



लोक सेवा आयोग

(पाठ्यक्रम तथा मूल्यांकन शाखा)



पत्र संख्या :- ०७९/८०
चलानी नं. ५४



फोन नं.:- ४७७०५५०
फ्याक्स नं.:-४७७९४९०
केन्द्रीय कार्यालय
कमलपोखरी, काठमाडौं ।

श्री निजामती कर्मचारी अस्पताल,
नयाँ वानेश्वर, काठमाण्डौं ।

दस्तावेज नं. २९
मिति: २०७९/११/२९

मिति: २०७९/११/२९
श्री ५९
Wave like music
सोडालिङ सम
११/२९

विषय: पाठ्यक्रमको परीक्षा प्रणाली तथा अंकभार सम्बन्धमा ।

लोक सेवा आयोग नियमावली, २०७९ को नियम ६ को उपनियम ३ बमोजिम आयोगबाट स्वीकृतिका लागि तहाँ अस्पतालको प.सं. २०७९/८० च.नं. ७९३ मिति २०७९/११/१७ को पत्रसाथ प्राप्त भएको सिमित (विशेष) प्रतियोगिताबाट पदपूर्ति गरिने पदहरुको लिखित परीक्षाको परीक्षा प्रणाली र अंकभार सम्बन्धमा आयोगबाट मिति २०७९/११/२९ गते देहाय बमोजिमको निर्णय भएको हुँदा सोही बमोजिम पाठ्यक्रममा संसोधन गरी पाठ्यक्रमलाई सरोकारवालाहरुको जानकारीको लागि सार्वजनिक गर्ने व्यवस्थाको लागि अनुरोध छ ।

आयोगको निर्णय (निर्णय नं. १३९-२०७९/११/२९)

“ लोक सेवा आयोग नियमावलीको नियम ६ को उपनियम ३ बमोजिम आयोगको स्वीकृतिको लागि प्राप्त भएका निजामती कर्मचारी अस्पतालको तपसिलमा उल्लेख गरिए बमोजिमका विभिन्न तह/पदहरुका सिमित प्रतियोगितात्मक परीक्षाको लागि मिति २०७९/०९/१८ गते स्वीकृत गरिएको पाठ्यक्रमहरुको परीक्षा योजनामा उत्तीर्णाङ्कको अङ्कभार ५० (पचास) कायम गर्ने ।”

तपसिल

सिमित प्रतियोगिता हुने पदहरु :

सि.नं.	पद	तह	सेवा	समूह	उपसमूह
१	कन्सल्ट्यान्ट	दशौं	प्राविधिक	मेडिसिन	इन्टरनल मेडिसिन
२	कन्सल्ट्यान्ट	दशौं	प्राविधिक	रेडियोलोजी	रेडियो डाइग्नोसिस एण्ड इमेजीङ
३	कन्सल्ट्यान्ट	दशौं	प्राविधिक	अबस्ट्रेटिक्स एण्ड गाइनेकोलोजी	अबस्ट्रेटिक्स एण्ड गाइनेकोलोजी
४	सिनियर रजिष्ट्रार (स्पेसलिष्ट)	नवौं	प्राविधिक	मेडिसिन	इन्टरनल मेडिसिन
५	सिनियर रजिष्ट्रार (स्पेसलिष्ट)	नवौं	प्राविधिक	सर्जरी	जनरल सर्जरी
६	सिनियर रजिष्ट्रार (स्पेसलिष्ट)	नवौं	प्राविधिक	अबस्ट्रेटिक्स एण्ड गाइनेकोलोजी	अबस्ट्रेटिक्स एण्ड गाइनेकोलोजी
७	सिनियर रजिष्ट्रार (स्पेसलिष्ट)	नवौं	प्राविधिक	मेडिसिन	क्लिनिकल हेमाटोलोजी

५/११/२९

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, डेन्टिस्ट्री समूह, डेन्टल हाइजिन उपसमूह, डेन्टल हाइजेनिष्ट पद, चौथो तहको सिमित
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, डेन्टिस्ट्री समूह, डेन्टल हाइजिन उपसमूह, डेन्टल हाइजेनिष्ट पद, चौथो तहको सिमित
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
Paper I : Technical subject

Section (A): 50 % Marks

1. **Health Service System**
 - 1.1 History of the development of dental health services in Nepal
 - 1.2 Purpose and characteristics of a dental health care system
 - 1.3 Code of conduct for Dental Hygienist and its purpose
 - 1.4 General Knowledge of Health/Dental Hygienist service in Nepal
 - 1.5 General knowledge about Civil Service Hospital and its Bylaws
2. **Dental Theory and Terminology**
 - 2.1 Dental and oral anatomy, tooth numbering system
 - 2.2 Instrument nomenclature and identification for all aspects of general dentistry
 - 2.3 Dental Terminology.
 - 2.4 Equipment operation, chair positioning, assistant equipment use age
3. **Four- handed Dental Assisting :**
 - 3.1 Instrument transfer techniques, chair side assisting and suctioning
 - 3.2 Chair-side doctor-patient- assistant positioning
 - 3.3 Tube and Tray system.
 - 3.4 Use of instruments and materials in assisting for :
 - 3.4.1 Operative dentistry
 - 3.4.2 Oral surgery
 - 3.4.3 Prosthodontics (crown and bridge)
 - 3.4.4 Endodontic
 - 3.4.5 Periodontics
 - 3.4.6 Pedodontics
 - 3.4.7 Orthodontics
 - 3.5 Hand piece care and maintenance

Section (B): 50 % Marks

4. **Oral Medicine and Radiology**
 - 4.1 Oral medicine - definition, scope and clinical application
 - 4.2 Case history and components; physical examination methodologies (general-extra oral, intra oral)
 - 4.3 Concepts of provisional diagnosis and differential diagnosis
 - 4.4 X-ray theory and technique, use of Ring Holders and their method
 - 4.5 Intra oral, bitewing, panoramic and endodontic exposure methods
 - 4.6 Developing X-rays
 - 4.7 X-ray safety and precautions
5. **Impressions and Model Trimming :**
 - 5.1 Impression materials and practice in their use, alginate, and rubber base
 - 5.2 Wax bites, counter impressions
 - 5.3 Model pouring and trimming

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प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

6. **Oral Pathology and Microbiology**

- 6.1 Concept, causes and types of inflammation and abscess
- 6.2 Definition of facial space and enumerate spaces of oro-facial region
- 6.3 Oral microbiology and normal oral flora of human being from birth to old age
- 6.4 Introduction to micro-organisms (bacteria, virus, fungi, protozoa, amoeba)
- 6.5 Source, types, clinical features and sequelae of infection

7. **Sterilization Techniques**

- 7.1 Sterilization theory and terminology, autoclave operation
- 7.2 Instrument and equipment sterilization disinfection
- 7.3 Treatment room disinfection and asepsis techniques

निजामती कर्मचारी अस्पताल
प्रशासन सेवा, प्रशासन समूह, आर्थिक प्रशासन उपसमूह, लेखा उपसहायक पद, चौथो तहको सिमित
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पाठ्यक्रम योजनालाई निम्नानुसारका दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :-	लिखित परीक्षा	पूर्णाङ्क :- १००
द्वितीय चरण :-	अन्तर्वार्ता	पूर्णाङ्क :- २०

परीक्षा योजना (Examination Scheme)

१. प्रथम चरण : लिखित परीक्षा (Written Examination)

पत्र /विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
सेवा सम्बन्धी	१००	५०	वस्तुगत	बहुवैकल्पिक प्रश्न (MCQ)	२५ प्रश्न X २ अङ्क	१ घण्टा
			विषयगत	छोटो उत्तर लमो उत्तर	८ प्रश्न X ५ अङ्क १ प्रश्न X १० अङ्क	

२. द्वितीय चरण : अन्तर्वार्ता (Interview)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- यो पाठ्यक्रमको योजनालाई प्रथम चरण र द्वितीय चरण गरी दुई भागमा विभाजन गरिएको छ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A,B,C,D मा लेख्नुपर्नेछ । सानो अक्षर (Small letter) a,b,c,d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्भन्नु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

निजामती कर्मचारी अस्पताल
प्रशासन सेवा, प्रशासन समूह, आर्थिक प्रशासन उपसमूह, लेखा उपसहायक पद, चौथो तहको सिमित
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पत्र/विषय - सेवा सम्बन्धी

१. लेखा र लेखा परीक्षणको अर्थ, उद्देश्य र महत्व ।
२. सरकारी बजेटको अर्थ र महत्व ।
३. जिन्सी सेस्ता सम्बन्धी ज्ञान ।
४. म.ले.प.फा.नं. ५- (बैंक नगदी किताब), ८- (बजेट हिसाब), १०- (गोश्वारा भौचर), २२- (पेशकी लेजर) ।
५. कोष तथा लेखा नियन्त्रक कार्यालयको काम, कर्तव्य ।
६. नेपालको संविधान, २०७२ को सामान्य जानकारी ।
७. लेखा परीक्षण ऐन, २०४८ ।
८. भ्रष्टाचार निवारण ऐन, २०५९ ।
९. निजामती सेवा ऐन, २०४९ र नियमावली, २०५० (तलब भत्ता, उपदान, निवृत्तभरण र आचरण) ।
१०. आर्थिक कार्यविधि तथा वित्तिय उत्तरदायित्व ऐन, २०७६ (बजेट तथा कार्यक्रम सम्बन्धी व्यवस्था, बजेट निकासी र सरकारी रकम खर्च गर्ने तरिका, लिलाम बिक्री सम्बन्धी व्यवस्था, विविध) ।
११. भ्रमण खर्च नियमावली, २०६४ ।

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, नर्सिङ्ग समूह, ओ.पि.डी. उपसमूह, ओ.पि.डी. सहायक पद, चौथो तहको सिमित प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, नर्सिङ्ग समूह, ओ.पि.डी. उपसमूह, ओ.पि.डी. सहायक पद, चौथो तहको सिमित प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

Paper I : Technical subject

Section (A): 50 % Marks

1. **Anatomy and Physiology**
 - 1.1 Names, types and functions of the different Organs of following system
 - 1.1.1 Skeletal System
 - 1.1.2 Muscular System
 - 1.1.3 Digestive System
 - 1.1.4 Circulatory System
 - 1.1.5 Urinary System
 - 1.1.6 Nervous System
 - 1.1.7 Respiratory System
 - 1.1.8 Endocrine System
 - 1.1.9 Sensory Organs
 - 1.2 Mechanism of the different system
 - 1.2.1 Mechanism of digestion of food
 - 1.2.2 Mechanism of respiration
 - 1.2.3 Mechanism of Menstrual cycle
 - 1.2.4 Mechanism of urinary system
2. **Basic Medical Procedures and First Aid Treatment**
 - 2.1 First aid
 - 2.1.1 Shock, Bleeding, burn/scalds fracture, Ear, Throat, Nose and Eye injuries, Poisoning, Snake bite, Insect bite and Animal bite & Frost bite, Shock
 - 2.1.2 First aid treatment of electrical injury
 - 2.1.3 Drowning, Choking, High fever fit and convulsion
 - 2.1.4 Basic life Support
 - 2.2 Basic Medical Procedures
 - 2.2.1 Vital signs, Wound dressings
 - 2.2.2 Investigation process and Importance of urine, Stool, Blood, Sputum pus and throat swab collection
 - 2.2.3 Bandage (Importance, types & application)
 - 2.2.4 Technique of giving injection
 - 2.2.5 Sterilization process, importance, type and methods
3. **Infection Prevention**
 - 3.1 Infection
 - 3.2 Medical asepsis/ surgical asepsis
 - 3.3 Infection control in health care facilities
 - 3.3.1 Hand hygiene
 - 3.3.2 Sterilization
 - 3.3.3 Cleaning
 - 3.3.4 Disinfection
 - 3.3.5 Personal protective equipments
 - 3.3.6 Antimicrobial
 - 3.4 Nosocomial infection
 - 3.5 Standard precaution

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, नर्सिङ्ग समूह, ओ.पि.डी. उपसमूह, ओ.पि.डी. सहायक पद, चौथो तहको सिमित प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

Section (B): 50 % Marks

4. **Fundamentals of Nursing**
 - 4.1 ICN code for nursing
 - 4.2 Nursing ethics
 - 4.3 Professional and clients' right
 - 4.4 Basic needs of clients
 - 4.5 The nursing process
 - 4.6 Common nursing procedures used in the hospital
 - 4.7 Stress and coping mechanism
 - 4.8 Administration of drugs

5. **Medical/Surgical Nursing**
 - 5.1 Developmental tasks, Application of nursing process, Common diagnostic procedures
 - 5.2 Nursing management of common disease conditions including pre and post operative care. Accidents, Injuries, Head Injuries, Spinal cord injury, Meningitis, Encephalitis, Tetanus, Epilepsy, Bronchitis, Asthma, Pulmonary TB, Pleurisy, Common Cold, Rhinitis, Atelectasis, Peptic Ulcer, Intestinal Obstruction, Appendicitis, Peritonitis, Cirrhosis of liver, Haemorrhoids, Cholecystitis, Hepatitis, Hernias, Hydrocele, Bladder stones, Pyelonephritis, Urinary Tract Infection (UTI), Renal stone, Acute and Chronic Renal failure, Uremia
 - 5.3 Congestive Heart Failure (CHF), Angina, Cardiac Arrest, Anaemia, Leukaemia, Myocardial infarction, Gangrene, Diabetes mellitus, Diabetes incipides, Hypertension, Fracture, Dislocation, Osteomyelitis
 - 5.4 Care of patient with common sensory disorders and nursing management

6. **Midwifery**
 - 6.1 Anatomy and Physiology of male and female reproductive systems
 - 6.2 Antenatal, natal and post natal care of a mother
 - 6.3 Management of high risk mothers
 - 6.4 Management of minor and major disorders of pregnancy
 - 6.5 Diseases associated with pregnancy
 - 6.6 Care of new born baby with observation and assessment
 - 6.7 Breast care and management

7. **General knowledge about Civil Service Hospital and its Bylaws**

निजामती कर्मचारी अस्पताल
प्रशासन सेवा, प्रशासन समूह, सामान्य प्रशासन उपसमूह, प्रशासन उपसहायक पद, चौथो तहको सिमित
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पाठ्यक्रम योजनालाई निम्नानुसारका दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा पूर्णाङ्क :- १००
द्वितीय चरण :- अन्तर्वार्ता पूर्णाङ्क :- २०

परीक्षा योजना (Examination Scheme)

१. प्रथम चरण : लिखित परीक्षा (Written Examination)

पत्र /विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
सेवा सम्बन्धी	१००	५०	वस्तुगत	बहुवैकल्पिक प्रश्न (MCQ)	२५ प्रश्न X २ अङ्क	१ घण्टा
			विषयगत	छोटो उत्तर लमो उत्तर	८ प्रश्न X ५ अङ्क १ प्रश्न X १० अङ्क	

२. द्वितीय चरण : अन्तर्वार्ता (Interview)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- यो पाठ्यक्रमको योजनालाई प्रथम चरण र द्वितीय चरण गरी दुई भागमा विभाजन गरिएको छ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A,B,C,D मा लेख्नुपर्नेछ । सानो अक्षर (Small letter) a,b,c,d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्भन्नु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

निजामती कर्मचारी अस्पताल
प्रशासन सेवा, प्रशासन समूह, सामान्य प्रशासन उपसमूह, प्रशासन उपसहायक पद, चौथो तहको सिमित
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पत्र/विषय - सेवा सम्बन्धी

१. कार्यालय कार्यविधि:- दर्ता, चलानी, फाइलिंग, पत्रव्यवहार, टिप्पणी र जनसम्पर्क ।
२. संघीय मामिला तथा सामान्य प्रशासन मन्त्रालय, अर्थ मन्त्रालय र गृह मन्त्रालयको काम, कर्तव्यको साधारण जानकारी ।
३. बैंक-नगदी किताब, बजेट सीट, गोश्वारा भौचर सम्बन्धी साधारण जानकारी ।
४. जिन्सी स्वेस्ताको साधारण ज्ञान (दाखिला रिपोर्ट, म.ले.प.फा.नं. ४६ खर्च नहुने खाता, म.ले.प.फा.नं. ४७ र खर्च हुने खाता म.ले.प.फा.नं. ५२) ।
५. नेपालको संविधान, २०७२ को सामान्य जानकारी ।
६. स्थानीय प्रशासन ऐन, २०२८ ।
७. भ्रष्टाचार निवारण ऐन, २०५९ ।
८. स्थानीय सरकार सञ्चालन ऐन, २०७४ को सामान्य जानकारी ।
९. निजामती सेवा ऐन, २०४९ तथा निजामती सेवा नियमावली, २०५० (नियुक्ति, आचरण, बिदा तथा सजाय सम्बन्धी जानकारी) ।

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, ईञ्जिनियरिङ एण्ड मेन्टेनेन्स समूह, बायोमेडिकल उपसमूह, बायोमेडिकल टेक्निसियन पद, पाँचौं
तहको सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, इंजिनियरिङ एण्ड मेन्टेनेन्स समूह, बायोमेडिकल उपसमूह, बायोमेडिकल टेक्निसियन पद, पाँचौं
तहको सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
Paper I : Technical subject

Section (A): 50 % Marks

1. **Human Physiology and Biomedical Instrumentation**
 - 1.1 Introduction to Basic Physiology : nervous system, respiratory system, circulatory system, digestive system and excretory system
 - 1.2 Physiological Signals Monitoring : ECG, EMG, EEG, Pulse Oxymeter, Temperature Meter and Blood Pressure Meter
 - 1.3 Labour and Delivery : foetal heart monitoring, infant warmer and phototherapy
 - 1.4 Dental Clinic and Laboratory : suction pressure unit, suction machine and dental chair
 - 1.5 Dialysis: General introduction and working principle
 - 1.6 Basic Laboratory Equipments: introduction and working principle (water bath, hot air oven and autoclave)
 - 1.7 OT Light

2. **Biomedical Chemistry**
 - 2.1 Electrochemistry
 - 2.1.1 Introduction and range of electrochemical techniques
 - 2.1.2 Classification of electrochemical techniques: Potometry and Voltmetry
 - 2.2 Carbohydrates, Proteins and Lipids : definition, classification and properties
 - 2.3 Instrumental methods for analysis of biologically important substance : Electrophoresis, Chromatographic, Mass spectrometric, Centrifugation, Filtration and Colorimetric techniques
 - 2.4 Acid-Base Chemistry
 - 2.4.1 pH, buffer and buffer systems
 - 2.4.2 Electrolysis and water dissociation

3. **Electronic Principles and Practices**
 - 3.1 Circuit Parameters: introduction
 - 3.2 AC and DC circuits: introduction and analysis
 - 3.3 Transistors: introduction and classification (BJT, JFET, MOSFET)
 - 3.4 Power Supplies, Voltage Regulators and IC Regulators
 - 3.4.1 Introduction and characteristics
 - 3.4.2 Rectifiers, filters, voltage regulation and switching regulation
 - 3.5 Amplifiers
 - 3.5.1 Introduction, characteristics, ideal amplifier and differential amplifier
 - 3.5.2 Operational Amplifier: introduction, characteristics and application
 - 3.6 OptoElectronic Components
 - 3.6.1 General introduction
 - 3.6.2 Photoconductive cells, Photodiodes, Phototransistors, Solar cells, Light activated SCR, Light Emitted Diodes (LEDs), Optocouplers and Liquid Crystal Displays (LCD)

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, इंजिनियरिङ एण्ड मेन्टेनेन्स समूह, बायोमेडिकल उपसमूह, बायोमेडिकल टेक्निसियन पद, पाँचौं
तहको सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

Section (B): 50 % Marks

4. **Digital Electronics and Microprocessors**
 - 4.1 Fundamental of Digital Electronics
 - 4.1.1 Transistor: application as switch and relay
 - 4.1.2 Logic Gates: truth tables and Boolean expressions
 - 4.1.3 Universal gates and gate conversion
 - 4.1.4 DeMorgan's theorem
 - 4.2 Combinational Logic Devices
 - 4.2.1 Encoder and Decoder
 - 4.2.2 Multiplexer and Demultiplexer
 - 4.2.3 Half and Full: Adder and Subtractor
 - 4.3 Sequential Logic Devices
 - 4.3.1 Counters: types and characteristics
 - 4.3.2 Registers: SISO, SIPO, PISO, PIPO
 - 4.3.3 Digital clocks and frequency counter
 - 4.4 Introduction and characteristics of analog to digital or digital to analog conversion
 - 4.5 Fundamentals of microprocessor, introduction and architecture of 8085 microprocessor
5. **Record keeping and Technical Writing**
 - 5.1 Introduction to record keeping and technical writing
 - 5.2 Creating forms, memos, letters and daily reports
 - 5.3 Computerized inventory and maintenance report
6. **Patient and Hospital Environment**
 - 6.1 Procurement procedures
 - 6.2 Biomedical waste management
7. **Maintenance and Repair for Biomedical Devices**
 - 7.1 Working Tools and Testing Equipments: General Handling Tools, Oscilloscopes and Multimeters
 - 7.2 Electrical Safety Inspections
 - 7.3 General Equipment Maintenance : Blood pressure machine, Suction machine, Stethoscope Syringe and Infusion pump
8. **General knowledge about Civil Service Hospital and its Bylaws**

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, फार्मसी समूह, फार्मसी उपसमूह, फार्मसी सहायक पद, पाँचौं तहको सिमित प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, फार्मसी समूह, फार्मसी उपसमूह, फार्मसी सहायक पद, पाँचौं तहको सिमित प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

Paper I : Technical subject

Section (A): 50 % Marks

1. **Dispensing and Hospital Pharmacy**
 - 1.1 Prescription, Proper handling of prescription and dispensing of medicines.
 - 1.2 Adverse drug reactions and drug interaction
 - 1.3 Pharmaceutical dosage forms, Dispensing of pharmaceutical preparations.
 - 1.4 Pharmaceutical additives.
 - 1.5 Roles of Pharmacist in hospital and community, Patient counseling
 - 1.6 National Formulary and Hospital Formulary, Standard Treatment Schedule
 - 1.7 Role of Drug & Therapeutic Committee in hospital
 - 1.8 Rational use of drugs.
 - 1.9 Good Pharmacy Practice Guideline

2. **Emergency and Pharmaceutical Care**
 - 2.1 Basic knowledge of first aid; Various medical conditions requiring first aid
 - 2.2 Principle and strategy of Primary Health Care in context to National Health Policy
 - 2.3 Maternal and Child Health Care

3. **Pharmacognosy**
 - 3.1 Drying, storage, and quality control of herbal drugs
 - 3.2 Extraction process and isolation of active ingredients

4. **Pharmaceutical Analysis**
 - 4.1 Fundamental titrimetric analysis, acid-base titration
 - 4.2 Basic principle of spectroscopic methods of analysis, visible and ultra-violet spectroscopy
 - 4.3 Separation techniques, column, paper, thin layer chromatography
 - 4.4 Principles of microbiological assay of antibiotics and vitamins
 - 4.5 Sampling technique and use of statistics

Section (B): 50 % Marks

5. **Pharmacology and Microbiology**
 - 5.1 Mechanism and action of drugs, their safety, uses and mode of administration.
 - 5.2 Basic knowledge of Pharmacokinetics and pharmacodynamics
 - 5.3 Basic principles of immunology, sterility and pyrogen testing

6. **Inventory Control & Drug Supply Management**
 - 6.1 Logistics management and distribution
 - 6.2 Cost recovery drug scheme
 - 6.3 Concept of essential drugs
 - 6.4 Storage of drugs

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परीक्षाको पाठ्यक्रम

- 6.5 Development of Pharmacy and Drug Legislation in Nepal.
 - 6.6 Development of Pharmacy and Pharmaceutical Institutions in Nepal.
 - 6.7 Use of Pharmacopoeia and pharmacopoeias recognized in Nepal
 - 6.8 National Health Policy and National Drug Policy
 - 6.9 Role and Responsibility of Nepal Pharmacy Council
7. **Drug Legislation in Nepal**
- 7.1 औषधि ऐन, २०३५ (गुणस्तरीय औषधिको उत्पादन, निकासी, पैठारी, बिक्री वितरण, र संचय सम्बन्धी व्यवस्था, औषधिको वर्गिकरण र नेपालमा प्रतिबन्धित औषधिहरु)
 - 7.2 औषधि दर्ता नियमावली, २०३८
 - 7.3 औषधि परामर्श परिषद् र औषधि सल्लाहकार समिति गठन नियमावली, २०३७
 - 7.4 औषधि जांचबूझ तथा निरीक्षण नियमावली, २०४०
 - 7.5 औषधि स्तर नियमावली, २०४३
 - 7.6 औषधि उत्पादन संहिता, २०४१
 - 7.7 नेपाल फार्मसी काउन्सिल ऐन, २०५७ तथा नेपाल फार्मसी काउन्सिल नियमावली, २०५९
8. **General knowledge about Civil Service Hospital and its Bylaws**

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, प्याथोलोजी समूह, मेडिकल ल्याब टेक्नोलोजी उपसमूह, ल्याब टेक्निसियन पद, पाँचौं तहको
सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, प्याथोलोजी समूह, मेडिकल ल्याब टेक्नोलोजी उपसमूह, ल्याब टेक्निसियन पद, पाँचौं तहको
सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
Paper I : Technical subject

1. Haematology

- 1.1 Cleaning of glasswares and safety precaution in the laboratory
- 1.2 Collection and preservation of different samples for the laboratory
- 1.3 Preparation of chemicals and different stains for the Hematological tests
- 1.4 Quality control in the laboratory
- 1.5 Formation and development of Erythrocytes, Leucocytes, thrombocytes
- 1.6 Principle and clinical procedure for:
 - 1.6.1 Hemoglobin estimation and it's standard curve calibration
 - 1.6.2 Total count of W.B.C., R.B.C., Platelets and reticulocytes
 - 1.6.3 E.S.R., B.T., C.T., and RBC indices
 - 1.6.4 Coomb's tests
 - 1.6.5 Blood banking & Transfusion
 - 1.6.6 Coagulation profile (mechanism, disorder & investigations)
 - 1.6.7 LE cell preparation
 - 1.6.8 Tissue parasite
 - 1.6.9 Absolutes cell count

2. Microbiology

- 2.1 Bacteriology
 - 2.1.1 Classification of medically important bacteria
 - 2.1.2 Characteristics of Microorganism: Prokaryotes, Eukaryotes, Viruses
 - 2.1.3 Different methods of sterilization and disinfections
 - 2.1.4 Preparation of different media and ingredients uses and interpretation
 - 2.1.5 Preparation of chemicals and stains
 - 2.1.6 Cultural procedure of different samples aerobically
 - 2.1.7 Identification of bacteria and confirmative tests serologically and bio-chemically
 - 2.1.8 Different staining methods of bacteria and their principles
 - 2.1.9 T.B. Bacteriology and skin scraping for A.F.B
 - 2.1.10 Quality control in Bacteriology Laboratory
 - 2.1.11 The universal precaution in microbiology laboratory and safe west disposal of infected materials
- 2.2 Virology
 - 2.2.1 General properties of virus comparing with bacteria, terminology used in virology and basic laboratory procedure used in the diagnosis of viral disease
- 2.3 Parasitology
 - 2.3.1 Classification of medically important:
 - 2.3.1.1 Protozoal parasite
 - 2.3.1.2 Helminthic parasites
 - 2.3.1.3 blood parasites
 - 2.3.1.4 Semen analysis
 - 2.3.2 Methods of identification of different parasites from stool samples by:
 - 2.3.2.1 Wet preparation
 - 2.3.2.2 Concentration methods
 - 2.3.2.3 Cultural methods
 - 2.3.3 Method of identification of blood parasites

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, प्याथोलोजी समूह, मेडिकल ल्याब टेक्नोलोजी उपसमूह, ल्याब टेक्निसियन पद, पाँचौं तहको
सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

- 2.3.4 Routine Examination and special test in Urine
- 2.4 Mycology
 - 2.4.1 Terminologies used in mycology sample collection for fungal infection (skin scarping, nails and hair) and method of wet preparation
- 2.5 Immunology
 - 2.5.1 Principle and procedure for the estimation of:
 - 2.5.1.1 V.D.R.L., (RPR)
 - 2.5.1.2 A.S.O.
 - 2.5.1.3 C.R.P.
 - 2.5.1.4 Rheumatoid factor
 - 2.5.1.5 ELISA Test
 - 2.5.1.6 Blood Grouping
- 3. Biochemistry**
 - 3.1 Define of mol. wt and eq. wt
 - 3.2 Preparation of normal and molar solution
 - 3.3 Colorimeter/spectrophotometer
 - 3.4 Principle and procedure of different methods for the estimation of biochemical tests
 - 3.4.1 Sugar, Urea, Creatinine, Uric Acid, LFT Amylase
 - 3.4.2 Cavity fluids examination
 - 3.4.3 C.S.F examination
 - 3.4.4 24 hours Urine Protein
 - 3.5 Simple theory of lights waves, function of filters Beers and Lamberts law, absorbance and percent transmission
 - 3.6 The lab hazards and precautions to be taken while working in clinical Biochemistry lab
- 4. Anatomy and physiology**
 - 4.1 Important anatomical terminologies
 - 4.2 The composition and function of blood
 - 4.3 The structure and functions of alimentary canal, digestive system, circulatory system, urinary system & respiratory system
- 5. Histology/Cytology**
 - 5.1 Different types of fixatives and their uses
 - 5.2 Methods of decalcification
 - 5.3 Methods of processing of tissues to prepare paraffin block tissue
 - 5.4 Methods of cutting section from the paraffin block tissue and staining Procedure
- 6. General knowledge about Civil Service Hospital and its Bylaws**

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, फिजियोथेरापि समूह, फिजियोथेरापि उपसमूह, फिजियोथेरापि सहायक पद, पाँचौं तहको सिमित
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर (Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

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प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
Paper I : Technical subject

Section (A): 50 % Marks

- 1. Introduction to physiotherapy**
 - 1.1 Definition of physiotherapy
 - 1.2 Scope of physiotherapy in the context of Nepal
 - 1.3 Fields of physiotherapy
 - 1.4 Disability awareness
- 2. Applied Anatomy**
 - 2.1 Muscular system
 - 2.2 Skeletal system
 - 2.3 Cardio respiratory system
 - 2.4 Neurology and neurosurgery
 - 2.5 Dermatology
 - 2.6 Obstetrics and gynaecology
- 3. Electrotherapeutic Modalities**
 - 3.1 Shortwave diathermy
 - 3.2 Microwave Diathermy
 - 3.3 Infrared Therapy
 - 3.4 Transcutaneous electrical nerve stimulation
 - 3.5 Therapeutic muscle stimulator
 - 3.6 Ultrasonic therapy
 - 3.7 Continuous passive motion
 - 3.8 Paraffin wax bath
 - 3.9 Hot packs and superficial heating modalities
 - 3.10 Traction unit
 - 3.11 Extracorporeal Shockwave Therapy (ESWT)
 - 3.12 Laser Therapy

Section (B): 50 % Marks

- 4. Therapeutic Exercise/Treatment planning**
 - 4.1 Strengthening Exercise
 - 4.2 Stretching exercise
 - 4.3 Re-education and Co-ordination exercises
 - 4.4 Therapeutic massage
 - 4.4.1 Neck
 - 4.4.2 Back
 - 4.4.3 Upper and Lower limbs
 - 4.4.4 Face
- 5. Rehabilitation (Institutional & Community)**
 - 5.1 Skeletal system
 - 5.1.1 Fractures, dislocation & subluxation
 - 5.1.2 Deformities- acquired and congenital
 - 5.1.3 Inflammatory, degenerative and pathological condition – Arthritis
 - 5.1.4 Amputation-upper/lower limbs

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- 5.2 Muscular System
 - 5.2.1 Muscles injuries- strain, tendinitis
 - 5.2.2 Muscular distrophy
 - 5.2.3 Ligament injuries - sprain
- 5.3 Neurological
 - 5.3.1 Peripheral Nerve injuries
 - 5.3.2 Cerebro vascular Accident
 - 5.3.3 Spinal cord injuries
 - 5.3.4 Epilepsy
 - 5.3.5 Inflammatory disease:- meningitis, encephalitis, Poliomyelitis
 - 5.3.6 Parkinsonism
 - 5.3.7 Cerebral palsy
- 5.4 Cardio-respiratory
 - 5.4.1 Chest physiotherapy-Breathing exercise/postural drainage
- 5.5 Dermatology
 - 5.5.1 Leprosy
 - 5.5.2 Burns and plastic surgery

6. General knowledge about Civil Service Hospital and its Bylaws

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यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
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Paper I : Technical subject
Section (A): 50 % Marks

1. Anatomy and Physiology

- 1.1 General introduction
 - 1.1.1 The cell
 - 1.1.2 Reproduction of the individual
- 1.2 The tissues
 - 1.2.1 Epithelial, Connective, Skeletal, Muscular and Nervous tissue
- 1.3 General pathology
 - 1.3.1 Bacteria
 - 1.3.2 Viruses
 - 1.3.3 Tumours
- 1.4 Surface and regional anatomy
 - 1.4.1 The anatomical position
 - 1.4.2 Head, Neck, Thorax, Abdomen and Pelvic cavity
- 1.5 The skeleton
 - 1.5.1 The structure of bone
 - 1.5.2 Function of bone
 - 1.5.3 The development and growth of bones
 - 1.5.4 The healing of fractures
- 1.6 The skull
 - 1.6.1 The skull viewed from the above and the below
 - 1.6.2 The skull viewed from the side and the front
 - 1.6.3 The interior of the skullcap
 - 1.6.4 The interior of the base of the skull
 - 1.6.5 The nasal cavity
 - 1.6.6 The accessory nasal sinuses
 - 1.6.7 The individual bones of the skull
- 1.7 The vertebral column, ribs and sternum
 - 1.7.1 The vertebral column
 - 1.7.2 The ribs
 - 1.7.3 The sternum
- 1.8 The bones of the upper limb
 - 1.8.1 The clavicle
 - 1.8.2 The scapula
 - 1.8.3 The humerus
 - 1.8.4 The radius
 - 1.8.5 The ulna
 - 1.8.6 The carpal bones
 - 1.8.7 The metacarpal bones
 - 1.8.8 The phalanges
 - 1.8.9 Arteries and nerves related to the bones of the upper limb
 - 1.8.10 Ossification of the bones of the upper limb
- 1.9 The bones of the lower limb
 - 1.9.1 The hipbone
 - 1.9.2 The pelvis
 - 1.9.3 The femur
 - 1.9.4 The patella

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- 1.9.5 The tibia
- 1.9.6 The fibula
- 1.9.7 The tarsal bones
- 1.9.8 The metatarsal bones
- 1.9.9 The phalanges
- 1.9.10 The arches of the foot
- 1.9.11 Arteries and nerves related to the bone of the lower limb
- 1.9.12 Ossification of the bones of the lower limb
- 1.10 The joints of the bones of the lower limb
 - 1.10.1 Types of joints
 - 1.10.2 The muscles and joints of the head
 - 1.10.3 The joints and muscles of the neck and trunk
 - 1.10.4 The joints and muscles of the upper limb
 - 1.10.5 The joint and muscles of the lower limb
- 1.11 The circulatory system
 - 1.11.1 The blood
 - 1.11.2 The blood vessels
 - 1.11.3 The heart
 - 1.11.4 The pulmonary circulation
 - 1.11.5 The systemic circulation
 - 1.11.6 The veins
- 1.12 The lymphatic system
 - 1.12.1 Lymph
 - 1.12.2 The lymphatic vessels
 - 1.12.3 The lymph nodes
 - 1.12.4 The lymphatic drainage of the body
 - 1.12.5 Lymphatic tissue
 - 1.12.6 The spleen
- 1.13 The respiratory system
 - 1.13.1 The nose
 - 1.13.2 The pharynx
 - 1.13.3 The larynx
 - 1.13.4 The trachea
 - 1.13.5 The bronchi
 - 1.13.6 The lungs
 - 1.13.7 The physiology of respiration
- 1.14 The digestive system
 - 1.14.1 The mouth
 - 1.14.2 The salivary glands
 - 1.14.3 The pharynx
 - 1.14.4 The oesophagus
 - 1.14.5 The stomach
 - 1.14.6 The small intestine
 - 1.14.7 The large intestine
 - 1.14.8 The pancreas
 - 1.14.9 The liver
 - 1.14.10 The biliary apparatus
 - 1.14.11 The function of the alimentary system

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- 1.15 The urinary system
 - 1.15.1 The kidneys
 - 1.15.2 The ureters
 - 1.15.3 The urinary bladder
 - 1.15.4 The urethra
 - 1.15.5 The functions of kidneys
 - 1.15.6 The control of micturition
 - 1.16 The nervous system
 - 1.16.1 Nervous tissue
 - 1.16.2 The central nervous system
 - 1.16.3 The brain
 - 1.16.4 The spinal cord
 - 1.16.5 The peripheral nervous system
 - 1.16.6 The autonomic nervous system
 - 1.17 The endocrine system
 - 1.17.1 The pituitary gland
 - 1.17.2 The thyroid gland
 - 1.17.3 The parathyroid gland
 - 1.17.4 The adrenal glands
 - 1.18 The reproductive system
 - 1.18.1 The male reproductive system
 - 1.18.2 The female reproductive system
 - 1.19 The skin and the organs of special sense
 - 1.19.1 The skin
 - 1.19.2 The eye
 - 1.19.3 The ear
 - 1.19.4 The nose
 - 1.19.5 The tongue
-
2. **Radiation Physics**
 - 2.1 Atomic structure
 - 2.1.1 The Nucleus
 - 2.1.2 Electron orbits and energy levels
 - 2.2 Production of x-ray, properties of x-rays
 - 2.2.1 General radiation (Bremsstrahlung)
 - 2.2.2 Characteristic Radiation
 - 2.2.3 Intensity of x-rays beams
 - 2.2.4 Target material
 - 2.2.5 Voltage (kVp) applied
 - 2.3 Basic interactions between x-rays and matter
 - 2.3.1 Coherent scattering
 - 2.3.2 Photoelectric effect
 - 2.3.3 Compton scattering
 - 2.3.4 Pair production
 - 2.3.5 Photodisintegration
 - 2.4 Radiation measurement and units
 - 2.4.1 Construction & working of the free air ionization chamber
 - 2.4.2 Thimble ionization chamber & condenser ionization chamber

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- 2.5 Radiation protection
 - 2.5.1 Historical introduction or why the protection is necessary against the radiation
 - 2.5.2 Maximum permissible dose
 - 2.5.3 Tabulation of the recommended maximum permissible doses for the different parts of the body
 - 2.5.4 Following the code of practice
 - 2.5.5 Identifying the protective materials
 - 2.6 Personnel monitoring
 - 2.6.1 The necessity of personnel monitoring & monitoring instruments (film badge, ionization chamber & thermoluminescent dosimeter)
 - 2.7 Safety requirements for operating X-ray unit
- 3. Patient Care and Management**
- 3.1 The hospital, the patient and the radiographer
 - 3.1.1 Clinical responsibility
 - 3.1.2 Legal responsibility
 - 3.1.3 The radiographer and the hospital
 - 3.2 Features of general patient care
 - 3.2.1 General preliminaries to the examination
 - 3.2.2 Moving chair and stretcher patients
 - 3.2.3 The anaesthetized patient
 - 3.2.4 Hygiene in the x-ray department
 - 3.2.5 General comfort and reassurance for the patient
 - 3.3 Drugs in the x-ray department
 - 3.3.1 Poisons and dangerous drugs
 - 3.3.2 Units of measurement
 - 3.3.3 Drugs used in preparation of the patient
 - 3.3.4 Contrast agents used in x-ray examinations
 - 3.3.5 Drugs used in resuscitation
 - 3.3.6 Labeling and issuing
 - 3.4 Sterilization and sterile techniques
 - 3.4.1 Methods of sterilization
 - 3.4.2 Central sterile supply
 - 3.4.3 Preparation of the hands for aseptic procedures
 - 3.5 Preparation of the patient
 - 3.5.1 General abdominal preparation
 - 3.5.2 Clothing of the patient
 - 3.6 First aid in the x-ray department
 - 3.6.1 Radiological emergencies
 - 3.6.2 Shock
 - 3.6.3 Hemorrhage
 - 3.6.4 Burns, scalds
 - 3.6.5 Loss of consciousness
 - 3.6.6 Asphyxia
 - 3.6.7 Fractures
 - 3.6.8 Electric shock
 - 3.7 Medico-legal aspects of the radiographer's work

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- 3.7.1 Breach of professional confidence
- 3.7.2 Negligence
- 3.7.3 Procedure in the event of an accident
- 3.7.4 The importance of records

Section (B): 50 % Marks

4. Radiographic Photography

- 4.1 Film
 - 4.1.1 Construction and composition of x-ray film
 - 4.1.2 Types of x-ray film
 - 4.1.3 Characteristic curve, special sensitivity & role of dyeing
 - 4.1.4 Film speed, density, contrast, sensitometry
 - 4.1.5 Artifacts and its causes
- 4.2 Intensifying screen
 - 4.2.1 Construction and composition of I.S.
 - 4.2.2 Screen speed, sharpness, coating weight
 - 4.2.3 Fluorescent material and phosphorescence
 - 4.2.4 Fluorescent material, new phosphors
- 4.3 Image
 - 4.3.1 Production of radiographic image
 - 4.3.2 Component of radiographic image
 - 4.3.2.1 Contrast, sharpness, resolution
 - 4.3.2.2 Exposure factors
 - 4.3.2.3 Absorption coefficient
- 4.4 Film processing
 - 4.4.1 Manual film processing
 - 4.4.1.1 The processing cycle
 - 4.4.1.2 Tanks and containers for processing chemical, processing units
 - 4.4.1.3 Mixing chemicals
 - 4.4.1.4 Storage of chemicals
 - 4.4.1.5 Film hangers
 - 4.4.2 Automatic processor
 - 4.4.2.1 Basic principle & it's functioning
- 4.5 Dark room planning
 - 4.5.1 Location, layout, radiation protection, safelight filter & sensitivity range
- 4.6 Identification
 - 4.6.1 Methods
 - 4.6.2 Importance
- 4.7 Silver recovery
 - 4.7.1 General introduction

5. Radiographic equipment

- 5.1 Historical background of x-ray and its production
 - 5.5.1 X-ray tube construction
 - 5.5.2 Stationary and rotating x-ray tube
 - 5.5.3 Recent advancement of an x-ray tube
 - 5.5.4 Tube rating cooling and care of x-ray tube and its faults
- 5.2 Control panel, x-ray table and tube column

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- 5.2.1 Type of x-ray table
 - 5.2.2 Different metering equipment
 - 5.2.3 X-ray tube support
 - 5.3 Fluoroscopic equipment
 - 5.3.1 Conventional fluoroscopy, image intensifier tube and Digital fluoroscopy
 - 5.4 Control of scatter radiation & beam restricting devices
 - 5.4.1 Secondary radiation grids
 - 5.4.2 Air gap technique
 - 5.5 Portable and mobile x-ray units
 - 5.5.1 Capacitor discharge and c-arm
 - 5.6 Computed and Direct Digital Radiography
 - 5.7 Introduction to modern modalities (CT, MRI, mammography)
- 6. Radiographic Technique**
- 6.1 **General radiography**
 - 6.1.1 Routine Radiography Technique for upper limb
(Fingers, thumb, hand, wrist forearm, elbow, humerus, shoulder, scapula, clavicle)
 - 6.1.2 Routine Radiography Technique for the lower limb,
(Toes, foot, calcaneum, ankle, tibia, fibula, knee, femur, hip joint, neck of femur, pelvis)
 - 6.1.3 Routine Radiographic technique for thoracic cage and its contents
(Chest, heart, ribs and sternum)
 - 6.1.4 Routine technique for the abdomen
Routine technique of plain & erect abdomen x-ray
 - 6.1.5 Routine technique for the spine
(Cervical, thoracic, lumbar, sacrum and coccyx, sacro-illac joint)
 - 6.1.6 Routine technique for the skull
 - 2.1.6.1 The radiograph anatomical landmarks of the skull
 - 2.1.6.2 The process of routine examination of the bones of skull (cranium, facial bone and mandible)
 - 6.1.7 To locate the following by x-rays (scaphoid, foreign body in the hand, head of humerues & axial Shoulder, acromio-calvicular joints, sterno-calvicular joints, foreign body in the foot, lateral foot weight bearing, skyline view of patella, tibial Tuberosity)
 - 6.1.8 a) The supplementary views of the chest and abdomen (Apical views, lordotic view & decubitus, oblique views for heart size & lateral with barium swallow, thoracic inlet, diaphragm exursion, inhaled or swallowed foreign body, imperforated anus)
b) The purposes of these views
 - 6.1.9 The supplementary views for the spine and pelvis (soft tissue)
(Neck, odontoid peg (open-mouth), vertebral foramina of cervical spine, upper thoracic spine oblique lumbar spine, lumbosacral junction, oblique sacro-illac joints, illum, acetabulum, pelvimetry, skeleton survey)
 - 6.1.10 The supplementary views for the skull (towne's view, submento vertical, sella turcica, temporo-mandibular joint, nasal bones, paranasal sinuses, mastoids, orbits, optic foramina, foreign body in the eye, dental radiography)
 - 6.1.11 Registration process

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- a) The steps of registration of patients
- b) The importance of a monthly and annual record, filling system and preparing the Performa invoices
- c) Filling of radiographs and reports (x-ray No, hospital number, patient's name, cross reference bill, with patient's name)

6.2 Radiographic examination with contrast media

Special examination with contrast media

6.2.1 Contrast media

- 6.2.1.1 Definition of the contrast media
- 6.2.1.2 Types of contrast media
- 6.2.1.3 Methods of introducing the contrast media
- 6.2.1.4 Reactions of contrast media
- 6.2.1.5 Name of the emergency equipments and drugs needed to cope with reactions

6.2.2 Radiographic investigation of Gastro-intestinal tract using contrast media

- 6.2.2.1 Barium swallow
- 6.2.2.2 Barium meal
- 6.2.2.3 Barium follow through
- 6.2.2.4 Examination of GI tract
- 6.2.2.5 Ba-enema
- 6.2.2.6 Small bowel enema
- 6.2.2.7 Loopogram
- 6.2.2.8 State the role of a radiographer during fluoroscopy

6.2.3 Investigation of urinary tract and hystero salpinogram

- 6.2.3.1 Intravenous Urogram (IVU)
- 6.2.3.2 Cystogram
- 6.2.3.3 Micturating cystogram
- 6.2.3.4 Urethrogram
- 6.2.3.5 Retrograde pyelogram
- 6.2.3.6 Hystero salpinogram (HSG)

6.2.4 Radiographic procedure of the Biliary tract

- 6.2.4.1 Percutaneous transhepatic cholangiography and drainage (PTC and PTCD)
- 6.2.4.2 Endoscopic retrograde cholangio pancreatography (ERCP)
- 6.2.4.3 Operative cholangiography
- 6.2.4.4 T. Tube cholangiography

6.2.5 Use of portable/mobile x-ray in ward and operation theatre

- 6.2.5.1 The uses of mobile machine
- 6.2.5.2 The technique of using ward radiography
- 6.2.5.3 The technique of using operating theatre radiography
- 6.2.5.4 Technique to help in Hip pinning
- 6.2.5.5 The technique of operative-cholangiography

6.2.6 Vascular and Neurological examinations

- 6.2.6.1 Carotid and vertebral angiogram
- 6.2.6.2 Femoral angiogram
- 6.2.6.3 Aortogram
- 6.2.6.4 Phlebogram
- 6.2.6.5 Myelogram

6.2.7 Special examinations

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, रेडियोलोजी समूह, रेडियोग्राफी उपसमूह, रेडियोग्राफर पद, पाँचौं तहको सिमित प्रतियोगितात्मक
परीक्षाको पाठ्यक्रम

- 6.2.7.1 Arthrogram
- 6.2.7.2 Dacryccystogram
- 6.2.7.3 Sinogram/Fistulogram
- 6.2.7.4 Sailogram
- 6.2.7.5 Mammogram
- 6.2.7.6 Macro-radiography
- 6.2.7.7 Soft tissue radiography

7. General knowledge about Civil Service Hospital and its Bylaws

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, नर्सिङ्ग समूह, नर्सिङ्ग उपसमूह, स्टाफ नर्स पद, पाँचौं तहको सिमित प्रतियोगितात्मक परीक्षाको
पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, नर्सिङ्ग समूह, नर्सिङ्ग उपसमूह, स्टाफ नर्स पद, पाँचौ तहको सिमित प्रतियोगितात्मक परीक्षाको
पाठ्यक्रम

Paper I : Technical subject

1. Fundamentals of Nursing

- Basic needs of clients
- The nursing process
- Common nursing procedures used in the hospital
- Stress and coping mechanism
- First aid treatment
- Administration of drugs
- Infection prevention
- Methods of collecting different specimen for routine and culture test

2. Applied Science

- Anatomy and Physiology of all body systems and organs
- Body mechanisms, Friction, Gravity, Newton's Law, Force, Transfer of heat, Fluid and electrolyte, Osmosis, Diffusion, Acid base balance, Rehydration therapy, Common investigation and its significance, Microbiology, Infection diseases, Common drugs, its action and side effects.

3. Medical/Surgical Nursing

- Developmental tasks, Application of nursing process, Common diagnostic procedures
- Nursing management of common disease conditions including pre and post operative care - Accidents, Injuries, Head Injuries, Spinal cord injury, Meningitis, Encephalitis, Tetanus, Epilepsy, Bronchitis, Asthma, Pulmonary TB, Pleurisy, Common Cold, Rhinitis, Atelectasis, Peptic Ulcer, Intestinal Obstruction, Appendicitis, Peritonitis, Cirrhosis of liver, Haemorrhoids, Cholecystitis, Hepatitis, Hernias, Hydrocele, Bladder stones, Pyelonephritis, Urinary Tract Infection (UTI), Renal stone, Acute and Chronic Renal failure, Uremia
- Congestive Heart Failure (CHF), Angina, Cardiac Arrest, Anaemia, Leukaemia, Myocardial infarction, Gangrene, Diabetes mellitus, Diabetes insipidus, Hypertension, Fracture, Dislocation, Osteomyelitis
- Care of patient with common sensory disorders and nursing management

4. Community Health Nursing

- Concepts of primary health care
- Epidemiological concepts and approaches
- Nutrition, deficiency diseases and management
- Immunization
- Communicable diseases and management
- Health Indicators
- Family planning

5. Midwifery

- Anatomy and Physiology of male and female reproductive systems
- Antenatal, natal and post natal care of a mother
- Management of high risk mothers
- Management of minor and major disorders of pregnancy
- Diseases associated with pregnancy
- Care of new born baby with observation and assessment

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पाठ्यक्रम

- Breast care and management

6. Nursing Care of Gynaecological Problems

- Disorder of Uterine Bleeding
- Cystocele and Rectocele
- Uterine Prolaps
- Vesico Vaginal Fistula
- STD/HIV/AIDS
- Infertility

7. Pediatric Nursing

- Major developmental characteristics and milestones
- Promoting optimum development of children
- Adolescent changes and problems
- Six major killer diseases
- Common health problems in children and their nursing management
- Common health hazards in children in Nepal and their prevention
- Congenital disorders/disabilities
- Role of nurses in reduction of mortality rate of children
- Nursing care of critically ill children

8. Mental Health

- Management of clients with mental disorders
- Characteristics of mentally ill patient
- Classification of mental disorders

9. Leadership and Management in Nursing Planning

- Management process: Supervision, motivation, implementation and evaluation
- Leadership style
- Organizational structure of Government health services
- National health planning and concept of national health system
- Policies, rules and regulations in management of different level of hospitals and health centres
- Communication Process

10. General knowledge about Civil Service Hospital and its Bylaws

निजामती कर्मचारी अस्पताल
प्रशासन सेवा, प्रशासन समूह, सामान्य प्रशासन उपसमूह, प्रशासन सहायक पद, पाँचौं तहको सिमित
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पाठ्यक्रम योजनालाई निम्नानुसारका दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :-	लिखित परीक्षा	पूर्णाङ्क :- १००
द्वितीय चरण :-	अन्तर्वार्ता	पूर्णाङ्क :- २०

परीक्षा योजना (Examination Scheme)

१. प्रथम चरण : लिखित परीक्षा (Written Examination)

पत्र /विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
सेवा सम्बन्धी	१००	५०	वस्तुगत	बहुवैकल्पिक प्रश्न (MCQ)	२५ प्रश्न X २ अङ्क	१ घण्टा
			विषयगत	छोटो उत्तर लमो उत्तर	८ प्रश्न X ५ अङ्क १ प्रश्न X १० अङ्क	

२. द्वितीय चरण : अन्तर्वार्ता (Interview)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- यो पाठ्यक्रमको योजनालाई प्रथम चरण र द्वितीय चरण गरी दुई भागमा विभाजन गरिएको छ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A,B,C,D मा लेख्नुपर्नेछ । सानो अक्षर (Small letter) a,b,c,d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

निजामती कर्मचारी अस्पताल
प्रशासन सेवा, प्रशासन समूह, सामान्य प्रशासन उपसमूह, प्रशासन सहायक पद, पाँचौं तहको सिमित
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

पत्र/विषय - सेवा सम्बन्धी

१. सार्वजनिक प्रशासन, संगठन, कर्मचारी प्रशासन, समन्वय र नियन्त्रण सम्बन्धी सामान्य जानकारी ।
२. नेपाल सरकारको केन्द्रीय, प्रादेशिक र जिल्ला स्तरीय संगठन सम्बन्धी सामान्य जानकारी ।
३. नेपाल सरकारको कार्य संचालनस्तरको लेखा र जिन्सी सेस्ता सम्बन्धी सामान्य जानकारी ।
४. नेपालको संविधान, २०७२ को सामान्य जानकारी ।
५. स्थानीय प्रशासन ऐन, २०२८
६. भ्रष्टाचार निवारण ऐन, २०५९
७. स्थानीय सरकार सञ्चालन ऐन, २०७४ को सामान्य जानकारी ।
८. लोक सेवा आयोग ऐन, २०७९
९. निजामती सेवा ऐन, २०४९ र निजामती सेवा नियमावली, २०५०
१०. आर्थिक कार्यविधि तथा वित्तिय उत्तरदायित्व ऐन, २०७६
११. सार्वजनिक खरीद नियमावली, २०६४
१२. भ्रमण खर्च नियमावली, २०६४
१३. सुशासन (व्यवस्थापन तथा सञ्चालन) नियमावली, २०६५

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, फिजियोथेरापि समूह, फिजियोथेरापि उपसमूह, फिजियोथेरापिष्ट पद, छैठौं तहको सिमित
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

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Paper I : Technical subject

Section (A): 50 % Marks

1. Applied Anatomy and Physiology

1.1 Applied Anatomy

1.1.1 Regional (Muscles, Bones, Joints, Nerves, Blood vessels, Lymphatics)

1.1.1.1 Upper limb

1.1.1.2 Lower limb

1.1.1.3 Head

1.1.1.4 Neck

1.1.1.5 Trunk

1.1.2 Systemic

1.1.2.1 Muscular

1.1.2.2 Skeletal

1.1.2.3 Nervous

1.1.2.4 Cardio-vascular

1.1.2.5 Respiratory

1.1.2.6 Metabolic & Endocrine

1.1.2.7 Excretory

1.1.2.8 Reproductive

1.1.2.9 Integumentary system

1.1.3 Radiological

1.1.3.1 Investigation

1.1.3.2 Finding

1.1.4 Surface Anatomy

1.2 Physiology

1.2.1 Physiology of the following systems:

1.2.1.1 Muscular

1.2.1.2 Skeletal

1.2.1.3 Nervous

1.2.1.4 Cardio-vascular

1.2.1.5 Respiratory

1.2.1.6 Metabolic & Endocrine

1.2.1.7 Excretory

1.2.1.8 Reproductive

1.2.1.9 Integumentary system

2. Pharmacology, Pathology, Microbiology, Biochemistry

2.1 Pharmacology

1.2.2 Drug allergy

1.2.3 Drug toxicity

1.2.4 Methods of administration

1.2.5 Hormones

1.2.6 Vitamins

1.2.7 Drugs acting on neuromuscular junction and muscles

1.2.8 Drugs acting on cardio-respiratory system

1.2.9 Drugs acting on CNS, PNS, ANS

1.2.10 Chemotherapeutic agents

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2.2 Pathology

- 2.2.1 Inflammation/ tissue repair/ cell repair
- 2.2.2 Infection/tumors-etiologic spreads and types
- 2.2.3 Blood: Anemia, rheumatic and coronary heart diseases
- 2.2.4 Respiratory system: Pneumonia, asthma, bronchitis, bronchiectasis, emphysema
- 2.2.5 Bones and joints disease: auto immune disease, different arthritis, osteomyelitis
- 2.2.6 Skin: leprosy
- 2.2.7 Polio, myopathies, CNS infections and psoriasis

2.3 Microbiology

- 2.3.1 Sterilization
- 2.3.2 Bacteriology/virology
- 2.3.3 Immunity
- 2.3.4 Allergy and hypersensitivity

2.4 Biochemistry

- 2.4.1 Metabolism of carbohydrates, vitamins, fats, proteins

3. **Biomechanics and Kinesiology**

- 3.1 Basics principles of mechanics including Centre of gravity, line of gravity, force, Newton's law, friction, stability, equilibrium, levers etc
- 3.2 Biomechanics of spine, upper extremity and lower extremity
- 3.3 Biomechanics of posture and its deviations
- 3.4 Biomechanics of gait and its deviations

4. **Rehabilitation in Neurology:** (Clinical condition and different exercises regimes, therapeutic modalities and equipment's, prosthetics and orthotics used for the management of the condition)

- 4.1 Cerebral vascular accident
- 4.2 Acquired brain injury, spinal cord injury
- 4.3 Tumors
- 4.4 Degenerative neurological/neuromuscular disorder
- 4.5 Demyelinating disorders
- 4.6 Inflammatory/ infectious condition
- 4.7 Cerebellar/vestibular disorders
- 4.8 Neuropathies
- 4.9 Developmental/ birth injuries e.g. CP
- 4.10 Dementia and other cognitive disorder

5. **Rehabilitation in Musculoskeletal and Sports:** (Clinical condition and different exercises regimes, therapeutic modalities and equipments, prosthetics and orthotics used for the management of the condition)

- 5.1 Muscle contusion/strain/ ligament sprain/tear/weakness
- 5.2 Pelvic floor dysfunction
- 5.3 Tendinopathy, tendon tear/ rupture/ tendonosis
- 5.4 Joint derangement/dysfunction, fracture, dislocation, subluxation
- 5.5 Degenerative joint diseases, osteoporosis, osteopenia
- 5.6 Amputation

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- 5.7 Congenital malformation
- 5.8 Sports injuries
- 5.9 Mechanical spinal abnormalities
- 5.10 Inflammatory/infectious conditions
- 5.11 Nerve compression/ radiculopathy/ peripheral nerve injuries

Section (B): 50 % Marks

- 6. **Rehabilitation in Cardio-respiratory:** (Clinical condition and different exercises regimes, therapeutic modalities and equipments, prosthetics and orthotics used for the management of the condition)
 - 6.1 Heart diseases, malformation, injury
 - 6.2 Myocardial ischemia, infarction, heart failure, cor-pulmonale
 - 6.3 Tumors
 - 6.4 Pneumonia, atelectasis, ARDS, asthma, COPD, pulmonary edema
 - 6.5 Arterial and venous diseases
 - 6.6 Pleural effusion, cystic fibrosis, tuberculosis
- 7. **Rehabilitation in Pediatrics:** (Clinical condition and different exercises regimes, therapeutic modalities and equipments, prosthetics and orthotics used for the management of the condition)
 - 7.1 Congenital and acquired musculoskeletal disorders
 - 7.2 Congenital and acquired neurological disorders
 - 7.3 Congenital and acquired cardio-pulmonary disorders
 - 7.4 Developmental disorder, learning disorders, burns, vitamins deficiency
- 8. **Rehabilitation in Gynecology:** (Clinical condition and different exercises regimes, therapeutic modalities and equipments, prosthetics and orthotics used for the management of the condition)
 - 8.1 Pregnancy, stages of labour, complications
 - 8.2 Gynecological disorders- salpingitis, parametritis, retro-uterus, prolapse of uterus, pelvic inflammatory diseases, urinary incontinence
- 9. **Rehabilitation in Geriatrics**
(Clinical condition and different exercises regimes, therapeutic modalities and equipments, prosthetics and orthotics used for the management of the condition)
 - 9.1 Musculoskeletal disorder
 - 9.2 Cardiopulmonary disorder
 - 9.3 Neurological disorders
 - 9.4 Burns, nutritional disorders
 - 9.5 Dementia, depression
- 10. **Rehabilitation in Multisystem**
(Clinical condition and different exercises regimes, therapeutic modalities and equipments, prosthetics and orthotics used for the management of the condition)
 - 10.1 HIV/AIDS, autoimmune disease, hemophilia
 - 10.2 Fibromyalgia, chronic pain
 - 10.3 Obesity, burns
 - 10.4 Wounds/ ulcers
 - 10.5 Skin condition like dermatitis, psoriasis

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11. Ethics, Management, Research, and Evidence based practice

- 11.1 Ethics
 - 11.1.1 Ethics and professionalism
 - 11.1.2 Standard of practice, competency
 - 11.1.3 Continuing Physical Therapy education, lifelong learning
- 11.2 Management
 - 11.2.1 People management, communication and team work
 - 11.2.2 Development and implementation of policies and procedures
 - 11.2.3 Budgets
 - 11.2.4 Staffing and Record keeping
 - 11.2.5 Job descriptions, roles and responsibilities
 - 11.2.6 Performance evaluations and appraisals
 - 11.2.7 Interviewing
- 11.3 Research
 - 11.3.1 Introduction to research, research design
 - 11.3.2 Questionnaires, surveys and sampling
 - 11.3.3 Ethical issues in research, elements of informed consent
 - 11.3.4 Structure of a research proposal
 - 11.3.5 Reliability and validity
 - 11.3.6 Research design and types of research
 - 11.3.7 Errors in research, hypothesis testing
- 11.4 Evidence based practice

12. Clinical Practice

- 12.1 Data collection
- 12.2 Tests/measurements
- 12.3 Data interpretation
- 12.4 Prognosis
- 12.5 Goal setting and care planning
- 12.6 Implementation
- 12.7 Education/communication with patients and their family members
- 12.8 Intervention progression

13. General knowledge about Civil Service Hospital and its Bylaws

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यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

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Paper I : Technical subject
Section (A): 50 % Marks

1. ANATOMY & PHYSIOLOGY

1.1 INTRODUCTION

- 1.1.1 General anatomical terms
- 1.1.2 Human cell structure and function
- 1.1.3 The tissues

1.2 MUSCULO-SKELETAL SYSTEM

- 1.2.1 Formation, growth and development of bones
- 1.2.2 Function of bone according to the size and shape of bone
- 1.2.3 Classification of bone
- 1.2.4 Classification of joints and their function
- 1.2.5 Different groups of muscle responsible for joint movement

1.3 NERVOUS SYSTEM

- 1.3.1 Neuron and nerve cells
- 1.3.2 Central nervous system and brain
- 1.3.3 Parts of ventricles of the brain and their extent
- 1.3.4 The cerebrospinal fluid
- 1.3.5 Midbrain and brain stem
- 1.3.6 Peripheral nervous system
- 1.3.7 Autonomic nervous system
- 1.3.8 Cranial nerves, spinal nerves

1.4 CARDIO-VASCULAR SYSTEM

- 1.4.1 Blood vessels- arteries, veins, and capillaries
- 1.4.2 Different parts of heart and its function
- 1.4.3 Cardiac cycle
- 1.4.4 Systemic circulation
- 1.4.5 Pulmonary circulation
- 1.4.6 Coronary circulation
- 1.4.7 Aorta
- 1.4.8 Inferior venacava (IVC) & Superior venacava (SVC)

1.5 THE LYMPHATIC SYSTEM

- 1.5.1 Lymphatic System
- 1.5.2 Lymph nodes
- 1.5.3 Spleen
- 1.5.4 Thymus gland

1.6 THE RESPIRATORY SYSTEM

- 1.6.1 Respiration, Alveolar respiration
- 1.6.2 Lungs and Pleura
- 1.6.3 Organs of the respiratory system, Respiratory passages (Nose, Pharynx, Larynx, Trachea, Bronchioles, Alveoli)

1.7 THE DIGESTIVE SYSTEM

- 1.7.1 Organs of the digestive system, Mouth, Pharynx, Esophagus, Stomach, Small intestine, large intestine, rectum and anal canal Salivary glands
- 1.7.2 Function of alimentary tract
- 1.7.3 Pancreas, Liver, biliary tract and their function
- 1.7.4 Metabolism of Carbohydrates, Protein and fat

1.8 THE URINARY SYSTEM

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- 1.8.1 Organs of urinary system: Kidneys, ureters, bladder, and urethra
- 1.8.2 Kidneys-position, gross structure, cortex, medulla pelvis
- 1.8.3 Functional unit of kidney: nephron, function of kidneys
- 1.8.4 Formation of urine, water-electrolyte balances in body
- 1.8.5 Ureters: Position structure and function
- 1.8.6 Micturation-reflex control
- 1.8.7 Structure and function of the urinary bladder and urethra
- 1.8.8 Supra-renal glands, prostate gland
- 1.9 THE REPRODUCTIVE SYSTEM
 - 1.9.1 Female Reproductive System & Breast
 - 1.9.1.1 External genitalia, Uterus, Ovaries: Position, structure functions
 - 1.9.1.2 Menstrual cycle, Reproduction & menopause
 - 1.9.1.3 Breast-Position, structure and its functions
 - 1.9.1.4 Puberty
 - 1.9.2 Male Reproductive System:
 - 1.9.2.1 Position structure and functions of scrotum, testes, epididymis, deferent ducts, seminal vesicles, ejaculatory ducts and penis
 - 1.9.2.2 Puberty
- 1.10 SPECIAL SENSES
 - 1.10.1 Skin- structure and function
 - 1.10.2 The ear (external, middle & internal ear)-structure and function
 - 1.10.3 The Eyes- structure & functions.
 - 1.10.4 Nose- structure and functions
 - 1.10.5 Tongue-structure, functions
 - 1.10.6 Taste buds and Sense of taste
- 1.11 THE ENDOCRINE SYSTEM
 - 1.11.1 Endocrine glands - pituitary gland, thyroid gland, parathyroid glands, adrenal gland, islets of langerhans, pineal gland, testis, ovaries, thymus
 - 1.11.2 Endocrine glands - Position, structure, functions and hormone secretion
- 2. **BASIC RADIATION PHYSICS**
 - 2.1 REVIEW OF ELECTRICITY
 - 2.1.1 Electromagnetic induction and its laws
 - 2.1.2 Self and mutual induction
 - 2.1.3 A.C generator, Peak and effective values of AC
 - 2.1.4 Concept of Reactance, Impedance & phase angle
 - 2.2 TRANSFORMER
 - 2.2.1 Theory, construction, Losses & Efficiency, Transformer ratings
 - 2.2.2 Filament transformer
 - 2.2.3 High-tension transformer
 - 2.2.4 Autotransformer or variac transformer
 - 2.3 THERMIONIC EMISSION AND RECTIFIERS
 - 2.3.1 Diode - construction, principle & characteristics
 - 2.3.2 Rectifiers: Self-rectification, Half-wave, Full-wave (two valves and four valves) and constant voltage rectifiers
 - 2.3.3 The cold cathode gas filled diode and its use
 - 2.4 ATOMIC STRUCTURE AND ELECTROMAGNETIC RADIATION
 - 2.4.1 Electron, proton, neutron, mass number, and atomic number
 - 2.4.2 Isotopes, isobars and isomers

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- 2.4.3 Electron shells & energy levels
- 2.4.4 Excitation and ionization
- 2.4.5 Emission of electromagnetic waves, spectra
- 2.4.6 Properties of electromagnetic waves
- 2.4.7 Concept of photon and quanta
- 2.4.8 Photoelectric effect, photocell
- 2.5 RADIOACTIVITY
 - 2.5.1 Radioactive elements, radioactive disintegration
 - 2.5.2 Properties of radioactive particles
 - 2.5.3 Radioactive decay law, half-life, mean life
 - 2.5.4 Artificial radioactivity: Radioactivity induced by neutron bombardment and proton bombardment
 - 2.5.5 Nuclear binding energy, nuclear stability
 - 2.5.6 Alpha, beta and gamma disintegration
 - 2.5.7 Introduction to fission and fusion
- 2.6 X-RAYS
 - 2.6.1 Historical background
 - 2.6.2 X-ray tube
 - 2.6.3 Mechanism of x-ray production
 - 2.6.4 Properties of x-rays, intensity & quality of x-rays, continuous and characteristic spectra
 - 2.6.5 Effects of variation of tube current and voltage, Brag's law for wavelength determination
 - 2.6.6 X-ray control and indicating equipment: simple circuit diagram as illustration of sequence from mains supply to exposure control
 - 2.6.7 Mains voltage circuit
 - 2.6.8 Mains cables, Switches and fuses
 - 2.6.9 Mains voltage compensation, earthing, insulation, voltage drops in cables
 - 2.6.10 X-ray tube voltage control and indication
 - 2.6.11 Exposure controls. Contactors and timers
 - 2.6.12 X-ray tube current control and filament supply, mA compensation, Generator regulation
- 2.7 INTERACTION OF RADIATION WITH MATTER
 - 2.7.1 Thompson scattering
 - 2.7.2 Photoelectric interaction
 - 2.7.3 Compton scattering
 - 2.7.4 Pair production
 - 2.7.5 Transmission of a homogenous and heterogeneous x-ray beam through matter
 - 2.7.6 Effects of filtration
 - 2.7.7 Relative amount of scatter from an x-ray beam during the passage through matter
 - 2.7.8 Effects of collimation
- 2.8 RADIATION DETECTION AND MEASUREMENT
 - 2.8.1 Principle of measurement
 - 2.8.2 Ionization chamber, Electrometer
 - 2.8.3 Scintillation counter
 - 2.8.4 Gieger-muller counter
 - 2.8.5 Thimble chamber
 - 2.8.6 Condenser chamber

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2.9 RADIATION PROTECTION

- 2.9.1 Objective and principle of radiation protection
- 2.9.2 Radiation and Radiation units
- 2.9.3 Personnel monitoring
- 2.9.4 Protective materials
- 2.9.5 ICRP recommendations on dose limits

2.10 ULTRASOUND

- 2.10.1 Longitudinal waves
- 2.10.2 Principles of ultrasound, intensity, power and fields
- 2.10.3 Transmission of ultrasound
- 2.10.4 Velocity of ultrasound in different media
- 2.10.5 Ultrasonic interactions, absorption and scattering mechanism in tissue, refraction and reflection of ultrasound
- 2.10.6 Damping of ultrasound in media
- 2.10.7 Doppler effect

3. RADIOGRAPHIC TECHNIQUE

3.1 UPPER LIMB

- 3.1.1 Technique for whole hand, fingers, thumb, wrist joint, Radio ulnar joints
- 3.1.2 Supplementary technique: carpal tunnel, scaphoid, ulnar groove, head of radius
- 3.1.3 Supplementary views of elbow, humerus & Supra-condylar projection

3.2 SHOULDER GIRDLE AND THORAX

- 3.2.1 Technique for shoulder joint, acromio-clavicular joint, and scapula
- 3.2.2 Supplementary views: projection to show recurrent dislocation of shoulder, infero-superior projection of clavicle, sterno-clavicular joint, sternum, ribs

3.3 LOWER LIMB

- 3.3.1 Technique for whole foot, toes, great toe, calcaneum, talo-calcaneal joint, ankle joint, lower leg with ankle joint
- 3.3.2 Knee joint, patella, tibio-fibular joints
- 3.3.3 Supplementary technique for torn ligaments, flat feet, axial view of calcaneum, skyline view of patella, intercondylar notch view

3.4 VERTEBRAL COLUMN

- 3.4.1 Technique for cranio-vertebral joint, atlanto-occipital joint, first three cervical vertebra, odontoid peg view
- 3.4.2 Cervical spine for intervertebral joints and foramina, cervico thoracic vertebrae
- 3.4.3 Thoracic spine, thoraco-lumbar vertebrae
- 3.4.4 Lumbar spine, intervertebral joints and foramina, lumbo-sacral joint, sacrum, coccyx
- 3.4.5 Supplementary techniques, to demonstrate scoliosis, kyphosis, spondylolisthesis

3.5 PELVIC GIRDLE AND HIP REGION

- 3.5.1 Technique for whole pelvis, ileum, ischium and pubic bones
- 3.5.2 Sacroiliac joints, symphysis pubis, hip joints, acetabulum, neck of femur
- 3.5.3 Supplementary projections: acetabulum view, judet view, Von-Rosen view and frog leg view for hip joint (CDH)

3.6 SKULL

- 3.6.1 Routine views of Skull, Towne's view, SMV, Emergency Skull radiography

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- 3.6.2 Technique for mastoids, styloid process, IAM
- 3.6.3 Routine views for facial bones, mandible, zygomatic arches, nasal bone, maxilla, temporo-mandibular joints
- 3.6.4 Optic foramina, macroradiography for optic foramina
- 3.6.5 Routine and special views for Paranasal sinuses
- 3.7 CHEST RADIOGRAPHY
 - 3.7.1 Routine radiography of chest, High kV technique for Chest
 - 3.7.2 Supplementary views: apicogram, lordotic and oblique views, lateral decubitus, diaphragmatic excursions double exposure technique
- 3.8 WARD AND OPERATION THEATRE RADIOGRAPHY
 - 3.8.1 Knowledge of Electrical supply, radiation protection
 - 3.8.2 Radiography of bed-ridden patients
 - 3.8.3 Radiography in operation theatre
- 3.9 MAMMOGRAPHY
 - 3.9.1 Soft tissue radiography
 - 3.9.2 Principle and technique of mammography
- 3.10 MACRO-RADIOGRAPHY
 - 3.10.1 Definition, principles and its applications
 - 3.10.2 Magnification factors and uses of magnification radiography

Section (B): 50 % Marks

4. SPECIAL RADIOLOGICAL PROCEDURES

- 4.1 FIRST AIDS AND EMERGENCY CARE
 - 4.1.1 Introduction to Shock, emergency treatment, Cardio-Pulmonary resuscitation (CPR)
 - 4.1.2 Introduction to Haemorrhage, primary management of haemorrhage
- 4.2 CONTRAST MEDIA
 - 4.2.1 Introduction to contrast media
 - 4.2.2 Definition, types and uses of contrast media
 - 4.2.3 Properties of contrast media
 - 4.2.4 Adverse effects of contrast media and their management
 - 4.2.5 Emergency trolley setting
 - 4.2.6 Life saving drugs and emergency trays
- 4.3 ALIMENTARY TRACT
 - 4.3.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming & post procedure care for following investigations:
 - 4.3.1.1 Barium swallow
 - 4.3.1.2 Barium meal
 - 4.3.1.3 Barium follow -through
 - 4.3.1.4 Small bowel enema
 - 4.3.1.5 Barium enema -single contrast, -double contrast
 - 4.3.1.6 Loopogram
- 4.4 BILIARY TRACT
 - 4.4.1 Definition, indications, contraindications, equipment required contrast media, preparation of the patient, technique / procedure, filming, post procedure care for following investigations:
 - 4.4.1.1 Percutaneous transhepatic cholangiography (PTC)
 - 4.4.1.2 Endoscopic retrograde cholangio-pancreatography (ERCP)

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4.4.1.3 Per operative cholangiography (POC)

4.4.1.4 T-tube cholangiography

4.5 URINARY TRACT

4.5.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for following investigations:

4.5.1.1 Intravenous urography (IVU), Modification of IVU and additional techniques

4.5.1.2 Percutaneous nephrostomy (PCN)

4.5.1.3 Retrograde pyelography (RGP)

4.5.1.4 Micturating cysto-urethrography

4.6 REPRODUCTIVE SYSTEM

4.6.1 Definition, indications, contraindications, equipment required contrast media, preparation of the patient, technique/procedure, filming, post procedure care for Hysterosalpingography

4.7 CARDIO-VASCULAR SYSTEM

4.7.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for following investigations:

4.7.1.1 Carotid angiography

4.7.1.2 Abdominal aortography

4.7.1.3 Portal venography

4.7.1.4 Peripheral and lower limb venography

4.8 MYELOGRAPHY

4.8.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for following investigations:

4.8.1.1 Lumabr, Thoracic and Cervical Myelography

4.8.1.2 Post Myelo-CT (CT Myelography)

4.9 ARTHROGRAPHY

4.9.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for following investigations:

4.9.1.1 Knee Arthrography

4.9.1.2 Hip Arthrography

4.10 SINOGRAPHY

4.10.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique /procedure, filming, post procedure care for Sinography

4.11 SIALOGRAPHY

4.11.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for following investigations:

4.11.1.1 Parotid sialography

4.11.1.2 Sub-mandibular sialography

4.12 DACRYOCYSTOGRAPHY

4.12.1 Definition, indications, contraindications, equipment required, contrast media, preparation of the patient, technique/procedure, filming, post procedure care for Dacryocystography.

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5. EQUIPMENT FOR DIAGNOSTIC RADIOLOGY

5.1 X-RAY TUBES

- 5.1.1 Overview of production of x-rays, Historical background
- 5.1.2 Components of an x-ray tube: Cathode assembly, Anode assembly
- 5.1.3 Stationary and rotating anodes
- 5.1.4 Line focus principle, anode heel effect, Off-focus radiation
- 5.1.5 Glass envelope, tube shielding, care of x-ray tubes
- 5.1.6 X-ray tube faults
- 5.1.7 Modification and recent advances in x-ray tube

5.2 RADIOGRAPHIC COUCHES, STANDS AND TUBE SUPPORTS

- 5.2.1 X-ray tube supports
- 5.2.2 Radiographic couches
- 5.2.3 Chest stands and vertical bucky
- 5.2.4 Modern basic radiographic units

5.3 EXPOSURE TIMERS

- 5.3.1 Clockwork timer, synchronous motor and impulse timers
- 5.3.2 Electronic timers
- 5.3.3 Autotimers (photoelectric timer and ionization chamber timer)

5.4 BEAM CENTERING & BEAM LIMITING DEVICES

- 5.4.1 Cones and cylinders, Aperture diaphragms
- 5.4.2 Light beam diaphragms, Positive beam limitation

5.5 PORTABLE AND MOBILE RADIOGRAPHIC EQUIPMENTS

- 5.5.1 Main features of portable and mobile equipment
- 5.5.2 Mains dependent mobile equipment
- 5.5.3 Capacitor discharge equipment
- 5.5.4 Battery powered generators

5.6 CONTROL OF SCATTERED RADIATION

- 5.6.1 Significance of scattered radiation
- 5.6.2 Reduction in the amount of scatter radiation produced (field size, use of appropriate exposure factors, compression band)
- 5.6.3 Reduction in the amount of scatter radiation reaching to the film (metal backing of cassettes, filters, air-gap technique, cones and diaphragms, Grids)
- 5.6.4 Grid: construction, function, grid characteristics, grid types and patterns. Grid movement
- 5.6.5 Reduction in the effect of scatter (use of intensifying screens)

5.7 FLUOROSCOPIC EQUIPMENT

- 5.7.1 Conventional fluoroscopy
- 5.7.2 Mobile and specialised fluoroscopic units
- 5.7.3 Image intensified fluoroscopy
- 5.7.4 Image intensifier- construction and working principle
- 5.7.5 TV camera and TV monitor
- 5.7.6 Digital fluoroscopy

5.8 EQUIPMENT FOR DENTAL RADIOGRAPHY

- 5.8.1 A simple dental radiographic unit, Orthopantomography (OPG)

5.9 VASCULAR IMAGING EQUIPMENT

- 5.9.1 Generators and x-ray tubes
- 5.9.2 C-Arm/U-Arm assembly

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- 5.9.3 Angiographic tables
- 5.9.4 Automatic pressure injectors
- 5.9.5 Digital subtraction Angiography
- 5.10 MAMMOGRAPHIC EQUIPMENT
 - 5.10.1 Mammography x-ray tube
 - 5.10.2 Image receptors in mammography
 - 5.10.3 Apparatus for magnification radiography in mammography
 - 5.10.4 Digital mammography/ Digital Breast tomosynthesis
- 5.11 DIGITAL IMAGING
 - 5.11.1 Introduction to digital imaging concepts and advantages of image digitization
 - 5.11.2 Digital image structure
 - 5.11.3 Digital radiography: Scanned projection radiography (SPR), Computed radiography (CR), Direct digital radiography (DR)
- 5.12 COMPUTED TOMOGRAPHY (CT)
 - 5.12.1 Basic principles of CT
 - 5.12.2 Generations of CT/ MDCT/Newer advances in CT
 - 5.12.3 System components
 - 5.12.4 Image characteristics & Image quality in CT
 - 5.12.5 Artifacts in CT.
- 5.13 MAGNETIC RESONANCE IMAGING (MRI)
 - 5.13.1 Fundamental concepts: magnetic moments, precession, resonance, nuclear magnetic resonance (NMR)
 - 5.13.2 Introduction to MR Scanners: imaging magnets, RF transmitter and receiver coils, shim coils and gradient coils
 - 5.13.3 Principal parameters of MRI: spin density, T1 relaxation time, T2 relaxation time
 - 5.13.4 Basic principles of MR imaging and related parameters
 - 5.13.5 Spin echo pulse sequence
 - 5.13.6 Gradient echo pulse sequence
 - 5.13.7 Artifacts in MRI
 - 5.13.8 Advances in MR technology.
- 5.14 CT AND MRI TECHNIQUE
 - 5.14.1 Technique for Brain
 - 5.14.2 Technique for Head, Chest, Abdomen and other body parts
 - 5.14.3 Technique for CTA and MRA
 - 5.14.4 Technique for Spine and Joint
- 6. **RADIOGRAPHIC PHOTOGRAPHY**
 - 6.1 PHOTOGRAPHIC PRINCIPLE
 - 6.1.1 Photographic effect
 - 6.1.2 Photosensitive materials
 - 6.1.3 Photographic emulsion
 - 6.1.4 Characteristic curve
 - 6.1.5 Spectral sensitivity
 - 6.1.6 Direct exposure film (x-ray sensitive)
 - 6.1.7 Gurney-Mott theory of latent image formation
 - 6.2 FILM MATERIALS
 - 6.2.1 Construction of x-ray film
 - 6.2.2 Film for medical imaging

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- 6.2.3 Comparison between single coated and double coated x-ray films
 - 6.3 FILM STORAGE
 - 6.3.1 Different storage areas
 - 6.3.2 Ideal storage condition
 - 6.3.3 Stock control and film ordering methods
 - 6.4 INTENSIFYING SCREENS
 - 6.4.1 Luminescence: fluorescence and phosphorescence
 - 6.4.2 Construction of Intensifying screen and their types
 - 6.4.3 Types of phosphors: calcium tungsten, rare earth and their comparison
 - 6.4.4 Detective Quantum efficiency (DQE)
 - 6.4.5 Quantum mottle
 - 6.4.6 Care, monitoring and cleaning of IF screen
 - 6.4.7 X-ray film cassettes
 - 6.4.8 Cassette function, construction, materials used, types and care of cassettes
 - 6.5 RADIOGRAPHIC PROCESSING
 - 6.5.1 Manual and Automatic processing
 - 6.5.2 Processing cycles
 - 6.5.3 Processing chemical
 - 6.5.4 Care and maintenance of automatic processors
 - 6.5.5 The principle of dry silver imager
 - 6.5.6 Silver recovery
 - 6.5.7 Daylight processing
 - 6.6 DESIGN AND CONSTRUCTION OF DARKROOM
 - 6.6.1 The layout of an ideal darkroom
 - 6.6.2 Darkroom location, size, radiation protection, floor, walls / ceiling, ventilation and heating, entrance, white lighting and safe light and its test, film hoppers loading bench and wet bench
 - 6.7 THE RADIOGRAPHIC IMAGE
 - 6.7.1 Radiographic image quality
 - 6.7.2 Factors affecting radiographic image quality
 - 6.7.3 Image artifacts
 - 6.8 IDENTIFICATION AND VIEWING OF RADIOGRAPHS
 - 6.8.1 Methods of film
 - 6.9 Quality assurance in radiography
- 7. General knowledge about Civil Service Hospital and its Bylaws**

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पाठ्यक्रम योजनालाई निम्नानुसारका दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :-	लिखित परीक्षा	पूर्णाङ्क :- १००
द्वितीय चरण :-	अन्तर्वार्ता	पूर्णाङ्क :- २०

परीक्षा योजना (Examination Scheme)

१. प्रथम चरण : लिखित परीक्षा (Written Examination)

पत्र /विषय	पूर्णाङ्क	उत्तीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
सेवा सम्बन्धी	१००	५०	विषयगत	छोटो उत्तर	२० प्रश्न X ५ अङ्क	३ घण्टा

२. द्वितीय चरण : अन्तर्वार्ता (Interview)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

१. यो पाठ्यक्रमको योजनालाई प्रथम चरण र द्वितीय चरण गरी दुई भागमा विभाजन गरिएको छ ।
२. लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
३. यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरु परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
४. प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

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पत्र/विषय - सेवा सम्बन्धी

(क) : सार्वजनिक प्रशासनका मूलभूत पक्षहरू (अंक ४०)

१. परिचय
 - १.१ सरकारको अर्थ, शक्ति पृथकीकरण र शक्ति सन्तुलनको अवधारणा
 - १.२ सार्वजनिक प्रशासनको अवधारणा
 - १.२.१ परिचय तथा परिभाषा
 - १.२.२ उद्देश्य
 - १.२.३ कार्य क्षेत्र
 - १.२.४ सार्वजनिक प्रशासन र निजी (व्यापारिक) प्रशासनको समानता र भिन्नता
 - १.२.५ राजनीति तथा प्रशासन
 - १.२.५.१ नीति निर्माण, विश्लेषण तथा कार्यान्वयनमा प्रशासनको भूमिका
 - १.२.५.२ सार्वजनिक प्रशासन र राजनीति बीचको सम्बन्ध तथा सीमा
 - १.३ निर्णय लिने प्रक्रिया (Decision Making Process)
२. कर्मचारीतन्त्र
 - २.१ कर्मचारीतन्त्रको अवधारणा तथा परिभाषा
 - २.२ कर्मचारीतन्त्रका आधारभूत प्रकृति (९लवतगचभ) हरु
 - २.३ कर्मचारीतन्त्रका प्रकारहरू
 - २.४ कर्मचारीतन्त्रका दुर्बल तथा सबल पक्षहरू
३. संगठन र यसका प्रमुख पक्षहरू
 - ३.१ संगठनको परिचय
 - ३.२ संगठनका किसिमहरू तथा स्वरूपहरू
 - ३.३ संगठन गठनका आधारहरू
 - ३.४ संगठनका सिद्धान्त तथा अन्य केही प्रमुख पक्षहरू
 - ३.४.१ आदेशको एकात्मकता (Unity of Command)
 - ३.४.२ नियन्त्रणको सिमा (Span of Control)
 - ३.४.३ पदशोपान (Hierarchy)
 - ३.४.४ संगठनात्मक व्यवहार (Organizational Behaviour)
 - ३.४.५ समूह गतिशिलता (Group Dynamics) र समूहगत कार्य (Team Work)
 - ३.४.६ सल्लाह दिने निकाय (Staff Agency) र निर्णय लिने तथा कार्यान्वयन गर्ने निकाय (Line Agency)
 - ३.५ संगठनको विभिन्न स्वरूप Flat, Vertical, Matrix, Dome bell etc. (Football on the church bell)
४. सार्वजनिक प्रशासनको संचालन विधिहरू
 - ४.१ समन्वय : अर्थ, महत्व र समन्वयका तरिकाहरू
 - ४.२ अधिकार प्रत्यायोजन
 - ४.३ अधिकार निक्षेपण (Devolution)
 - ४.४ सुपरिवेक्षण
 - ४.५ अनुगमन तथा मूल्यांकन
 - ४.६ वार्ता गर्ने तरिका तथा शीपवारे सैद्धान्तिक ज्ञान
 - ४.७ अभिलेख व्यवस्थापन
५. सार्वजनिक कर्मचारी प्रशासन
 - ५.१ परिचय तथा परिभाषा

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- ५.२ उद्देश्य
 - ५.३ कार्यहरु
 - ५.४ सार्वजनिक प्रशासनमा जनशक्तिको स्थान
 - ५.५ उत्प्रेरणाको परिचय, उत्प्रेरणाको लागि मौद्रिक तथा गैह्र मौद्रिक प्रोत्साहन (Incentive) हरुको भूमिका
 - ५.६ मनोबल तथा मनोबललाई प्रभाव पार्ने तत्वहरु
 - ५.७ केन्द्रीय कर्मचारी निकाय (Central Personnel Agency) र संचालन (Operating Personnel Agency) निकायको अवधारणा
 - ५.८ नेपालको सार्वजनिक कर्मचारी प्रशासनमा लोक सेवा आयोग, न्याय सेवा आयोग, सामान्य प्रशासन मन्त्रालय तथा सेवा संचालन गर्ने मन्त्रालयहरुको भूमिका
६. विकास प्रशासन
 - ६.१ परिचय तथा परिभाषा
 - ६.२ विकास प्रशासन र परम्परागत प्रशासनमा भिन्नता
 - ६.३ विकास प्रशासकमा हुनुपर्ने गुणहरु
 - ६.४ विकास प्रशासनका चुनौती तथा संभावनाहरु
७. आर्थिक प्रशासन
 - ७.१ आर्थिक प्रशासनको अर्थ र क्षेत्र
 - ७.२ आर्थिक प्रशासनको प्रमुख कार्यहरु
 - ७.३ सार्वजनिक प्रशासनमा आर्थिक प्रशासनको महत्व
८. तथ्यांक एवं सूचनाको संकलन, प्रशोधन, विश्लेषण तथा प्रस्तुतीकरणको सामान्य जानकारी
 - ८.१ सार्वजनिक व्यवस्थापनमा तथ्यांक र सूचनाको महत्व र उपयोगिता
 - ८.२ तथ्यांक तथा सूचनाको प्रकृति र स्रोत
 - ८.३ तथ्यांक तथा सूचना संकलनका विधि
 - ८.४ तथ्यांक प्रशोधन, विश्लेषण तथा प्रस्तुतिकरण
 - ८.४.१ संकलित तथ्यांक एवं सूचनाको तालिकीकरण (Tabulation) को तरिका
 - ८.४.२ Measures of Central Tendency को ज्ञान
 - ८.४.३ Measures of Dispersion को ज्ञान
 - ८.४.४ Correlation Analysis को ज्ञान
 - ८.४.५ Regression Analysis को ज्ञान
 - ८.४.६ ग्राफिकल प्रस्तुतिकरणको तरिका र त्यसको महत्व

(ख) : निजामती सेवा तथा सार्वजनिक व्यवस्थापनका विविध पक्षहरु (अंक ३०)

१. निजामती सेवा तथा कर्मचारी प्रशासन / जनशक्ति व्यवस्थापन
 - १.१ निजामती सेवा :
 - १.१.१ निजामती सेवाको अवधारणा
 - १.१.२ दर्जा मूलक (Rank-in-man) निजामती सेवा र पद मूलक (Position Classification) निजामती सेवाको अवधारणा
 - १.१.३ जनशक्ति योजनाको परिचय, महत्व र योजना तर्जुमाको तरिका र नेपालको निजामती सेवाको सन्दर्भमा जनशक्ति योजनाको व्यवस्था
 - १.१.४ पदपूर्ति गर्ने तरिकाहरु:
 - १.१.४.१ आन्तरिक पदपूर्ति, वाह्य पदपूर्ति
 - १.१.४.२ आन्तरिक पदपूर्ति, वाह्य पदपूर्तिका सबल तथा कमजोर पक्षहरु
 - १.१.४.३ नेपालको निजामती सेवामा पदपूर्ति गर्ने तरिका र प्रक्रियाहरु
 - १.१.५ तालिमको परिचय, महत्व, तालिम चक्र र नेपालको निजामती सेवामा तालिमको व्यवस्था

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प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

- १.१.६ तलब र अन्य सहूलियत (Fringe Benefits) को परिचय, तलब निर्धारणका सैद्धान्तिक आधारहरु नेपालको निजामती सेवामा तलब भत्ताको व्यवस्था
 - १.१.७ खुल्लावृत्ति प्रणाली (Open Career System) र बन्दवृत्ति प्रणाली (Closed Career System) को परिचय, प्रत्येकका फाइदा, बेफाइदाहरु, वृत्ति विकासको लागि आवश्यक शर्तहरु र नेपालको निजामती सेवामा वृत्ति विकास
 - १.१.८ कार्य सम्पादन मूल्यांकन, यसको बहुउद्देशीय उपयोग र नेपालको निजामती सेवामा कार्य सम्पादन मूल्यांकन व्यवस्था
 - १.१.९ प्रजातान्त्रिक शासन व्यवस्थामा कर्मचारीको संगठित हुने अधिकार र यसका सकारात्मक तथा नकारात्मक पक्षहरु, सार्वजनिक प्रशासनमा कर्मचारीको मर्का सुन्ने व्यवस्था (Grievance Handling), सामूहिक सौदावाजी (Collective Bargaining) र नेपालको निजामती सेवाको सन्दर्भमा भएका व्यवस्थाहरु
 - १.१.१० कर्मचारीका आचरण, अनुशासन र नेपालको निजामती सेवामा रहेका यस सम्बन्धी वर्तमान व्यवस्थाहरु
 - १.१.११ व्यावसायिक सुरक्षा तथा स्वास्थ्यको अवधारणा र नेपालको वर्तमान निजामती सेवामा यसको स्थिति
 - १.१.१२ कर्मचारी प्रशासनको सन्दर्भमा प्रशासकीय पुनर्गठन समिति (वुच कमिशन) २००९, प्रशासन पुनर्गठन योजना आयोग २०१३, प्रशासन सुधार आयोग, २०२५/ २०३२/०३३ र २०४८ का सुझावहरु र तिनको कार्यान्वयन बारे संक्षिप्त जानकारी
२. प्रशासन/व्यवस्थापनका केही प्रमुख पक्षहरु
- २.१ द्वन्द व्यवस्थापन (Conflict Management)
 - २.२ संगठनमा द्वन्दको अर्थ, द्वन्दका श्रोतहरु/कारणहरु र प्रकृति
 - २.३ संगठनमा द्वन्दका सकारात्मक तथा नकारात्मक पक्षहरु
 - २.४ द्वन्द व्यवस्थापनका उपायहरु
 - २.५ तनाव व्यवस्थापन
 - २.५.१ तनावका प्रकृति कारण/श्रोतहरु
 - २.५.२ तनाव व्यवस्थापनका उपायहरु
 - २.६ समय व्यवस्थापनको अवधारणा
 - २.७ दैवी प्रकोप व्यवस्थापन
 - २.८ संकट व्यवस्थापन (Crisis Management)
 - २.९ परिवर्तन व्यवस्थापन (Management of Change) को अवधारणा
 - २.१० परिवर्तन व्यवस्थापन गर्दा सामना गर्नु पर्ने समस्याहरु र समाधान गर्न अवलम्बन गर्नु पर्ने उपायहरु
 - २.११ प्रशासनिक उत्तरदायित्व (Administrative Accountability)
 - २.११.१ परिचय तथा परिभाषा
 - २.११.२ सार्वजनिक उत्तरदायित्वका किसिमहरु
 - २.११.३ सार्वजनिक उत्तरदायित्वका चुनौति
 - २.११.४ उत्तरदायित्व बढाउने उपायहरु
 - २.१२ अम्बुस्डम्यान (Ombudsman) को अवधारणा, कार्यहरु र यस सन्दर्भमा नेपालको अख्तियार दुरुपयोग अनुसन्धान आयोगको भूमिका
 - २.१३ प्रशासनमा संचार
 - २.१३.१ संचारको महत्व
 - २.१३.२ संचारका तरिकाहरु
 - २.१३.३ संचारका व्यवधानहरु र तिनलाई समाधान गर्ने उपायहरु
 - २.१३.४ व्यवस्थापन सूचना प्रणालीको महत्व र आवश्यकता

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प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

३. केही प्रशासनिक विधिहरू (Administrative Techniques)
 - ३.१ कार्य विश्लेषण (Job Analysis)
 - ३.२ कार्य विवरण (Job Description)
 - ३.३ कार्य मूल्याङ्कन (Job Evaluation)
 - ३.४ कार्य पुष्टीकरण (Job Enrichment)
 - ३.५ कार्य विस्तृतिकरण (Job Enlargement)
 - ३.६ संगठन तथा व्यवस्थापन (Organization & Management) पद्धति
 - ३.७ व्यवस्थापन परीक्षण (Management Audit)
 - ३.८ कार्यालय समयको लचकता (Flexi Time)
 - ३.९ गुण चक्र (Quality Circle)
 - ३.१० सम्पूर्ण गुणस्तर व्यवस्थापन (Total Quality Management)
 - ३.११ निरन्तर सुधार विधि (Kaizen)
 - ३.१२ छरितो व्यवस्थापन (Lean Management)
 - ३.१३ परफरमेन्स पे प्रणाली (Performance Pay System)

४. सार्वजनिक वित्त प्रशासन तथा लेखा
 - ४.१ वजेटको परिभाषा र किसिम, लायन आइटम बजेट (Line Item Budget), कार्यक्रम वजेट (Program Budget) र शून्यमा आधारित बजेट (Zero Based Budget)
 - ४.२ मौद्रिक तथा वित्तीय नीतिको सैद्धान्तिक परिचय, यी नीतिहरू तर्जुमा गर्दा ध्यान पुऱ्याउनु पर्ने तत्वहरू तथा यी नीतिहरूको सार्वजनिक प्रशासनमा महत्व
 - ४.३ राजस्व, सार्वजनिक खर्च र सार्वजनिक ऋणको अवधारणाहरूको परिचय
 - ४.४ लेखा प्रणालीको सिद्धान्त र नेपाल सरकारको श्रेस्ता प्रणालीको संक्षिप्त परिचय
 - ४.५ सार्वजनिक प्रशासनमा आन्तरिक र अन्तिम लेखापरिक्षणको आवश्यकता

५. औद्योगिक क्रान्ति र औद्योगिक सम्बन्ध
 - ५.१ विश्वमा औद्योगिक क्रान्तिको संक्षिप्त परिचय
 - ५.२ औद्योगिक क्रान्तिको प्रभाव
 - ५.३ नेपालमा औद्योगिक विकासको क्रम
 - ५.४ औद्योगिक सम्बन्धको अवधारणा र नेपालमा यसको अवस्था
 - ५.५ औद्योगिक मनोविज्ञान

६. विविध
 - ६.१ संविधान, कानून, ऐन, नियमको अर्थ र यिनीहरूको बीचका भिन्नताहरू
 - ६.२ कानूनका श्रोतहरू
 - ६.३ नेपाल सरकारको केन्द्रीय संरचना
 - ६.४ प्रशासकीय कानून: परिचय, क्षेत्र
 - ६.५ सार्वजनिक प्रशासनमा संसदीय समितिहरूको भूमिका

(ग) : विकास प्रशासन, विकेन्द्रीकरण, स्थानीय सरकार र नेपाल सरकारका नीतिहरू (अंक ३०)

१. विकास प्रशासन
 - १.१ विकास सम्बन्धी अवधारणाहरू
 - १.१.१ आर्थिक वृद्धि तथा आर्थिक विकास
 - १.१.२ सामाजिक परिवर्तन तथा सामाजिक विकास
 - १.१.३ राजनैतिक संस्कृति तथा राजनैतिक विकास
 - १.१.४ मानव विकास
 - १.२ विकास योजना तथा विकास परियोजना
 - १.२.१ विकास योजना तथा परियोजना बीचको सम्बन्ध

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प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

- १.२.२ परियोजना चक्र
- १.२.३ आयोजनाको वित्तिय विप्लेषण सम्बन्धी जानकारी
 - १.२.३.१ प्रोफिट्याविलिटी र लिक्विडिटी (Profitability and Liquidity) सम्बन्धी ज्ञान
 - १.२.३.२ अनडिस्काउन्टेड प्रविधि (Undiscounted Technique)
 - १.२.३.३ डिस्काउन्टेड प्रविधि (Discounted Technique)
 - १.२.३.३.१ आई.आर.आर (Internal Rate of Return)
 - १.२.३.३.२ लाभ लागत अनुपात (Cost Benefit Ratio)
 - १.२.३.३.३ यन.पि.भि. (Net Present Value)
 - १.२.३.३.४ डिस्काउन्टेड क्यास फ्लो (Discounted Cash Flow)
२. ग्रामीण तथा शहरी विकास
 - २.१ ग्रामीण तथा शहरी विकासका सैद्धान्तिक अवधारणाहरु
 - २.२ नेपालमा ग्रामीण तथा शहरी विकासका लागि २००८ साल देखि हालसम्म भएका प्रयास, समस्या र सम्भावनाहरु
 - २.३ ग्रामीण तथा शहरी विकास योजना तर्जुमा, कार्यान्वयन, अनुगमन र मूल्याङ्कन
 - २.४ ग्रामीण र शहरी विकासको संस्थागत व्यवस्था
 - २.५ स्थानीय श्रोत परिचालन तथा व्यवस्थापन
 - २.६ ग्रामीण र शहरी विकास बीचको सम्बन्ध र साभेदारी (Rural-urban Linkage/Partnership)
 - २.७ शहरीकरण र शहरी सेवाको व्यवस्थापन
 - २.८ स्थानीय विकासमा जन सहभागिताको महत्व तथा सैद्धान्तिक अवधारणा
३. विकासका केही आयामहरु
 - ३.१ विकासमा विश्वव्यापीकरण र स्थानीयकरण
 - ३.२ विकास र मानव अधिकारको सम्बन्ध
 - ३.३ सामाजिक न्यायको स्थापनामा विकास
 - ३.४ सुशासन र विकासको सम्बन्ध
 - ३.५ विकासमा जन सहभागिता
 - ३.६ विकासवाट उत्पन्न हुन सक्ने समस्याहरु र तिनका समाधानका उपायहरु
५. नेपाल सरकारका विद्यमान प्रमुख नीति
 - ५.१ पर्यटन नीति
 - ५.२ राष्ट्रिय हवाई नीति
 - ५.३ औद्योगिक नीति
 - ५.४ बाणिज्य नीति
 - ५.५ सूचना प्रविधि नीति
४. विकेन्द्रकरण र स्थानीय सरकार
 - ४.१ विकेन्द्रकरणको अवधारणा र विकेन्द्रकरण तथा अधिकार प्रत्यायोजन र अधिकार निक्षेपण (Devolution) बीचका भिन्नताहरु
 - ४.२ विकासको लागि विकेन्द्रकरणको सान्दर्भिकता
 - ४.३ विकेन्द्रकरणको सन्दर्भमा गठन भएका आयोग/समितिहरु र प्रशासन सुधार आयोगहरुको प्रतिवेदनमा विकेन्द्रकरण सम्बन्धमा भएका प्रमुख सिफारिशहरु, तिनका कार्यान्वयन र यसबाट प्राप्त अनुभव
 - ४.४ स्थानीय स्वायत्त सरकारको सैद्धान्तिक अवधारणा
 - ४.५ नेपालमा स्थानीय स्वायत्त शासनको लागि भएका प्रयासहरु
 - ४.६ स्थानीय सरकार सञ्चालन ऐन, २०७४ अनुसार स्थानीय सरकारको स्वरूप र कार्यहरु सम्बन्धी समस्या र सम्भावनाहरु

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(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, डर्माटोलोजी, लेप्रोलोजी एण्ड भेनरल डिजिज समूह, अधिकृत नवौं (९) तह (खुल्ला र आन्तरिक) को प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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लागि पाठ्यक्रम
Paper II : Technical Subject

Part: General Subject

1. Training, Research and Development
2. Development of human resource in Dermatology Venereology and Leprosy.
3. Research and dissemination of research.
4. Participate actively in conferences seminars and meetings both national and international by presenting papers, by acting as chairperson or commentator and also by organizing such activities.
5. Contribute in educating the general public on issues.
6. Miscellaneous:
 - 6.1. Diagnose and manage independently the skin diseases including the emergencies.
 - 6.2. Carry out the activities for preventions and better Management for skin and sexually transmitted diseased patients as dictated by personal conscience.

Part II: Technical Subject

A. Dermatology

1. Anatomy and organization of human skin.
2. Function of the skin in general and specific cutaneous pathology.
3. Histopathology of the skin in general and specific cutaneous pathology.
4. Genetics and genodermatoses.
5. Clinical immunology and allergy
6. Genetics and genodermatoses.
7. Prenatal diagnosis of skin diseases.
8. The neonate.
9. Naevi and other development defects.
10. Pruritus.
11. Eczema, lichenification, prurigo and erythroderma.
12. Atopic dermatitis
13. Contact dermatitis
14. Irritants and sancitizers.
15. Occupational dermatosis.
16. Reaction to cold, mechanical and thermal injury.
17. Viral infections.
18. Bacterial and mycobacterial infections.
19. Fungal, Parasitic worms and protozoal infection of skin.
20. Skin diseases caused by Arthropodes and noxious animals.
21. Disorders of keratinization.
22. Psoriasis.
23. Skin tumours.
24. Disorder of skin colour
25. Bullous diseases of the skin
26. Lichen planus and lichenoid disorders.
27. Disorders of sebaceous and sweat glands.
28. Connective tissue disorders of skin.
29. Disorders of blood vessels related to skin.
30. Rosecia, flushing and perioral dermatitis.
31. Urticaria.
32. Purpura

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लागि पाठ्यक्रम

33. Cutaneous vasculitis.
34. Necrobiotic disorders and leg ulcers.
35. Histocytoses
36. Mastocytoses
37. Lymphomas, pseudo-lymphomas and leukaemias
38. Metabolic and nutritional disorders.
39. Sarcoidosis
40. Skin and systemic diseases.
41. Reiter's disease.
42. Psychocutaneous disorder
43. Nail disorder.
44. Hair disorder
45. Pediatric dermatology
46. Skin and the eyes
47. The ages of man and their dermatoses.
48. The oral cavity disorders.
49. The external ear disorders
50. General aspects of treatment and systemic and topical therapy.
51. Drug reaction
52. Cutaneous-surgery
53. Recent advances in Dermatology

B. Venereology

1. Sexually Transmitted Infections.
2. AIDS
3. Syndromic approach to STI
4. Recent Advances.

C. Leprosy

1. WHO policies regarding Leprosy control
2. National policies regarding Leprosy control
3. Recent advances in Leprosy management.

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यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति :

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Paper II : Technical Subject
Section (A) – 50 Marks

1. **Applied Basic Sciences**
 - 1.1 Applied anatomy
 - 1.2 Applied Physiology
 - 1.3 Applied Pathology
 - 1.4 Applied Pharmacology
 - 1.5 Applied immunology
 - 1.6 Applied biostatics
 - 1.7 Applied research methods
 - 1.8 Applied Molecular biology and genetics

2. **Knowledge of outpatient department**
 - 2.1 Initial assessment with logical approach to undifferentiated illness.
 - 2.2 Impact of illness in the context of the family and community
 - 2.3 Sensitive to psychosocial issues related to presentation
 - 2.4 Follow- up management plans especially in chronic disease (e.g. diabetes, hypertension, asthma, COPD, APD ,anxiety/depression, growth and development)
 - 2.5 STD, antenatal and postnatal care, well women and men assessments
 - 2.6 Care of previously treated problems
 - 2.7 Coordination of care

3. **Medicine**
 - 3.1 Chest pain (acute and chronic)
 - 3.2 Palpitations
 - 3.3 Shortness of breath (acute, intermittent and chronic)
 - 3.4 Wheezing/Stridor
 - 3.5 Haemoptysis
 - 3.6 Cough
 - 3.7 Cyanosis
 - 3.8 Swelling of body parts
 - 3.9 Dyspepsia
 - 3.10 Reflux
 - 3.11 Haematemesis and malaena
 - 3.12 Upper and lower abdominal pain (acute and chronic)
 - 3.13 Diarrhoea
 - 3.14 Vomiting
 - 3.15 Abdominal distension
 - 3.16 Constipation
 - 3.17 jaundice
 - 3.18 Dysuria
 - 3.19 Haematuria
 - 3.20 Impotence
 - 3.21 Confusion
 - 3.22 Coma
 - 3.23 Headache
 - 3.24 Convulsions
 - 3.25 Syncope
 - 3.26 paralysis

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- 3.27 paraesthesia
- 3.28 Weakness
- 3.29 Fever
- 3.30 Anorexia
- 3.31 Fatigue
- 3.32 Myalgia
- 3.33 Itch
- 3.34 Rash
- 3.35 Abnormal bleeding
- 3.36 Swollen glands
- 3.37 Joint swelling
- 3.38 Joint pain
- 3.39 Thyroid disease
- 3.40 Diabetes
- 3.41 Tuberculosis
- 3.42 Drug related problem -iatrogenic, poisoning, or abuse including alcohol/smoking
- 3.43 Anaemia
- 3.44 Depression
- 3.45 Hypertension
- 3.46 Spinal dysfunction
- 3.47 Urinary tract infection
- 3.48 Holistic management of patients with HIV/AIDS
- 3.49 palliative care

4. Paediatrics

- 4.1 Neonatal Knowledge-Normal Newborn Care
 - 4.1.1 Prematurity/Postmaturity
 - 4.1.2 Birth trauma/Asphyxia
 - 4.1.3 Respiratory distress
 - 4.1.4 Jaundice
 - 4.1.5 Sepsis
 - 4.1.6 Congenital problems (cardiac, hip, cleftpalate, tracheo-oesophageal fistula, imperforate anus, diaphragmatic hernia)
- 4.2 Acute Life Threatening Problems
 - 4.2.1 Stridor /Airway compromise (Croup/epiglottitis)
 - 4.2.2 Respiratory distress and potential respiratory failure (severe ARI, Asthma)
 - 4.2.3 Circulatory failure/shock including Sepsis and dehydration
 - 4.2.4 Altered Sensorium including Meningitis/ encephalitis / encephalopathies (hepatic, uraemic, hypertensive)
 - 4.2.5 Seizures and status epilepticus
 - 4.2.6 Congestive heart failure
 - 4.2.7 Supraventricular tachycardia
 - 4.2.8 Acute renal failure
 - 4.2.9 Tetanus
 - 4.2.10 Poisoning
 - 4.2.11 Drowning/near drowning
 - 4.2.12 Bleeding disorders
 - 4.2.13 Diabetic Ketoacidosis
 - 4.2.14 Acute Abdominal Pain (distinguish medical and surgical causes)

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तहको सिमित प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

- 4.3 Feeding Problems: Understanding of Breastfeeding and Nutrition
 - 4.4 Growth Disorders: Protein Calorie Malnutrition, failure to thrive, short stature
 - 4.5 Common Febrile Illness
 - 4.5.1 ARI (including Pertussis)
 - 4.5.2 Diarrheal diseases (viral, bacterial, Parasitic)
 - 4.5.3 Urinary Tract Infection
 - 4.5.4 Septicemia/Bacteremia
 - 4.5.5 Enteric fever
 - 4.5.6 Malaria
 - 4.5.7 Viral exanthema (measles ,mumps, etc)
 - 4.5.8 Acute tonsilitis
 - 4.5.9 Rheumatic fever/endocarditis
 - 4.5.10 Tuberculosis (TB)
 - 4.5.11 Infective hepatitis
 - 4.5.12 Kala azar
 - 4.5.13 PUO
 - 4.6 Cough - including Asthma/Bronchitis/Bronchiolitis
 - 4.7 Oedema-including renal (nephritic syndrome, nephritis), Kwashiorkor, cardiac
 - 4.8 Chronic abdominal pain
 - 4.9 Jaundice
 - 4.10 Seizure disorders
 - 4.11 Anemia and blood dyscrasias including Leukemias(recognize and refer)
 - 4.12 Arthritis (septic arthritis, osteomyelitis, Juvenile Rheumatoid arthritis)
 - 4.13 Skin disease/rashes(eg; scabies)
 - 4.14 Common eye problems (eg, conjunctivitis)
 - 4.15 Common ear problems(eg, otitis media)
 - 4.16 Developmental delay/cerebral palsy/mental retardation
 - 4.17 Visual/hearing/speech disorders(recognize and refer)
 - 4.18 Dehydration
 - 4.19 Certain diseases can present in different ways, so specifics attention should be paid to
 - 4.19.1 Diabetes mellitus
 - 4.19.2 Hypothyroidism
 - 4.19.3 TB
 - 4.19.4 HIV/AIDS
5. **Dermatology**
- The general practice doctor will be able to manage the following common skin conditions:
- 5.1 Bacterial : Superficial bacterial infections, Skin TB ,Leprosy
 - 5.2 Viral: Herpes simplex, Herpes Zoster, Wart, Molluscum contagiosum
 - 5.3 Fungal: Dermatophyte, Candida, Tinea versicolor, Deep Fungal infection
 - 5.4 Parasites: Scabies, Pediculosis, Leishmaniasis
 - 5.5 Approach : Systemic Causes
 - 5.5.1 Skin Causes – Infective (e.g. Scabies), Urticaria, Dermatitis Herpetiform, Lichen Planus
 - 5.6 Common Skin Problems: Eczema/Dermatitis, Acne, Psoriasis, Drug eruption, Erythema multiforme, Erythema , Nodosum, Purpura, Bullous diseases
 - 5.7 Skin Ulcers: Hair and Nail Disorders:
 - 5.7.1 Alopecia, Onycholysis, Paronychia
 - 5.7.2 Pigmented Skin Lesion including Melanoma.

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- 5.7.3 Common Lumps and Bumps including Skin Cancers:
- 5.7.4 Warts, Keratoacanthoma, Basal Cell, Squamous Cell, Carcinoma
- 5.8 Sexually transmitted disease
 - 5.8.1 Non-specific urethritis/cervicitis, punctate balanoposthitis, candidiasis, trichomoniasis, condyloma accuminata, syphilis, gonorrhea and chancroid
 - 5.8.2 Sexual contact history, past history of STI, medications
 - 5.8.3 Clinical examination and investigation to find other STDs
 - 5.8.4 Contact tracing and treatment of contacts
 - 5.8.5 Regular follow -up of STD cases
6. **Psychiatry**
 - 6.1 Anxiety including Panic and phobic disorders
 - 6.2 Depression
 - 6.3 Conversion/Dissociative disorder
 - 6.4 Psychosis
 - 6.5 Bipolar mood disorder
 - 6.6 Somatic presentations- including pseudo-seizures and multi- symptomatic patients
 - 6.7 Substance Related Disorder
 - 6.8 Childhood Mental Health Conditions
 - 6.9 Concept of diagnostic classification: eg, DSM IV, WHO guidelines
 - 6.10 Concept and simple practice of non -pharmacological approaches to mental health problems
 - 6.11 Drug therapy
 - 6.12 Legal and ethical issues regarding mental competence and detention and relationship with police (recognizing at present there are no laws in Nepal but there is a proposed National Mental Health Act)
 - 6.13 Long term therapy, strategies for optimizing regime and getting compliance
 - 6.14 Liaison with other health workers for management of long term cases
 - 6.15 Practical approach to stabilizing cases before referral
 - 6.16 Common conditions of Primary Care
 - 6.16.1 Anxiety
 - 6.16.2 Depression
 - 6.16.3 Somatic Presentation of mental distress
 - 6.16.4 Culture specific presentation of mental distress
 - 6.16.5 Culture Specific presentation- dhatu, night fall, demon possession, new brides, perceptions about disease
 - 6.16.6 Alcohol and substance misuse
 - 6.16.7 Chronic Tiredness
 - 6.16.8 Sleep disturbances
 - 6.17 Health Promotion and support in chronic mental illness
 - 6.17.1 Monitoring and follow- up in patient with chronic mental illness
 - 6.17.2 Social support for patient and their family
 - 6.17.3 Referral to appropriate specialist care
 - 6.17.4 Work effectively with other workers for the management of people with mental health problems
 - 6.18 Stage of life issues
 - 6.18.1 Behavioral disorders in children
 - 6.18.2 Intellectual disability
 - 6.18.3 Childhood and family problems

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- 6.18.4 Adolescent depression and somatization disorders
- 6.18.5 Perinatal mental illness
- 6.18.6 At risk -drinking other dangerous behavior in young men and women
- 6.18.7 Mid-life crises, menopause,sexual problems
- 6.18.8 Adjustment disorders and chronic physical illness, disability
- 6.18.9 Dementia
- 6.18.10 Dying and bereavement

7. Emergency Medicine

- 7.1 Triage serious & non-serious problem.
- 7.2 Manage Major and minor Trauma
- 7.3 Manage life threatening medical, surgical, paediatric, gynaecological /obstetric emergencies
- 7.4 Describe concept of Disaster Plan & management
- 7.5 Manage Medico Legal Cases
- 7.6 Develops systematic approach to undifferentiable presentation (unconscious patients, chest pain; abdominal pain, dyspnea, etc.)
- 7.7 Organize and manage emergency services
- 7.8 Use emergency equipment and supplies available in Nepal
- 7.9 Develop knowledge about the Emergency Drugs particularly analgesia

Section (B) – 50 Marks

8. Anaesthesia

- 8.1 Cardiopulmonary resuscitation(basic and advanced cardiac life support)
- 8.2 Pre-operative assessment,including assessing ASA Physical status to know whether a GP anaesthetic is appropriate
- 8.3 Pre-anesthetic prescribing
- 8.4 General anesthetic prescribing
- 8.5 Local anesthesia and regional blocks
- 8.6 Post-operative recovery and monitoring
- 8.7 Pain management Intravenous fluid management(Pre and post surgery)
- 8.8 Airway management using facemask, oral airway and intubation
- 8.9 Regional anesthetic blocks, spinal, epidural and peripheral
- 8.10 Ketamine anesthetics(total intravenous anesthesia)
- 8.11 General anesthesia using draw- over technique
- 8.12 Ether anesthesia (EMO)

9. Surgery

9.1 Skin and subcutaneous tissue

- 9.1.1 Diagnosis and management of inflammatory condition of skin like cellulites, boils, carbuncle, etc.
- 9.1.2 Diagnosis and excision of sebaceous cysts, lipomas, etc
- 9.1.3 Diagnosis and management of squamous cell carcinoma, basal cell carcinoma and malignant melanoma

9.2 Burns

- 9.2.1 Initial resuscitation
- 9.2.2 management of fluid
- 9.2.3 Surgical Management -debridement and grafting

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- 9.3 **Lymph Nodes**
 - 9.3.1 Describe the differential diagnosis of lymph node enlargement
- 9.4 **Arterial disorders**
 - 9.4.1 Describe the feature of chronic limb ischaemia including Buerger's disease
 - 9.4.2 Diagnose acute limb ischaemia
 - 9.4.3 Diagnose and manage dry gangrene
 - 9.4.4 Diagnose and manage DVT
- 9.5 **Salivary gland**
 - 9.5.1 Diagnosis and management of parotid and submandibular abscess
 - 9.5.2 Differential diagnosis of parotid and submandibular lump (biopsy is inappropriate)
- 9.6 **Thyroid**
 - 9.6.1 Differential diagnosis of solitary thyroid nodule
 - 9.6.2 Features of nodular goiter, its complications and indications for surgery
 - 9.6.3 Features of thyrotoxicosis, its complications and indications for surgery
 - 9.6.4 Management of hypothyroidism
- 9.7 **Breast**
 - 9.7.1 Method of Breast self examination
 - 9.7.2 Differential diagnosis of breast lump
 - 9.7.3 Triple investigation
 - 9.7.4 Principles of management of breast carcinoma
 - 9.7.5 Differential diagnosis of nipple discharge and indication for surgery
 - 9.7.6 Breast pain
- 9.8 **Upper GI Tract**
 - 9.8.1 Dysphagia : differential diagnosis, Investigations required
 - 9.8.2 Principle of management of oesophageal carcinoma,
 - 9.8.3 Gastro-oesophageal reflux disease: medical management
 - 9.8.4 Peptic ulcer disease: symptomatology, indications for endoscopy, medical management, complications and indications for surgery.
 - 9.8.5 Management of Ulcer GI Bleeding
 - 9.8.6 Management of Gastric carcinoma (Operative details not required)
- 9.9 **Hepatobiliary**
 - 9.9.1 Jaundice : Pathophysiology, differential diagnosis
 - 9.9.2 Liver abscess
 - 9.9.3 Tumors of liver : differential diagnosis
 - 9.9.4 Gallstone disease and its complications
- 9.10 **Pancreas**
 - 9.10.1 Acute pancreatitis: aetiology, definitions of mild and severe pancreatitis, management, complications and indications for surgery
 - 9.10.2 Chronic pancreatitis
- 9.11 **Small Intestine**
 - 9.11.1 Features of small bowel obstruction, its differential diagnosis and management
 - 9.11.2 Enteric fever and its complication
 - 9.11.3 Appendicitis, appendicular mass and appendicular diagnosis abscess
- 9.12 **Large bowel/Rectum and Anal Canal**
 - 9.12.1 Features of large bowel obstruction and its differential diagnosis
 - 9.12.2 Ulcerative colitis
 - 9.12.3 Bleeding per rectum, differential diagnosis
 - 9.12.4 Hemorrhoids including complications
 - 9.12.5 Perianal abscess

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- 9.13 **Hernia**
 - 9.13.1 Inguinal and Femoral
 - 9.13.2 Incisional hernia
- 9.14 **Urology**
 - 9.14.1 Haematuria:differential diagnosis and investigation
 - 9.14.2 Phimosis,paraphimosis
 - 9.14.3 Stones in renal tract:indications for surgery
 - 9.14.4 BHP
 - 9.14.5 Acute urinary retention
 - 9.14.6 Kidney Infection
 - 9.14.7 Vasectomy
 - 9.14.8 Scrotal swelling: differential diagnosis and investigation Undescendedtestis ,Diagnosis and Management of Testicular Torsion
 - 9.14.9 Urethral Strictures
- 10. **Orthopaedics**
 - 10.1 Traumatic condition: Recognition of what need to be done acutely and when referral may be more appropriate where possible
 - 10.1.1 Injuries of the upper limb: (Manage/ Consider Referral if Possible)
 - 10.1.2 Injuries of the lower limb and pelvis: (Manage/Refer)
 - 10.2 Non- Traumatic condition:
 - 10.2.1 Infective condition : Most important, Acute infection: Acute osteomyelitis; Acute septic arthritis; Chronic osteomyelitis; Tubercular infections including spine
 - 10.2.2 Degenerative condition and office orthopaedics
 - 10.3 Approach to diagnosis and conservative management where possible, with referral if possible and benefit from orthopedic consultation.
 - 10.3.1 Osteoarthritis
 - 10.3.2 Gout/Pseudogout
 - 10.3.3 Acute and Chronic low back and cervical pain
 - 10.3.4 Regional Musculo-skeletal condition Shoulder, Elbow, Wrist, Hip, Knee,Ankle
 - 10.4 Other Rarer Condition
 - 10.4.1 Congenital Deformities
 - 10.4.2 Neoplastic condition
 - 10.4.3 Metabolic and other condition
 - 10.4.4 Auto-immune diseases
- 11. **Obstetrics & Gynaecology**
 - 11.1 Antenatal period(normal and abnormal pregnancy)
 - 11.1.1 Normal/ low risk pregnancy and High risk pregnancy
 - 11.2 Labour and delivery
 - 11.3 Postpartum(Normal puerperium/Abnormal puerperium)
 - 11.4 Gynaecology(Local management/Referral)
 - 11.5 Medical condition during Pregnancy
 - 11.5.1 DM: Hypertension
 - 11.5.2 Heart disease
 - 11.5.3 Jaundice
- 12. **Family Planning**
 - 12.1 Male and female reproductive anatomy physiology

निजामती कर्मचारी अस्पताल

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- 12.2 The current status of family planning and voluntary surgical contraception in Nepal, including legal status, cultural barriers, myths and prejudices
 - 12.3 The rationale for vasectomy and tubal ligation, their benefits and disadvantages.
 - 12.4 Recognize eligible candidates for voluntary surgical contraception and provide information and counseling services to ensure informed client consent.
 - 12.5 Follow the principles of infection prevention and control and preoperative management for vasectomy and/or the minilap
 - 12.6 Demonstrate the use of aseptic technique, appropriate anaesthesia and analgesia
 - 12.7 Demonstrate the basic surgical skills required for vasectomy and /or minilap.
 - 12.8 Manage post- operative patients, including any complication related to anaesthesia, surgery and early and late complications.
 - 12.9 Techniques for reversal of vasectomy of tubal ligation
 - 12.10 Utilize the common methods of contraception including Depo-Provera, Norplant, Intra-uterine devices, Oral contraceptives
 - 12.11 Follow up patient who accept various methods of contraception
13. **Ultrasound**
- 13.1 The different components of Ultrasound equipment and their function
 - 13.2 Take proper care of the Ultrasound equipment including sterilization of transducers
 - 13.3 Identify artifacts and their usefulness and those that degrade the ultrasound image
 - 13.4 The ultrasound orientation of the image, scanning techniques and preparation of the patients
 - 13.5 Identify key obstetrics, medical and surgical condition on ultrasound
14. **Dentistry**
- 14.1 Prevent common dental diseases
 - 14.2 Recognize and manage common dental problems
 - 14.3 Manage dental emergencies
 - 14.4 Recognize and manage acute dental and periodontal conditions.
 - 14.5 Perform minor procedures.
 - 14.6 Recognize conditions that need to be referred for further therapeutic measures.
 - 14.7 Temporomandibular joint dislocation
 - 14.8 Post dental extraction bleeding
 - 14.9 Gingivitis
 - 14.10 Syncope
 - 14.11 Periodontitis
 - 14.12 Dental caries
 - 14.13 Precancerous condition

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(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, मेडिसिन समूह, जनरल मेडिसिन उपसमूह अधिकृत नवौं (९) तह (खुल्ला र आन्तरिक) को प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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परीक्षाको लागि पाठ्यक्रम
Paper II : Technical Subject

Part I : General Subject

1. Research and Paper publication

- 1.1. Planning and carrying out health research
- 1.2. Methodology, design, variables, sampling, data collection, data entry, descriptive statistics, research reports, random number
- 1.3. Interpretation of the results of health research.
- 1.4. Bio-statistics, Probability, probability distributions, hypothesis tests, estimation, parametric and non-parametric statistics, regression and correlation, longitudinal studies
- 1.5. Dissemination of the results
- 1.6. Principles of paper publications and search and critical review of literature, types of papers, common headings, tables and graphs, reference writing
- 1.7. Medical ethics, including introduction to ethical theories, medical ethics, professional ethics, ethics in research, ethics in health policy

2. Medical education and training

- 2.1. General principal, curricular components, the fundamentals of educational process.
- 2.2. Curriculum Development and Education Strategies
- 2.3. Identification of learning resources to meet the learning objectives,
- 2.4. Teaching/Learning Methods
- 2.5. Teaching-Learning Aids: Use of overhead projectors, slides, models etc in the teaching learning objectives
- 2.6. Classroom Presentation skills
- 2.7. Evaluation and Assessment of Learning: methods of evaluation, questions type
- 2.8. Organization, Management and Leadership
- 2.9. Continuing Professional Development (CPD)
- 2.10. Basics of Educational medicine.
- 2.11. Evidence based medical practice
- 2.12. Problem oriented medical record

3. Acts/Regulations related to Health

- 3.1. Human organ transplant act, Consumer protection act
- 3.2. Primary health care.
- 3.3. Rational use of drugs, drug policies.
- 3.4. NMC and National Health Agencies.

4. Epidemiology and control of communicable diseases:

- 4.1. Public health and epidemiology.
- 4.2. Problem and control of communicable disease, common terminology and principle.
- 4.3. TB Control.
- 4.4. HIV/AIDS control.
- 4.5. Malaria control.
- 4.6. Kala-azar control.

5. Problem and control of non-communicable diseases and of accidents and poisoning:

- 5.1. Epidemiology and control of IHD
- 5.2. Epidemiology and control of hypertension

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- 5.3. Epidemiology and control of diabetes
- 5.4. Epidemiology and control of chronic respiratory disease
- 5.5. Epidemiology and control of cancers
- 5.6. Epidemiology and control of accident
- 5.7. Disaster management
- 5.8. Epidemiology and prevention of poisoning including snake bite, poison information and networking.

Part II : Technical Subject

1. Pharmacology, poisoning and critical care medicine

- 1.1. Principles of pharmacology therapy
- 1.2. Pharmacology of different medicines
- 1.3. Acute and chronic poisoning and their management
- 1.4. Principles of critical care medicine
- 1.5. Oxygen delivery
- 1.6. Major manifestations, monitoring and management of critical illness
- 1.7. Nutrition

2. Infection

- 2.1. Basic of infection
- 2.2. Major manifestations of infections
- 2.3. Principles of management of infection, including different antimicrobial agent and prevention of infection.
- 2.4. Diseases due to different organism like virus, bacteria, protozoa, helminthes

3. Diabetes and nutritional and metabolic disease and other endocrine disease

- 3.1. Diabetes mellitus: Classification, epidemiology, aetiology, pathophysiology, clinical feature, diagnosis, management, acute and long-term complications of diabetes, special problems in management, prospects in diabetes.
- 3.2. Obesity
- 3.3. Nutritional factors in health and disease
- 3.4. Other metabolic disorders
- 3.5. Thyroid disease: functional anatomy, physiology, investigation and major manifestations, management and prevention
- 3.6. Other endocrine disease, including functional anatomy, physiology, investigations, major manifestations, management and prevention.

4. Cardiovascular system and disease as required for General Physicians

- 4.1. Functional anatomy, physiology and investigations
- 4.2. Major manifestation and heart disease
- 4.3. Disorders of heart rate, rhythm and conduction
- 4.4. Ischemic heart disease
- 4.5. Vascular disease
- 4.6. Diseases of heart valves
- 4.7. Congenital heart disease
- 4.8. Diseases of the myocardium
- 4.9. Diseases of the pericardium

5. Respiratory system and diseases as required for General Physicians

- 5.1. Functional anatomy, physiology and investigations

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- 5.2. Major manifestations of lung disease
 - 5.3. Obstructive pulmonary diseases
 - 5.4. Infections of the respiratory system
 - 5.5. Tumors of the bronchus and lung
 - 5.6. Interstitial and infiltrative pulmonary disease, including occupational lung disease
 - 5.7. Pulmonary vascular disease
 - 5.8. Diseases of the nasopharynx, larynx and trachea
 - 5.9. Disease of the pleura, diaphragm and chest wall
- 6. GI and liver system & diseases as required for General Physicians**
- 6.1. Functional anatomy, physiology and investigations
 - 6.2. Major manifestation of gastrointestinal and liver disease
 - 6.3. Diseases of the mouth and salivary glands
 - 6.4. Diseases of the esophagus
 - 6.5. Diseases of the stomach and duodenum
 - 6.6. Diseases of the small intestine, colon, rectum and anal canal
 - 6.7. Diseases of the pancreas
 - 6.8. Diseases of the liver
 - 6.9. Gall bladder and other biliary diseases
 - 6.10. Disease of the peritoneal cavity
- 7. Water, electrolyte and acid-base balance and nephrology system and disorders as required for General Physicians**
- 7.1. Physiology and electrolytes, water and acid-base
 - 7.2. Major electrolyte and acid-base disorders
 - 7.3. Functional anatomy, physiology and investigations of the kidneys and urinary system
 - 7.4. Major manifestations of renal disease
 - 7.5. Renal vascular disease
 - 7.6. Glomerular disease
 - 7.7. Tubulo-interstitial disease
 - 7.8. Congenital abnormalities of the kidneys
 - 7.9. Renal involvement in systemic diseases
 - 7.10. Infections of the kidney and urinary tract
 - 7.11. Obstruction of the urinary tract
 - 7.12. Urinary tract calculi and nephrocalcinosis
 - 7.13. Drugs and the kidney
 - 7.14. Tumors of the kidney and genitourinary tract
- 8. Hematology, immunology and joint, bone and connective tissue system and disease**
- 8.1. Inflammation
 - 8.2. Organization and function of the immune system
 - 8.3. Hematopoiesis, physiology of the blood and clotting
 - 8.4. Investigations of diseases of the blood
 - 8.5. Major manifestations of blood diseases
 - 8.6. Anemias
 - 8.7. Lymphoproliferative and myeloproliferative disorders
 - 8.8. Bleeding disorders
 - 8.9. Venous thrombosis
 - 8.10. Blood transfusion

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- 8.11. Functional anatomy, physiology and investigation of the diseases of the connective tissues, joints and bones.
- 8.12. Diseases of the connective tissues, joints and bones

- 9. Nervous system and Psychiatric disorders as required for General Physicians**
 - 9.1. Functional anatomy, physiology and investigations of neurology
 - 9.2. Major manifestations of nervous system and psychiatric disease
 - 9.3. Diseases of the nervous system
 - 9.4. Diseases of the spine and spinal cord
 - 9.5. Diseases of the nerves and muscles
 - 9.6. Classification and etiology of psychiatric disorders
 - 9.7. The clinical interview
 - 9.8. The psychiatry disorders and syndromes and their management

- 10. Genetics, Oncology & Palliative care, Geriatrics and Skin system and disorders as required for General Physicians**
 - 10.1. Genetics and disease, particularly molecular features of infective disease
 - 10.2. Investigation of the molecular basis of disease
 - 10.3. Modern molecular methods in human disease
 - 10.4. Types of genetic disease
 - 10.5. Genetic factors in common diseases
 - 10.6. Epidemiology, etiology, clinical presentations, investigations and management of the oncology diseases.
 - 10.7. Palliative anticancer medicine
 - 10.8. Normal ageing
 - 10.9. Major manifestations of disease in frail older people
 - 10.10. Rehabilitation
 - 10.11. Functional anatomy and physiology of the skin
 - 10.12. Major manifestations and investigations of skin disease
 - 10.13. Skin diseases
 - 10.14. The skin and systemic disease

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तहको सिमित प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, अबस्ट्रेटिक्स तथा गाइनेकोलोजी समूह, नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

Paper II : Technical Subject
Section (A) – 50 Marks

1. Obstetrics

- 1.1 Anatomy: Knowledge of anatomy of abdomen and pelvis applied to surgical procedures undertaken by the obstetrician and gynaecologist.
- 1.2 Pathology: Infection, inflammation therapeutic intervention (especially by the use of irradiation, cytotoxic drugs and hormones), disturbances in blood flow, loss of body fluids and neoplasia. Knowledge about changes in haemostasis in health and disease of a pregnant women.
- 1.3 Pharmacology: Knowledge of those drugs used in obstetrics and gynaecology Hormonal contraceptives in pregnancy and gonadotrophins and drugs contraindicated in pregnancy.
- 1.4 Immunology: Immunological changes in pregnancy; fetal development of the immune system, with particular knowledge of rhesus and isoimmunisations.
- 1.5 Infectious diseases: Knowledge of infectious diseases affecting pregnant and non-pregnant woman and fetus in utero. Knowledge of epidemiology, diagnostic techniques, prophylaxis, immunization and the use of antibiotics and antiviral agents.
- 1.6 Epidemiology and statistics: Collect data apply methods of statistical analysis. Knowledge of setting up clinical trials and the ability to interpret data through commonly used terms and techniques, interpretation of results of research, investigations, clinical trials design and medical audit.
- 1.7 Diagnostic imaging: Understand the application of ultrasound, computerized tomographic scanning and magnetic resonance imaging.
- 1.8 Radiodiagnosis: Basic chest skull and abdominal radiography in different views. Contrast radiography of different organic like IVP, Ba-series, Hysterosalpingography. Radiology of bones and joints.
- 1.9 Recent advances in radiology like CT, MRI and radioisotope scanning, Genetics and embryology. Detailed knowledge of normal and abnormal karyotypes, of the inheritance of genetic disorders and of the genetic causes of early abortion to diagnosis fetal abnormality, intrauterine treatment of the fetus genetics and embryology. Demonstrate the ability to explain to patients and discuss its practical and ethical implications.
- 1.10 Normal pregnancy: Changes maternal and fetal physiology during normal pregnancy, antepartum care its, aim and methods changes of implementation, i.e. organization of intrapartum care, including obstetrical analgesia and anaesthesia and anaesthesia, and of the normal puerperium. Importance of Nutrition during pregnancy and puerperium. Understand the importance of breast feeding and postpartum contraception.
- 1.11 Abnormal pregnancy: Knowledge of all aspects of abnormality during pregnancy, labor and puerperium and their management. Understand effects of pre-existing disease (obstetrical, gynaecological medical or surgical) on pregnancy and demonstrate the ability to provide informative counseling before, during and after pregnancy. Knowledge of neonatal resuscitation and of the principles of neonatal management, Respiratory distress syndrome (RDS), prematurity and congenital abnormality.

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तहको सिमित प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम
Section (B) – 50 Marks

2. Gynaecology

- 2.1 Prepubertal gynaecology: Knowledge of normal and abnormal sexual development paediatric pathology and its management, normal puberty and its disorders and their management.
- 2.2 Adolescent gynaecology: Disorder of behaviour and sexual function counseling for safe living
- 2.3 Menstruation: Physiology of normal menstruation, pathophysiology of menstrual disorders their investigation and management. Menopause and its management.
- 2.4 Infertility: Causes of infertility, investigation and management of the infertile couple, techniques involved in assisted reproduction.
- 2.5 Infection: Sexually transmitted diseases including AIDS.
- 2.6 Abortion: Cause of abortion, its management, complication of therapeutic abortion and its legal aspects.
- 2.7 Contraception: Various method of permanent and temporary contraceptives, their uses and side effect.
- 2.8 Psychosexual medicine: Management of psychosexual problems including puerperal psychosis and the psycho social impact of violence against women
- 2.9 Urogynaecology: Surgical and non- surgical management urogynaecological problems.
- 2.10 Gynaecological oncology: Epidemiology and aetiology and the principles of carcinogenesis, tumor immunology and pathology. Diagnostic techniques and staging of gynaecological tumors. Treatment including surgery, radiotherapy, chemotherapy, and terminal care of patients dying due to gynaecological malignancy.
- 2.11 Breast: Problems of lactation and its management, Breast Lump and its management.
- 2.12 Obstetrical and Gynaecological surgery: Principle of obstetric and gynaecological (surgery) procedures preoperative assessment and post operative care.
- 2.13 Ethics and the law: Basic ethical and legal issues involved in contemporary obstetrical and gynecological practice, Introduction to ethical theories, medical ethics, Professional ethics, Ethics in research, Ethics in health policy.
- 2.14 Recent advances and subspeciality: Uro-gynaecology, Infertility, Gynaecology oncology,
- 2.15 Community obstetrics and gynaecology:
 - 2.15.1 Knowledge about basics community disease profile
 - 2.15.2 Definitions and causes of maternal morbidity and mortality and perinatal mortality, neonatal mortality and infant mortality rate
 - 2.15.3 Effect of socio cultural behavior in Reproductive health.
 - 2.15.4 National Health Programmes related to Maternal and child health, continuing health services for maternal care and child health, organizing health care delivery and referral system.
 - 2.15.5 Future vision to reduce maternal morbidity and mortality and perinatal mortality.

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(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, सर्जरी समूह, अर्थोपेडिक उपसमूह, नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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प्राविधिक सेवा, सर्जरी समूह, अर्थोपेडिक सर्जरी उपसमूह, रजिष्ट्रार पद, आठौं तहको सिमित प्रतियोगितात्मक परीक्षाको
लागि पाठ्यक्रम

**Paper II : Technical Subject
Section (A) – 50 Marks**

1. **Applied Basic Sciences**
 - 1.1 Applied anatomy
 - 1.2 Applied Physiology
 - 1.3 Applied Pathology
 - 1.4 Applied Pharmacology
 - 1.5 Applied immunology
 - 1.6 Applied biostatics
 - 1.7 Applied research methods
 - 1.8 Applied Molecular biology and genetics

2. **Recent Advances**
 - 2.1 Arthroscopy
 - 2.2 Endoscopic surgery (Spine, Knee, etc)
 - 2.3 Illizarov external fixator
 - 2.4 Total joint replacement
 - 2.5 Limb sparing surgery
 - 2.6 Bone Banking, Laser surgery, etc.

3. **Emergencies: Orthopedics**
 - 3.1 Acute Osteomyelitis
 - 3.2 Septic Arthritis
 - 3.3 Compartmental Syndrome
 - 3.4 Cauda Equina Syndrome
 - 3.5 Necrotizing fasciitis

4. **Emergencies : Trauma**
 - 4.1 All fractures and dislocations
 - 4.2 Open fractures
 - 4.3 Crush injuries
 - 4.4 Hand injuries
 - 4.5 Spinal injuries

Section (B) – 50 Marks

5. **Principles and practice of : Orthopedic Surgery**
 - 5.1 General orthopedics
 - 5.2 Regional Orthopedics
 - 5.3 Pediatric Orthopedics
 - 5.4 Orthopedic Oncology
 - 5.5 Orthopedic Neurology
 - 5.6 Sports Medicine
 - 5.7 Physical Medicine and Rehabilitation

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लागि पाठ्यक्रम

6. **Principles and practice of : Trauma Surgery**

- 6.1 General principles of Trauma including Pathophysiology
- 6.2 General practice of Trauma: Early management of injured, Management of Polytrauma, Disaster, Mass casualty, and management of Neglected trauma
- 6.3 Definite management of Musculoskeletal injuries; their operative treatment and rehabilitation

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प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, ओटोरिनोल्यारिङ्गेलोजी समूह, नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम
Paper II : Technical Subject

1. **EAR**
 - a. Otitis Externa
 - b. Impacted Wax, Foreign Body
 - c. Acute Otitis Media
 - d. Glue Ear
 - e. CSOM
 - f. Vertigo
 - g. Ototoxicity
 - h. Congenital and Acquired Deafness
 - i. Tumors of the Ear

2. **NOSE**
 - a. Rhinitis
 - b. Sinusitis
 - c. F.B. Nose
 - d. Epistaxis
 - e. Nasal Polyp
 - f. DNS
 - g. Tumours of the Nose and Paranasal Sinuses

3. **THROAT**
 - a. Tonsillitis
 - b. Laryngitis
 - c. Foreign Body Throat
 - d. Acute Epiglottitis
 - e. Cut Throat
 - f. CA Larynx

4. **General Medicine**
 - a. Bleeding Disorders
 - b. Otogenic Neurological Diseases
 - c. Cavernous Sinus Thrombosis
 - d. Disorder of Cranial Nerves

5. **Investigation**
 - a. X-Ray Ear, Nose and Throat
 - b. C.T.Scan
 - c. MRI
 - d. Hematological Investigations
 - e. Flexible Endoscopy
 - f. U.S.G.
 - g. FNAC
 - h. Thyroid Scan

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परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, प्याथोलोजी समूह, जनरल प्याथोलोजी उपसमूह, नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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परीक्षाको लागि पाठ्यक्रम
Paper II : Technical Subject

1. Histopathology
 - 1.1. Identify and describe the gross anatomic and microscopic alteration in the surgically removed specimens and autopsy specimens. Interpret and diagnose when clinical and operative data are provided.
 - 1.2. Explain the principles of laboratory techniques and perform the procedures in histopathology laboratory
2. Cytopathology
 - 2.1. Interpret and diagnose the morphological changes in cytological specimens when clinical and operative data are provided.
 - 2.2. Explain the principles of laboratory techniques and perform the common procedures in cytopathology laboratory.
 - 2.3. Perform fine needles aspiration techniques.
3. Hematopathology
 - 3.1. Plan a strategy for investigating haematological disorders and perform and interpret them.
 - 3.2. Perform haematological procedures and interpret the results.
 - 3.3. Interpret and diagnose the morphological changes in the blood and bone marrow specimens.
 - 3.4. Perform a bone marrow aspiration.
4. Clinical Microbiology
 - 4.1. Routine and special tests of urine, stool and body fluids
 - 4.2. Staining technique, Gram's stain, AFB stain.
 - 4.3. Aerobic and anaerobic culture and sensitivity
 - 4.4. Common serological tests.
5. Clinical Chemistry
 - 5.1. Interpretation and procedure of routine clinical chemistry tests.
 - 5.2. Equipments: Spectrophotometer, Colorimeter, Flame photometer, Blood gas analyzer, Auto analyzer.
6. Autopsy pathology
 - 6.1. Dissection of body partial/whole
 - 6.2. Preparation of provisional anatomical diagnosis and final anatomical diagnosis
7. Blood Bank
 - 7.1. Blood preservation
 - 7.2. Haematophoresis
 - 7.3. Blood grouping and cross matching
8. Immunology
 - 8.1. Basic immunology
 - 8.2. Immunological techniques used for diagnostic purpose and their principles.
9. Medical statistics and information technology

1. Histopathology

- 1.1.1. Describe the gross anatomy and histology of specimens and tissues of gastrointestinal (GIT), cardiovascular (CVS), respiratory (RS) systems.
- 1.1.2. Describe the normal physiology of above systems.
- 1.1.3. Describe the normal physiology of above systems.

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- 1.1.4. Identify and describe the gross anatomical alterations in the surgically removed specimens.
- 1.1.5. Correlate the gross pathological diagnosis of the lesions of gastrointestinal (GIT), cardiovascular (CVS), respiratory (RS) system with the given clinical information.
- 1.1.6. Explain different types and functions of fixatives in histopathology laboratory.
- 1.1.7. Explain different types of chemicals, and equipment used in tissue processing and perform the procedure.
- 1.1.8. Explain the steps and principles of H and E staining and mounting and perform them.
- 1.1.9. Interpret the microscopic findings of various types of lesions of gastrointestinal (GIT), cardiovascular (CVS), and respiratory (RS) system.
- 1.1.10. Recall the biochemical changes in a tissue or organ in above mentioned conditions.
- 1.1.11. Diagnose the above mentioned lesions and differentiate them from other similar lesions in view of the clinical findings provided.
- 1.1.12. Describe the gross anatomy and histology of specimens and tissues of renal electrolytes and reproductive systems.
- 1.1.13. Describe the normal physiology of renal electrolytes and reproductive systems.
- 1.1.14. Describe metabolism of carbohydrate, fat protein, nucleic acids, vitamins, copper and minerals.
- 1.1.15. Identify and describe the gross anatomical alterations in the surgically removed specimen of renal electrolytes respiratory systems and metabolic disorders.
- 1.1.16. Correlate the gross pathological diagnosis of the lesions of renal electrolytes and reproductive systems with clinical data.
- 1.1.17. Interpret the microscopic findings of various lesions of renal electrolyte reproductive system and metabolic disorders.
- 1.1.18. Diagnose and differentiate with various other lesions of above mentioned system.
- 1.1.19. Describe the gross anatomy and histology of specimen and tissues from musculoskeletal system, neuro sensory systems, eye, ENT and skin.
- 1.1.20. Describe the normal physiology of the above mentioned systems.
- 1.1.21. Describe the gross anatomical alterations in the surgically removed specimen of above mentioned systems.
- 1.1.22. Correlate the gross findings with the microscopic features and clinical presentations.
- 1.1.23. Explain the use of museum and importance of preservation of specimens.
- 1.2. Frozen Section
 - 1.2.1. Describe the principle and function of cryostat.
 - 1.2.2.
 - 1.2.3. Perform frozen section of intraoperative specimens and diagnose.

2. Cytopathology

- 2.1. Describe the normal cell morphology in vaginal, cervical and endometrial specimens and sputum specimen.
- 2.2. Prepare the above mentioned smears, fix and stain with Pap staining and mount them.
- 2.3. Describe different types of fixatives used in cytopathological laboratory and explain their functions.
- 2.4. Perform fine needle aspiration biopsy procedure, prepare wet and dry smears fix and stain the slides with Pap stain and Giemsa stain.
- 2.5. Explain the principle of Pap stain and Giemsa stain.
- 2.6. Interpret the cellular morphological changes in sputum, vaginal, cervical and endometrial specimen and neoplastic conditions.
- 2.7. Correlate with the clinical findings and diagnose.

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- 2.8. Describe the different methods of preparing smears from body fluids including urine and CSF.
- 2.9. Describe the principles of cytocentrifuge and Millipore filtration.
- 2.10. Describe the normal cell morphology in brushing, washing and body fluids smears.
- 2.11. Interpret the cellular morphological changes in brushing, washing and body fluid smears in different inflammatory, non-inflammatory, non-neoplastic and neoplastic conditions.
- 2.12. Correlate the findings with the clinical findings and diagnose them.
- 2.13. Explain sex chromatin. Describe the methods of obtaining and preparation of smears for the examination of sex chromatin.
- 2.14. Interpret the findings.
- 2.15. Describe the congenital anomalies in relation to sex chromosome.
- 2.16. Interpret FNAC smears and diagnose the lesions.

3. Haematopathology

- 3.1. Explain the normal hemopoiesis.
- 3.2. Describe the erythropoiesis.
- 3.3. Describe the structure, function, synthesis and metabolism of haemoglobin.
- 3.4. Classify the different types of Anaemias.
- 3.5. Explain the aetiopathogenesis and morphological findings in the peripheral and bone marrow smears in different types of anaemia and correlate with clinical data and diagnose correctly.
- 3.6. Perform routine as well as the following haematological tests and explain their principle:
 - 3.6.1. Reticulocyte count
 - 3.6.2. Osmotic fragility test
 - 3.6.3. Foetal haemoglobin
 - 3.6.4. LE cell phenomenon
 - 3.6.5. Hb electrophoresis
 - 3.6.6. Serum Iron, Folic acid, Vit B₁₂
 - 3.6.7. Total Iron binding capacity
 - 3.6.8. Serum ferritin
- 3.7. Perform a fine needle bone marrow aspiration and stain with Wright's stain.
- 3.8. Interpret and diagnose the morphological changes in the blood and bone marrow specimen.
- 3.9. Perform the common haematological procedures and interpret the results.
- 3.10. Perform cytochemical test and interpret.
- 3.11. Classify Leukaemia
- 3.12. Identify different types and their morphological features
- 3.13. Explain principles and interpretation of
 - 3.13.1. Bleeding time
 - 3.13.2. Clotting time
 - 3.13.3. Prothrombin time
 - 3.13.4. Activated partial thromboplastin time
 - 3.13.5. Platelet function test
 - 3.13.6. Factor VII and IX Assay
 - 3.13.7. Bence Jones protein
- 3.14. Plan a strategy of investigations for common haematological diseases.

4. Clinical Microbiology

- 4.1. Perform the routine examination of urine and faeces and interpret the findings correctly.

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- 4.2. Perform complete examination of CSF
- 4.3. Perform examination of peripheral blood for blood parasites.
- 4.4. Semen analysis
- 4.5. Identify the common aerobic and anaerobic bacteria in a culture plate.
- 4.6. Perform the Gram's stain and identify the common bacteria.
- 4.7. Perform sensitivity reactions of common bacteria.
- 4.8. Explain the principle of Gram's stain and ZN stain.
- 4.9. Explain the importance of collection of specimens of culture.
- 4.10. Explain principle of HbSAg, HIV tests.

5. Clinical Chemistry

- 5.1. Perform and interpret correctly the routine clinical chemistry tests.
- 5.2. Explain the working principles of spectrophotometer, colorimeter, flame photometer, blood gas analyzer, electrophoresis and automation in laboratory medicine.

6. Autopsy pathology

- 6.1. Perform a complete/partial autopsy.
- 6.2. Identify the gross and microscopic features found in autopsy body and tissue sections respectively and correlate it with clinical history and diagnosis.
- 6.3. Write the provisional and final anatomical diagnosis reports correctly.

7. Blood Bank

- 7.1. Perform blood grouping and Rh typing tests and cross matching.
- 7.2. Perform Coombs test
- 7.3. Explain the principles and interpretations of above tests

8. Immunology

- 8.1. Observe and interpret simple immunological tests eg:
 - 8.1.1. Agar Gel precipitation
 - 8.1.2. Haemagglutination
 - 8.1.3. Immunoelectrophoresis
 - 8.1.4. Identification of T and B cells in peripheral blood
 - 8.1.5. Immuno Fluorescence technique
 - 8.1.6. Counter current electrophoresis for demonstration of antigen
 - 8.1.7. ELISA techniques.
 - 8.1.8. Explain the principle lying behind these tests.
 - 8.1.9. Explain the principle of fluorescent microscopy.

9. Medical statistics and information technology

- 9.1. Explain the importance of statistical methods in assessing data from patient material and experimental studies, correlation coefficient, expected versus observed and their interpretations.
- 9.2. Calculate mean, standard deviation and standard error from given experimental data.
- 9.3. Familiarity with the use of the computer and other telecommunication devices like the fax for the storage, retrieval and sending of information.
- 9.4. Search for information in the Internet by electronic mail.

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(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, पेडियाट्रीक्स समूह, पेडियाट्रिक मेडिसिन उपसमूह, नवौं (९) तहको खुल्ला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

Paper II : Technical Subject

1. Growth and development

- 1.1. Physical and psychosocial growth and development of normal child
- 1.2. Disorders of growth
- 1.3. Delay and deviations of development
- 1.4. Assessment of growth and development
- 1.5. Disorders of psychological development
- 1.6. Common behavioral problems of preschool children
- 1.7. Common speech disorders

2. Nutrition

- 2.1. Normal nutrition in infancy and childhood
- 2.2. Common nutritional disorders in childhood
- 2.3. Nutrition supplementation programs

3. Preventive pediatrics

- 3.1. Immunizations
- 3.2. Prevention and management of common disorders of childhood
- 3.3. Prevention and management of poisonings and accidents

4. Social pediatrics

- 4.1. School health services
- 4.2. National health programmes related to maternal and child health
- 4.3. Community health services for the maternal and childhood
- 4.4. Organizing health care delivery and referral systems for children

5. Genetics

- 5.1. Genetic and chromosomal disorders
- 5.2. Inborn errors of metabolism
- 5.3. Genetic counseling including antenatal diagnosis

6. Neonatology

- 6.1. Management of normal, high risk and sick neonates
- 6.2. Monitoring and ventilatory support of the sick neonates
- 6.3. Foetal disorders
- 6.4. Perinatology
- 6.5. Preventive neonatology
- 6.6. Organization of neonatal care service in health institution with secondary level of care

7. Infectious diseases: diagnosis of common infectious diseases in the pediatric age group

8. Immunity, allergy and related disorders

9. System based pediatrics

Diagnosis and management of common disorders affecting digestive, hepatobiliary, cardiovascular, respiratory, endocrine system, blood and lymphoreticular system including malignancies, genitourinary, nervous, musculoskeletal system and skin.

10. Eye, ear, nose and throat:

Diagnosis and management of common disorders of eye, ear, nose and throat in the pediatric age group

11. Pediatric surgery

Diagnosis and supportive management of common surgical disorders of neonates, infants and children and appropriate referral

12. Pediatric emergencies

Diagnosis and management of common pediatric emergencies such as coma, convulsions, shock, asthmatic attacks, cyanotic spells, poisonings, accidents etc. Pediatric advance life support skills, pediatric anesthesia, ventilatory support, cardiovascular support and stabilization

13. Pediatric dermatology

Structure and function of skin, examination of skin, Infective dermatosis (bacterial, fungal, viral, parasitic), Non-infective dermatoses (congenital, eczema, immunological, nutritional and miscellaneous), Sexually transmitted diseases, AIDS

14. Neoplastic disorders and tumors

Epidemiology, principles of diagnosis and treatment, leukaemias, lymphomas, neuroblastoma, renal neoplasms, soft tissue sarcoma, retinoblastoma, benign tumors

15. Child psychiatry

- 15.1. Assessment and interview
- 15.2. Epidemiology and etiology of psychiatric disorders in children
- 15.3. Behavioural and emotional disorders
- 15.4. Neurotic, stress related and somatoform disorders
- 15.5. Mood disorders
- 15.6. Suicide and attempted suicide
- 15.7. Psychosis in childhood
- 15.8. Gender identify disorders in childhood
- 15.9. Psychiatric aspects of mental retardation
- 15.10. Treatment of psychiatric problems in children

16. Radiodiagnosis

- 16.1. Interpretation of
 - 16.1.1. Basic chest and abdominal and abdominal radiography in different views
 - 16.1.2. Contrast radiography of different organs like IVP, MCU, Ba-series and myelogram
 - 16.1.3. Radiology of bones and joints
 - 16.1.4. Ultrasonography of brain, abdomen and other organs
 - 16.1.5. Echocardiography
- 16.2. Recent advances in radiology like CT, MRI, USG, radioisotope scanning and PET

17. Research Methodology

- 17.1. Bio-statistics
- 17.2. Basic in research methodology including search and critical review of medical literature, selection of appropriate study design, analysis of findings etc.
- 17.3. Problem oriented medical record

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- 17.4. Management of information system
- 17.5. Medical education:
- 17.6. Curricular components, teaching learning strategies, lesson plan methods of evaluation
- 17.7. Identification of learning resources to meet the learning objectives
- 17.8. Use of overhead projectors, slides, models etc in the teaching learning objectives

18. Medical Ethics

- 18.1. Introduction to ethical theories
- 18.2. Medical ethics
- 18.3. Professional ethics
- 18.4. Ethics in research
- 18.5. Ethics in health policy

19. Recent advance in pediatric physiology, molecular biology and genetics as well in the different diagnostic and therapeutic approaches in child health

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प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

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२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
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- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

Paper II : Technical Subject

1. Radiation Physics

- 1.1 **Atom and Particles:** Definition; structures-nucleus, orbital shells, energy levels, binding energy; atomic number, atomic weight, isotope, isomer, isobar, proton, neutron, electron and positron
- 1.2 **Photon Interaction:** Coherent scattering, photoelectric effect, Compton scattering, pair production, annihilation radiation and photonuclear reactions
- 1.3 **Attenuation:** Process of attenuation, exponential attenuation, coefficients of attenuation, energy transfer and absorption (in relation to relative importance of interactions in photon beam therapy)
- 1.4 **Electron Interactions:** Ionisation, excitation, heat production; radioactive interaction (bremsstrahlung), relative rate of energy loss and directional changes through collisional and radioactive processes; stopping power, range, scattering power, linear energy transfer
- 1.5 X-ray and basic principles of X-ray production
- 1.6 Fundamental radiation quantities and units
- 1.7 **Principles of Image Production and Use in Radiation Therapy:** CT Scan, Plain film, Fluoroscopy, MRI, Ultrasonography, Nuclear medicine imaging including PET, Imaging techniques used to verify treatment accuracy e.g. port films, electronic portal imaging, cone beam CT
- 1.8 **External Photon Beam Radiation Therapy**
 - 1.8.1 Radiotherapy machines (Betatron, Van De Graff generator, Cobalt, Linear accelerator): constructions and process of photon production
 - 1.8.2 Alteration of the beam aperture using Cerrobend blocking, multileaf collimators and independent jaws
 - 1.8.3 Design and function of multileaf collimators including awareness of issues created by rounded leaf edges
 - 1.8.4 Types of wedge filters
 - 1.8.5 Characteristics of kV and MV photon beams:
 - 1.8.6 Measurements of an external photon beam, including choice of suitable radiation detector:
 - 1.8.6.1 Beam measurement: radiation quality, output & inverse square law
 - 1.8.6.2 Measurement protocols i.e. IAEA megavoltage absolute dosimetry protocol for megavoltage photon beams
 - 1.8.6.3 Dose distribution - kV and MV beam profiles, depth dose curves, construction of isodose charts
 - 1.8.7 Dose distribution in tissue produced by external beam photon radiation:
 - 1.8.7.1 Radiation components i.e. primary and scattered radiation
 - 1.8.7.2 Descriptors of dose distribution: percentage depth dose, beam profile, isodose charts, flatness and symmetry, penumbra, surface dose and skin sparing, terms used to calculate dose
 - 1.8.7.3 Factors affecting dose distribution and beam output: effects of field size and shape, source-skin distance, beam quality or energy and beam modifying devices on dose distribution and beam output
 - 1.8.7.4 Effects of tissue heterogeneity and patient irregularity: effects on dose distribution of patient contour, bone, lung, air cavities and prostheses; dose within bone cavities, interface effects, effects of electronic disequilibrium

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- 1.8.7.5 Effects on dose distribution of irregular or offset fields and associated clinical implications of changes in beam aperture: use of Cerrobend blocking, multileaf collimators and independent jaws
 - 1.8.7.6 Dose modification techniques: methods of compensation for patient contour variation and/or tissue inhomogeneity including wedging and compensating filters; shielding of dose-limiting tissues; the use of bolus and build-up material
 - 1.8.7.7 Physical aspects of the treatment techniques: Fixed SSD and isocentric techniques; Simple techniques: parallel opposed fields, multiple fields; Complex techniques: rotation therapy (full or partial), conformal therapy, IMRT, VMAT, IGRT
 - 1.8.7.8 Fundamental principles of Intensity Modulated Radiation Therapy, distinguishing features of step-and-shoot and dynamic deliveries including dynamic arcs
- 1.9 Electron Beam Radiation Therapy**
- 1.9.1 Process of generation of electron beam from a linear accelerator
 - 1.9.2 Characteristics of an electron beam – energy spectra, energy specification, variation of mean energy with depth, photon contamination
 - 1.9.3 Difference between electron and heavy charged particle (in particular proton) interaction with matter
 - 1.9.4 Dose distribution in tissue from an electron beam:
 - 1.9.4.1 Percentage depth dose, beam profiles, isodose charts, flatness and symmetry, penumbra, surface dose
 - 1.9.4.2 Effects of field size and shape, source-skin distance, energy, beam collimation on dose distribution and beam output
 - 1.9.4.3 Effects of heterogeneity and patient irregularity i.e. effect on dose distribution of surface obliquity, air gaps, lung, bone, air filled cavities, external and internal shielding
 - 1.9.4.4 Methods of field shaping for different beam energies and effect on surface dose
 - 1.9.4.5 Beam measurement: radiation quality, output, measurement protocols i.e. IAEA megavoltage dosimetry protocol for mega electron volt (MeV) electron beams
- 1.10 Proton Beam Radiotherapy**
- 1.10.1 Production of proton beams for clinical use
 - 1.10.2 Key principles and advantages of the cyclotron and synchrotron
 - 1.10.3 Dose distribution in tissue produced by proton beam radiation:
 - 1.10.3.1 Beam profile and percentage depth dose
 - 1.10.3.2 Clinical modification of Bragg peak and beam collimation
 - 1.10.3.3 Beams produced by passive scattering foils and active scanning
- 1.11 Treatment Planning and Delivery for Photon and Electron Beams**
- 1.11.1 Different equipment and methods for patient simulation; Processes of 2D and 3D planning; principles of intensity modulated radiation therapy and inverse treatment planning
 - 1.11.2 Methods of determining body contour, location of internal structures including critical tissues and target volume including comparison of CT, MRI and PET
 - 1.11.3 Choice of beam energy, field size, beam arrangement and the use of bolus
 - 1.11.4 Use of field junctions in terms of: Photon-photon junctions, Photon-electron junctions, Electron-electron junctions

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- 1.11.5 Calculation of monitor units and/or treatment time
- 1.11.6 Dose calculation algorithms including Clarkson (including equivalent tissue-air ratio corrections), superposition/convolution, Monte Carlo and pencil beam methods, their comparative advantages and limitations
- 1.11.7 Accuracy of treatment planning and delivery:
 - 1.11.7.1 Methods of patient monitoring and ensuring reproducibility of patient positioning throughout treatment and planning
 - 1.11.7.2 Image-guided radiation therapy
 - 1.11.7.3 Accuracy of calibration, stability of beam parameters, accuracy of isodose calculation
 - 1.11.7.4 Determination of mechanical and radiation accuracy of treatment machines and simulators
 - 1.11.7.5 Systematic and random errors
 - 1.11.7.6 Avoidance and detection of dose delivery errors
 - 1.11.7.7 Potential errors arising from computer control of set up and treatment machine operation
 - 1.11.7.8 In-vivo dosimetry techniques
- 1.12 **Radiation Measurement Devices**
 - 1.12.1 Ionisation chambers, semi-conductor detectors and optically stimulated luminescence dosimeters (TLD and OSL)
 - 1.12.2 Photographic film, radiochromic film, Geiger-Muller counters, scintillation counters, chemical dosimeters
 - 1.12.3 Use of radiation phantoms and dedicated dosimetry tools for fixed SSD and isocentric patient treatments
- 1.13 **Radioactivity**
 - 1.13.1 Activity, apparent activity, specific activity, air-kerma rate constant and reference air-kerma rate
 - 1.13.2 Radionuclide decay processes: alpha, beta, positron, gamma, electron capture, internal conversion
 - 1.13.3 Radionuclide production: natural and artificial radioactivity
 - 1.13.4 Exponential radioactive decay: decay constant, half life (physical, biological, effective), mean life, daughter products, radioactive equilibrium
- 1.14 **Sealed Source Radionuclides**
 - 1.14.1 Source construction including filtration
 - 1.14.2 Properties: spectra of radiation emitted, half-life, usual specific activity
 - 1.14.3 Measurement of source activity and dose rates, choice of suitable detectors and calibration
 - 1.14.4 Radionuclides: caesium-137, iridium-192, iodine-125, palladium-106, strontium-90, radium-226, cobalt-60, yttrium-90
 - 1.14.5 Management: handling, cleaning, inspection, storage and transport
 - 1.14.6 Sealed source brachytherapy:
 - 1.14.6.1 Types of procedures - surface applications, eye plaques, interstitial implants, intracavitary techniques
 - 1.14.6.2 Source dose rate and dose distributions
 - 1.14.6.3 Delivery techniques: remote afterloading machines, manual afterloading
 - 1.14.6.4 ICRU dose specification system: current ICRU recommendations for interstitial and gynecological treatment specifications
 - 1.14.6.5 Current dosage systems: Paris system, production of conformal dose distributions using a single, stepping source

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- 1.14.6.6 Procedures for beta emitters: surface and ophthalmic applications, intravascular techniques, techniques of delivery – unique applicators and methods of use
 - 1.15 **Unsealed Source Radionuclides**
 - 1.15.1 Concepts of uptake, distribution and elimination
 - 1.15.2 Physical, biological and effective half life
 - 1.15.3 Methods of dose estimation: Medical Internal Radiation Dose (MIRD) and other methods of estimating dose to target tissues and critical organs
 - 1.15.4 Sources: Iodine-131, strontium-90, samarium-153, phosphorus-32, yttrium-90
 - 1.15.5 Management: safe handling, storage, transport, clean up of spills
 - 1.16 **Radiation Protection**
 - 1.16.1 ALARA principle, radiation incident and radiation accident
 - 1.16.2 ICRU, ICRP; basis for international recommended limits; specific ICRP and national radiation protection standards
 - 1.16.3 Practical dose minimization practices and procedures
 - 1.16.4 Typical environmental dose levels and doses from diagnostic medical exposures
 - 1.16.5 Medical exposure in contrast to exposure of the public and occupational exposure (justification, optimization and dose limits)
 - 1.16.6 Minimization of dose to patients, staff and general public including safety procedures for staff, control of areas and radiation sources, personal monitoring, area monitoring, construction of rooms to house sources and radiation generators
 - 1.16.7 Recommended dose limits for fetal exposure and human data from which these have been derived
 - 1.16.8 Documentation and reporting requirements relating to radiation incidents and accidents
 - 1.17 Commissioning and quality assurance of external photon and electron beam radiation therapy equipment
- 2. Radiation Biology**
- 2.1 Law of Bergonie and Tribondeau
 - 2.2 Evolution of fractionated treatment :The ram's testis experiment, evolution of standard fractionation schedules, treatment protraction and adverse effects of protraction
 - 2.3 Cell: Normal cell structure; structure of eukaryotic genes e.g. open reading frame, untranslated regions, introns, exons, regulatory elements; chromosome packaging; DNA replication and the importance of maintaining genomic integrity; RNA transcription and translation; epigenetic effects on gene expression
 - 2.4 Cell Cycle: Phases and functions; Check points and their molecular controls; Major cell cycle regulators e.g. pRB, p53, cyclins, cyclin-dependent kinases; Cell cycle kinetic parameters; Extra cellular agents affecting cell growth e.g. growth factors, hormones; Growth factor receptors; Signal transduction e.g. MAPK/ERK, RAS, RAF pathways
 - 2.5 Mechanism of malignant cell transformation and progression
 - 2.5.1 Activation of oncogenes/loss of tumour suppressor genes: Mechanisms including point mutations, insertions, deletions, translocations, and amplifications; stable and unstable aberrations; Methods of quantification including comparative genomic hybridization, in-situ hybridization and spectral karyotyping
 - 2.5.2 Knudson's 2-hit hypothesis
 - 2.5.3 Epigenetic and telomeric changes: Global demethylation, promoter hypermethylation
 - 2.5.4 Aberrant histone acetylation

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- 2.5.5 Tumor angiogenesis and vasculogenesis
- 2.5.6 Steps in metastatic cascade
- 2.6 Tumor Growth: Gompertzian growth of untreated cancers including the concepts of tumour doubling time and potential doubling time; determinants of tumour growth rate including cell cycle time, growth fraction, cell loss factor; effect of tumour microenvironment on growth rate
- 2.7 Radiation Induced Cellular Damage
 - 2.7.1 Evidence for DNA being the clinically relevant target for cell killing and other targets of radiation damage
 - 2.7.2 Types of DNA lesions caused by ionizing radiation including double strand breaks (DSB), single strand breaks (SSB), cross links and base damage
 - 2.7.3 DNA damage repair mechanisms including sub-lethal damage and potentially lethal damage
 - 2.7.4 Assays for DNA damage including: gamma-H2AX, Comet assay, pulsed field electrophoresis, plasmid based assay, micronucleus assay and chromosomal aberrations
 - 2.7.5 Radiation sensitivity in different phases of the cell cycle
 - 2.7.6 Modes of cell death including timing of cell death and relative importance following ionizing radiation including: mitotic catastrophe, apoptosis, radiation-induced senescence, necrotic death, autophagy
 - 2.7.7 Concepts of reproductive death and clonogenicity; Bystander effect
 - 2.7.8 Titration of radiation dose according to tumour cell 'burden' including macroscopic versus microscopic disease
- 2.8 DNA double strand break repair
 - 2.8.1 Sensing DNA DSB
 - 2.8.2 Cell cycle arrest
 - 2.8.3 Histone modifications
 - 2.8.4 Recruitment of DNA DSB repair proteins
 - 2.8.5 DNA DSB repair pathway
 - 2.8.6 Homologous recombination and Non-homologous end-joining
 - 2.8.7 The genetic diseases that affect DNA repair/ clinically apparent radio-sensitivity (e.g. ataxia telangectasia)
- 2.9 Quantification of cell survival following irradiation
 - 2.9.1 Concept of cell survival curves
 - 2.9.2 In-vitro and in-vivo techniques to generate survival curves
 - 2.9.3 Dose rate effects on cell survival
 - 2.9.4 The linear quadratic formula in terms of: The biophysical basis of α and β in the linear quadratic formula, clinically derived α/β ratios for different types of cancer, acute and late responding normal tissues; limitations of linear quadratic formula
 - 2.9.5 Relationship between dose/fraction and tissue α/β ratio
- 2.10 Fractionations and "Rs" of radiobiology
 - 2.10.1 Conventional, hyper, hypo and accelerated fractionation
 - 2.10.2 Intrinsic Radiosensitivity, Repair, Reoxygenation, Redistribution, Repopulation
- 2.11 Biological Effective Dose
- 2.12 Hypoxia and the Oxygen effect
 - 2.12.1 Modification of radiation induced DNA damage by oxygen
 - 2.12.2 Oxygen enhancement ration (OER)
 - 2.12.3 Tumor hypoxia: clinical significance

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- 2.12.4 Methods used to overcome the effect of tumour hypoxia including their rationale: e.g. fractionation, hypoxic cell sensitizers, hypoxic cell cytotoxins, hyperbaric oxygen, high LET radiation, and hyperthermia
- 2.12.5 Consequences of molecular responses to hypoxia including: angiogenesis, increased propensity for metastasis and genetic instability
- 2.13 Radiation quality
 - 2.13.1 Types of ionizing radiation; Linear energy transfer (LET) and its relationship to direct and indirect DNA damage, free radicals and free radical scavengers; Relative biological effectiveness (RBE)
 - 2.13.2 Relationship between LET and OER
- 2.14 Dose response
 - 2.14.1 Dose response curve: shape, determinants of steepness of curve
 - 2.14.2 Therapeutic ratio: concept and significance
 - 2.14.3 Radiocurability and radioresponsiveness
 - 2.14.4 Factors influencing tumor control: physical factors including dose, dose rate, radiation quality, temperature; chemical factors including oxygen, radiosensitizers and radio-protectors; biological Factors including cell type and radiosensitivity, clonogen number, host factors; technical Factors including geographic miss; tumour control probability curves
- 2.15 Effects of radiation on normal tissues: Acute, sub-acute and late toxicity from radiation; meaning of latency with regard to normal tissue effects; functional sub-units of tissues/organs; flexible and hierarchical kinetic models; abscopal effect; post radiation regeneration of normal tissues; concept of normal tissue/organ tolerance; mechanism of effect and consequences of radiation on: parenchymal tissues, connective tissues, vascular systems and immune system
- 2.16 Acute syndromes following high doses of total body radiation
 - 2.16.1 Acute radiation syndrome: prodromal period, latent period, critical phase (manifestation of disease) and recovery or death
 - 2.16.2 Cerebrovascular syndrome
 - 2.16.3 Hematological syndrome
 - 2.16.4 Gastrointestinal syndrome
 - 2.16.5 Methods of biological dosimetry for unplanned / uncontrolled radiation exposure including: blood counts, chromosome aberrations in peripheral blood lymphocytes (dicentric assay, translocation assay), gamma-H2AX, mitotic index, micronucleus and comet assays
- 2.17 Effects of radiation on human embryo and fetus
 - 2.17.1 Major phases of fetal development, including CNS growth and corresponding gestational age; Nature of and reasons for effects caused in utero; Factors influencing effect type and risk including dose and stage of gestation; Definition of doubling dose
- 2.18 Quantification of radiation effects on normal tissues
 - 2.18.1 Principles of toxicity scoring systems used in current clinical practice including selection of appropriate endpoints and quantification
 - 2.18.2 Examples of toxicity scoring systems used in current clinical practice e.g. RTOG, Common Toxicity Criteria, LENT/SOMA
 - 2.18.3 Tolerance doses of normal tissues/organs including the QUANTEC data and its limitations
- 2.19 Radiation carcinogenesis
 - 2.19.1 Concept of stochastic and deterministic effects

- 2.19.2 The shape of the dose-response curve for this effect including the peak for leukaemias
 - 2.19.3 Relevance of integral dose in radiotherapy to second cancer induction risk
 - 2.20 Re-irradiation
 - 2.20.1 Re-irradiation tolerance of normal tissues derived from experimental and clinical studies for both early and late effects
 - 2.20.2 Time interval between therapy courses and concept of forgotten dose
 - 2.20.3 The radiobiological principles for consideration of re-treatment including initial radiotherapy dose, volume, volume of overlap and technique used
 - 2.20.4 Effect of radiation modifiers used in treatment of the first tumour e.g. concurrent chemotherapy
 - 2.21 Radiobiological principles in brachytherapy, stereotactic ablative radiotherapy, radiosurgery, tomotherapy, IMRT and particle therapy
 - 2.22 Molecular analysis
 - 2.22.1 Nucleic acid hybridization including Northern and Southern analysis, DNA microarrays, competitive genomic hybridization
 - 2.22.2 Protein analysis: Western analysis, immunoprecipitation, immune-histochemistry, proteomics (2-dimensional gels, mass spectrometry)
 - 2.22.3 PCR (polymerization chain reaction), quantitative RT-PCR
 - 2.22.4 DNA sequencing
 - 2.22.5 Detection of single nucleotide polymorphisms, mutations in tumors
 - 2.22.6 Knockout, knockin and transgenic mice
 - 2.22.7 RNA interference (RNAi)
 - 2.22.8 Tissue microarrays (TMAs)
 - 2.22.9 In-situ hybridization
 - 2.23 Oncopathology
 - 2.23.1 Major histological types of cancer
 - 2.23.2 Typical cytological features of malignant cells
 - 2.23.3 Typical biological behaviour of benign and malignant neoplasms
 - 2.23.4 Neoplasia, differentiation, anaplasia, aneuploidy
 - 2.23.5 Cancer stem cells and cancer cell lineages, monoclonality
 - 2.23.6 Tumour heterogeneity
 - 2.23.7 Pathways of spread
 - 2.23.8 Molecular basis of cancer and cancer genetics
 - 2.23.9 Mechanisms of cell death
 - 2.23.10 Tumour immunology
- 3. Haematological Malignancies**
- 3.1 **Myelodysplastic Syndrome:** Classification, French-American-British classification, WHO, Myelodysplastic syndrome, unclassified signs and symptoms, pathophysiology, genetics 5q- syndrome
 - 3.2 **Acute and Chronic Leukemia:** Pathology, genetic abnormalities, infective precursors, investigation and evaluate relevant diagnostic tests, including molecular and cytogenetic studies e.g. indicating Ph⁺ disease; significance of minimal residual disease and the duration of disease remission; uses of radiation therapy, including indications for cranial, craniospinal or total body irradiation in both myeloablative and non myeloablative transplants and total marrow irradiation
 - 3.3 **Hodgkin's Lymphoma:** Pathology, WHO classification system, appropriate staging investigations including the role of PET; contemporary combined modality therapy and

the historical changes in the role of radiation therapy in the curative treatment of HL; involved field and involved nodal radiation

- 3.4 **Non-Hodgkins Lymphomas:** Pathology, WHO classification, appropriate staging investigations (including PET, bone marrow biopsy), stratify patients according to contemporary prognostic groupings, involved field radiation therapy, treatment principles for extranodal lymphomas, indications and techniques for applying fields extending beyond “involved field” radiation therapy, including subtotal nodal irradiation, total nodal irradiation and TBI, role of chemotherapy, molecularly targeted agents and radioimmunotherapy
 - 3.5 **Plasma Cell Dyscrasias:** Pathology, Monoclonal Gammopathy of Undetermined Significance (MGUS), solitary plasmacytoma in both osseus and extraosseus sites and multiple myeloma. diagnostic tests including serum IgG and IgA, creatinine, calcium, urinary protein excretion, and radiology (skeletal survey, CT, and MRI), differences in PTV and prescription for solitary plasmacytoma compared to multiple myeloma, use of hemi-body radiation therapy, use of chemotherapy as the primary treatment modality, including the most effective regimens, timing of interventions with systemic therapies, use of bisphosphonates in multiple myeloma, evolving role of immunotherapy and currently used biological agents, role of transplantation
 - 3.6 **Myeloproliferative Disorders:** Classification, causes, diagnosis chronic myelogenous leukemia, essential thrombocythemia, polycythemia vera, primary myelofibrosis, treatment
 - 3.7 **Stem cell Transplant:** Normal haematopoiesis and stem cell biology, principles and practice of HSCT, indications and principles of stem cell transplant, sources of stem cells preparative regimen, principles of conditioning radiotherapy, procedure, complications, prognosis
 - 3.8 **Palliative Care:** Introduction, WHO definition; definition and types of pain, pain assessment, use of different pain scales; Palliative measures for other symptoms including: respiratory tract, gastrointestinal tract, neurological symptoms, cutaneous and mucosal symptoms, anorexia , cachexia; Communication, Breaking Bad News; Ethical issues in Palliative care; Psycho social issues; Palliative Radiotherapy
4. **Principles and Practice of Radiation Oncology**
 - 4.1 Anatomy
 - 4.2 Natural history and pattern of Spread
 - 4.3 Clinical presentation
 - 4.4 Diagnostic work up: Radiological, Cyto-Histopathological, Biochemical, Tumor markers, Radio nuclear imaging
 - 4.5 Tumor Classifications and Staging Systems (TNM, FIGO)
 - 4.6 Management of malignant diseases: Treatment protocols, Sequelae of treatment
 - 4.7 Results of Treatment
 - 4.8 Follow up protocols
 - 4.9 Clinical trials
 - 4.10 Cancers of various organs
 - 4.11 System wise disease management
 - 4.11.1 Eye and orbit
 - 4.11.2 Head and neck tumors
 - 4.11.3 CNS tumors
 - 4.11.4 Thoracic tumors
 - 4.11.5 Breast
 - 4.12 Pre treatment verification protocols

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- 4.13 Treatment delivery protocols
- 4.14 Radiation therapy treatment originating in various sites: treatment for Overall cancer management of various solid tumors
 - 4.14.1 Cancers of Head and neck
 - 4.14.2 Central nervous system tumours
 - 4.14.3 Cancers of Endocrine systems
 - 4.14.4 Cancers of Genitourinary system
 - 4.14.5 Cancers of Gastro-intestinal system
 - 4.14.6 Cancers of Reproductive organs
 - 4.14.7 Cancers of Haematopoietic and Lymphoreticular system
 - 4.14.8 Cancers of respiratory system
 - 4.14.9 Bone and soft tissue sarcomas
 - 4.14.10 Nasopharyngeal cancers
 - 4.14.11 Cancers of skin and adnexae
 - 4.14.12 malignant melanomas
 - 4.14.13 Paediatric cancers
 - 4.14.14 AIDS Related neoplasms
 - 4.14.15 Cancers of Hepato-Biliary system
- 4.15 Radiotherapy Treatment protocols for treating cancers of various sites
 - 4.15.1 Pre Treatment verification protocols
 - 4.15.2 Importance of Imaging with Computed tomography, MR imaging and PET –CT In radiation Therapy
 - 4.15.3 Saggital, coronal and axial planes of body
 - 4.15.4 Identification of normal anatomic plane in the Body
 - 4.15.5 Topographic anatomy to locate internal organs of the body
 - 4.15.6 Image formation and orientation for CT, MR, PET and Fusion concepts of various modalities
 - 4.15.7 Basic Principles of Digital imaging
 - 4.15.8 Image acquisition (Simulation, Portal imaging, Online image Guidance)
 - 4.15.9 Digital reconstruction DRR
 - 4.15.10 Patient positioning and dynamic target localization
 - 4.15.11 Image extraction
 - 4.15.12 Image formation
 - 4.15.13 Quality control of Imaging
 - 4.15.14 Computed Tomographic Imaging in radiation oncology
 - 4.15.15 Data acquisition (raw data, Beams Eye view)
 - 4.15.16 Anatomical structures (artifacts, contrast resolution, windows, distortion, spatial resolution)
 - 4.15.17 Image reconstruction
 - 4.15.18 Image backup and storage
- 4.16 Radiotherapy Treatment Delivery Protocols for malignant diseases of various sites
- 4.17 Techniques of Radiotherapy delivery
- 4.18 Treatment approaches for Metastatic Disease and palliation
 - 4.18.1 Common sites of metastases, detection, therapeutic approach
 - 4.18.2 Principles of surgical management
 - 4.18.3 Role and scope of radiation oncology
 - 4.18.4 Role and scope of medical oncology and chemotherapy
 - 4.18.5 Role and scope of Immunotherapy Agents
 - 4.18.6 Newer Treatment approaches

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- 4.19 Oncology emergencies
 - 4.19.1 Types
 - 4.19.2 Indications for radiation therapy,
 - 4.19.3 Chemotherapy
 - 4.19.4 Surgical approaches
 - 4.19.5 Best supportive care

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(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, रेडियोलोजी समूह रेडियोडाइग्नोसिस उपसमूह, नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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Paper II : Technical Subject

1. Basic Science

1.1 Anatomy

- 1.1.1 Respiratory system
- 1.1.2 Coardiovascular system
- 1.1.3 Gastrointestinal system
- 1.1.4 Hepatobiliitary System
- 1.1.5 Genito urinary system
- 1.1.6 Skeletal System
- 1.1.7 Cross sectional anatomy
- 1.1.8 Central Nervous system

1.2 Radiation Physics

- 1.2.1 Electromagnetic radiation & its properties
- 1.2.2 Radiation measurement and units
- 1.2.3 Production and properties of X-ray
- 1.2.4 Interaction of Radiation with matter
- 1.2.5 Properties of X-ray film, film processing
- 1.2.6 Intensifying and fluorescent screens.
- 1.2.7 X-ray absorption on the radiographic image.
- 1.2.8 Gird & filter.
- 1.2.9 Principles of Fluroscopy and IIT.
- 1.2.10 Principle of Diagnosttic ultrasound
- 1.2.11 Principle of CT
- 1.2.12 Principle of MRI
- 1.2.13 Principle of Nuclear Medicine and Imaging
- 1.2.14 Radiation Hazards and its effects

2. Radiology

2.1 Cardiovascular

- 2.1.1 Normal heart and pericardium
- 2.1.2 Pulmonary circulation
- 2.1.3 Acquired heart diseases
- 2.1.4 Congenital heart diseases

2.2 Respiratory

- 2.2.1 Normal Chest
- 2.2.2 Tumors of the lung
- 2.2.3 Inflammatory diseases of the lung
- 2.2.4 Remaining diseases of lung, pleura and soft tissue and bony thoracic cage of chest
- 2.2.5 Chest Trauma
- 2.2.6 Chest Childereen

2.3 Gastrointestinal tract and abdomen

- 2.3.1 Diseases of Pharynx, esophagus, stomach and duodenum
- 2.3.2 Diseases of small bowel and large bowel Acute abdomen
- 2.3.3 Diseases of biliary tract
- 2.3.4 Diseases of Liver, spleen & pancreas

2.4 Urogenital Tracts

- 2.4.1 Congenital lesions
- 2.4.2 Cystic diseases of the kidney
- 2.4.3 Tumours of the kidney and ureter
- 2.4.4 Renal calculi and Nephrocalcinosis
- 2.4.5 Renal Vascular diseases
- 2.4.6 Diseases of Bladder and prostate
- 2.4.7 Gynaecological diseases and obstetrical study

2.5 Diseases related to ENT, Eye, Teeth and soft tissues

2.6 Central Nervous System

- 2.6.1 Normal and abnormal skull
- 2.6.2 Diseases of brain and spine
- 2.6.3 Congenital diseases
- 2.6.4 Brain and spinal tumor

2.7 Bone & Joints

- 2.7.1 Congenital skeletal anomalies
- 2.7.2 Diseases of bone and joints
- 2.7.3 Tumors and tumors like conditions of bone
- 2.7.4 Skeletal disorders of metabolic and endocrine diseases
- 2.7.5 Skeletal trauma

2.8 Endocrine and metabolic diseases

- 2.8.1 Ultrasound imaging of the whole body
- 2.8.2 CT Imaging of the whole body
- 2.8.3 MRI Imaging of the whole body
- 2.8.4 Radiological Procedures
 - 2.8.4.1 Urinary tract
 - a) IVI
 - b) MCU
 - c) RGP and RGU
 - d) Nephrotomography
 - 2.8.4.2 Biliary tract and pancreas
 - a) OCG
 - b) T-toube cholangiography
 - c) ERCP, PTC and PTBD
- 2.8.5 GIT
 - 2.8.5.1 Barium swallow, barium meal, barium follow through, small bowel enema, barium enema, sinogram, loopogram, fistulogram.
- 2.8.6 Reproductive system- HSG
- 2.8.7 Vascular system
 - 2.8.7.1 Angiography
 - 2.8.7.2 Venography
 - 2.8.7.3 Lymphangiography
- 2.8.8 CNS- Myelography
- 2.8.9 Interventional procedures

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, सर्जरी समूह, जनरल सर्जरी उपसमूह, रजिष्ट्रार पद, आठौं तहको सिमित प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, सर्जरी समूह जनरल सर्जरी उपसमूह, नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, सर्जरी समूह, जनरल सर्जरी उपसमूह, रजिष्ट्रार पद, आठौं तहको सिमित प्रतियोगितात्मक परीक्षाको
लागि पाठ्यक्रम

Paper II : Technical Subject
Section (A) – 50 Marks

1. Basic & Applied

1.1 Applied Surgical Anatomy

- 1.1.1 Required to have acknowledge of the structure and function of all system of the body (where applicable to common clinical conditions in surgery)
- 1.1.2 Knowledge of histology to understand the function to tissue and organs as well as growth, degeneration and repair
- 1.1.3 Embryological basis of common congenital anomalies

1.2 System

- 1.2.1 Nervous system
- 1.2.2 Respiratory system
- 1.2.3 Cardiovascular system
- 1.2.4 Digestive system
- 1.2.5 Endocrine system
- 1.2.6 Musculoskeletal system
- 1.2.7 General – e.g. Acid-base balance, fluid and electrolyte balance, nutrition, metabolic response to trauma and sepsis, etc.

2. Applied Physiology

3. Surgical Pathology

- 3.1 Knowledge of the surgical pathology and microbiology in the context of surgery including inflammation, infection, neoplasm, response on the tissues to injury, disturbance of growth, degeneration processes, repair and regulation
- 3.2 Immunology and Genetics
- 3.3 Neoplastic diseases
- 3.4 Gross and histopathology of common surgical conditions
- 3.5 Nervous system
- 3.6 Respiratory system
- 3.7 Cardiovascular system
- 3.8 Genito-urinary system
- 3.9 Gastrointestinal system
- 3.10 Muscleskeletal system

4. Critical Care

- 4.1 Basics of pathophysiology, approach and management of critical surgical situation e.g. Trauma, shock, sepsis, organfailure
 - 4.1.1 Clinical pictures
 - 4.1.2 Investigation
 - 4.1.3 Diagnosis confirmation
 - 4.1.4 Management–use of equipments
 - 4.1.5 Monitoring–complications
 - 4.1.6 Counseling – communication
 - 4.1.7 Follow-up

5. Recent advance

- 4.2 Research-inside country
- 4.3 Recent advance–international

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, सर्जरी समूह, जनरल सर्जरी उपसमूह, रजिष्ट्रार पद, आठौं तहको सिमित प्रतियोगितात्मक परीक्षाको
लागि पाठ्यक्रम

- 4.4 Not published research work
- 4.5 Future national vision

Section (B) – 50 Marks

6. Surgical Management

- 6.1 Principle of management of common general surgical conditions
 - 6.1.1 Clinical practice (History and examinations)
 - 6.1.2 Investigation
 - 6.1.3 Provisional Diagnosis and differentials
 - 6.1.4 Treatment-Conservative, operative, palliative
 - 6.1.5 Monitoring
 - 6.1.6 Follow-up–of the patients with general surgical condition of following systems
 - 6.1.6.1 Nervous system
 - 6.1.6.2 Respiratory system
 - 6.1.6.3 Cardiovascular system
 - 6.1.6.4 Gastrointestinal system
 - 6.1.6.5 Genitourinary system
 - 6.1.6.6 Endocrine and breast
 - 6.1.6.7 Musculo-skeletal system and soft tissue
 - 6.1.6.8 Trauma/Polytrauma

7. Principles of Surgery

- 7.1 Knowledge of the General principle and practice of Surgery
 - 7.1.1 Imaging techniques/interventional Radiology
 - 7.1.2 Endoscopy/Laparoscopy
 - 7.1.3 Surgery at extremes of life
 - 7.1.4 Theatre techniques
 - 7.1.4.1 Aseptic techniques–sterilization
 - 7.1.4.2 Anesthesia in general, maintenance of homeostasis
 - 7.1.4.3 Basic techniques–suturing material dressing plaster
 - 7.1.4.4 Diathermy and electrosurgical devices
 - 7.1.4.5 Tourniquet
 - 7.1.5 Wound healing, dehiscence, scar, contractures
 - 7.1.6 Post operative complication and management
 - 7.1.7 Sepsis's surgery
 - 7.1.7.1 Acute and Chronic, inflammation
 - 7.1.7.2 Wound infection and septicemia
 - 7.1.7.3 TB, Leprosy, AIDS, Bacterial infection
 - 7.1.7.4 Antiseptic, Antibiotic policies

8. Operation Surgery

- 8.1 **Nervous System**
 - 8.1.1 Exposure to extradural haematoma
 - 8.1.2 Skull traction
 - 8.1.3 Nerve repair and transplant
 - 8.1.4 Trauma–skull, strive
- 8.2 **Respiratory System**
 - 8.2.1 F.B. in respiratory tract
 - 8.2.2 Tracheostomy, cricothyroidotomy

निजामती कर्मचारी अस्पताल
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लागि पाठ्यक्रम

- 8.2.3 Chest Drainage
- 8.2.4 Thoractomy
- 8.2.5 Chesttrauma (variety of injuries)
- 8.3 **Cardiovascular**
 - 8.3.1 Cardiac Tamponade
 - 8.3.2 Exposure to artery and vein,embolectomy
 - 8.3.3 Amputations
- 8.4 **Gastrointestinal System**
 - 8.4.1 All type of GI Surgery of all magnitude and types
 - 8.4.2 Different combination of operation
 - 8.4.3 Except-transplantation
- 8.5 **Genitourinary system**
 - 8.5.1 Suprapubic bladder drainage
 - 8.5.2 Cystoscopy
 - 8.5.3 Exposure of kidney, calculus, obstructive uropathy
 - 8.5.4 Perinephric abscess
 - 8.5.5 Scrotal/testicular operation
 - 8.5.6 Ectopic pregnancy/otherpelvicsurgery
- 8.6 **Endocrine and breast**
 - 8.6.1 Thyroid/parathyroid
 - 8.6.2 Breast surgery (noreconstruction)
- 8.7 **Musculoskeletal and soft tissue**
 - 8.7.1 Simple skeletal traction
 - 8.7.2 Compartmental syndrome
 - 8.7.3 Bone infection
- 8.8 **Plastic**
 - 8.8.1 Simple ceftlip repair
 - 8.8.2 Skin grafting /flaps
 - 8.8.3 Skin lesion
 - 8.8.4 Lymph node and biopsy
- 8.9 **Other**
 - 8.9.1 Venesection centralline
 - 8.9.2 Laryngoscope, E Tintubation
 - 8.9.3 FNAC /tru-cut needle biopsy
 - 8.9.4 Defibrillation

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, एनेस्थेसियोलोजी समूह, एनेस्थेसियोलोजी उपसमूह, रजिष्ट्रार पद, आठौं तहको सिमित प्रतियोगितात्मक
परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, एनेस्थेसियोलोजी समूह, अधिकृत नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, एनेस्थेसियोलोजी समूह, एनेस्थेसियोलोजी उपसमूह, रजिष्ट्रार पद, आठौं तहको सिमित प्रतियोगितात्मक
परीक्षाको लागि पाठ्यक्रम
Paper II : Technical Subject

Part I: General Subject

1. Health legislation: ilaj garneko mahal, police act, prison act, evidence act, narcotic drug control act, drug act and regulation, disabled protection and welfare act, disaster relief act, children's act, government prosecution act, vehicle and transport act, compensation for torture act, consumer protection act, iodized salt act, human organ transplant act, breast milk substitute control act.
2. Technical cooperation between developing villages.
3. National drug policy-1995 and importance of essential drug list
4. Anaesthesia Related Information
 - 4.1.1. History of Anaesthesia of Nepal
 - 4.1.2. Society of Anaesthesiologists of Nepal
 - 4.1.3. South Asian Confederation of Anaesthesiologists.
 - 4.1.4. World Federation of Societies of Anaesthesiologists

Part II: Technical Subject

A. Clinical Practice of Anaesthesia (Including relevant basic sciences)

1. History of Anaesthesia. From open to modern anaesthesia, balanced anaesthesia, dissociative anaesthesia and total intravenous anaesthesia.
2. Anaesthesia machines and circuits. Physics of pressure measurement, manometers and strain gauges.
3. Physiology of lung mechanics, compliance, resistance, surfactant. Physics of flow, laminar and turbulent, viscosity and density. Spirometers and rotameters.
4. Assessment of patients, effects on choice and technique of anaesthesia, Radiological assessment of lung disorders.
5. Pharmacokinetics of anaesthetic drugs.
6. Premedication, Pharmacology of premedicants.
7. Pharmacology of intravenous induction agents.
8. Inhalation anaesthetic agents. Vaporisers and humidification.
9. Oxygen therapy and toxicity. The physics of the gas laws.
10. Pharmacology of analgesics and opioids.
11. Neuromuscular blocking agents. Abnormal responses, pharmacogenetics.
12. Blood transfusion.
13. Pharmacology of local anaesthetic drugs. Nerve blocks. Epidural and spinal anaesthesia.
14. Resuscitation. Acid-base balance.
15. Blood gases. Pulse oximetry, capnography.
16. Emergency anaesthesia.
17. Drugs and the autonomic nervous system.
18. Drugs used in control of blood pressure.
19. Clinical trials. Use and misuse of statistics.

B. Clinical practice of Anaesthesia (Combined with relevant basic sciences)

1. Adrenal, pituitary, thyroid function. Control of blood sugar. Abnormalities of function. anaesthesia in endocrine disease.
2. Glycolysis, protein binding, fat utilization, Stress, Nutrition.
3. Shock.
4. Acute and chronic pain control.
5. Anaesthesia for general surgery.

निजामती कर्मचारी अस्पताल
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परीक्षाको लागि पाठ्यक्रम

6. Obstetric anaesthesia / gynaecological surgery.
7. Paediatric anaesthesia.
8. Geriatric anaesthesia.
9. Anaesthesia for thoracic surgery.
10. Anaesthesia for neurosurgery. Cerebral blood flow and factors affecting.
11. Anaesthesia for vascular surgery.
12. Anaesthesia for trauma and orthopaedics.
13. Anaesthesia for burns and plastic
14. Anaesthesia for head and neck surgery.
15. Anaesthesia outside the operating theatre.

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, मेडिसिन समूह, क्लिनिकल हेमाटोलोजी उपसमूह, सिनीयर रजिष्ट्रार (स्पेशलिष्ट) पद, नवौं तहको सिमित
प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, प्याथोलोजी समूह, हेमाटोलोजी उपसमूह, नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, मेडिसिन समूह, क्लिनिकल हेमाटोलोजी उपसमूह, सिनीयर रजिष्ट्रार (स्पेसलिष्ट) पद, नवौं तहको सिमित
प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम
Paper II : Technical Subject
Section (A) – 50 Marks

1. **Basic physiology of Haemopoetic system**
2. **Erythrocyte**
 - 2.1 Clinical manifestations & classification of erythrocyte disorders
 - 2.2 Aplastic Anaemia
 - 2.3 Pure red cell aplasia
 - 2.4 Anemia of chronic disease
 - 2.5 Paroxysmal Nocturnal hemoglobinuria (PNH)
 - 2.6 Iron deficiency anemia and iron overload
 - 2.7 Disorders of iron metabolism
 - 2.8 Thalassemias
 - 2.9 Sickle cell anemia
 - 2.10 Anemia of chronic disease, renal disease, endocrine disease,
 - 2.11 Megaloblastic anemias
 - 2.12 Haemolytic anemias
 - 2.12.1 Hereditary spherocytosis
 - 2.12.2 Hereditary elliptocytosis and related disorders
 - 2.12.3 Hereditary stomatocytosis
 - 2.12.4 Paroxysmal nocturnal hemoglobinuria
 - 2.12.5 Enzymatic defects
 - 2.12.6 Hemolytic anemias resulting from extracellular factors- immune haemolytic anemias, resulting from physical injury to RBCs, resulting from chemical & physical agents, resulting from infections & microorganisms etc
 - 2.13 Haemoglobinopathies
 - 2.13.1 Sickle cell disease/Sickle cell trait
 - 2.13.2 Hereditary methemoglobinemia
 - 2.13.3 Thalassemia syndromes
 - 2.14 Porphyria: Hematological aspects
 - 2.15 Polycythaemia (erythrocytosis)
3. **Pancytopenias**
 - 3.1 Inherited Bone marrow failure syndromes with pancytopenia
 - 3.2 Acquired pancytopenias
 - 3.3 Marrow infiltration disorders
4. **Disorders of different components of white blood cells**
 - 4.1 Neutrophil: Classification & clinical manifestations of neutrophil disorders, Neutropenia, Neutrophilia, Leukemoid reaction, Disorders of neutrophil function
 - 4.2 Eosinophil: Eosinophilia, Hypereosinophilic syndrome, Eosinophilic granulomatosis and polyangiitis, Other disorders of eosinophils
 - 4.3 Basophil: Basophilia, Other disorders of basophils and mast cells
 - 4.4 Lymphocyte: Classification & manifestations of lymphocyte & monocyte disorders, Lymphopenias, Lymphocytosis, Immunodeficiency disorders, Hematological aspects of HIV infection, Mononucleosis syndromes
 - 4.5 Monocyte: Classification & clinical manifestations of disorders of monocytes and macrophages, Monocytosis & monocytopenia, Inflammatory & malignant histiocytosis

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5. **Splenomegaly, Hyposplenism, Hypersplenism, Splenic trauma and Splenectomy**
6. **Hematopoietic Cell Transplantation**
 - 6.1 Autologous Stem cell transplant
 - 6.2 Allogeneic Stem cell transplant
7. **Transfusion medicine**
 - 7.1 Red blood cell transfusions and erythropoietin therapy
 - 7.2 Platelet transfusions
 - 7.3 Neutrophil (granulocyte) transfusions
 - 7.4 Plasma transfusions
 - 7.5 Risks of blood transfusions

Section (B) - 50 Marks

8. **Hemorrhagic and thrombotic diseases**
 - 8.1 Classification & clinical manifestations of disorders of hemostasis
 - 8.2 Clinical and laboratory evaluation of hemostasis
 - 8.3 Hereditary clotting factor deficiencies (bleeding disorders)
 - 8.3.1 Factor VIII or Factor IX deficiency
 - 8.3.2 Factor XI deficiency
 - 8.3.3 Factor VII deficiency
 - 8.3.4 Factor X deficiency
 - 8.3.5 Prothrombin (Factor II) deficiency
 - 8.3.6 Factor V deficiency
 - 8.3.7 Combined deficiency of Factor V and VIII
 - 8.3.8 Fibrinogen (Factor I) deficiency
 - 8.3.9 Factor XIII deficiency
 - 8.4 von Willebrand disease
 - 8.5 Thrombotic disorders: DVT, Pulmonary & other thromboembolisms
 - 8.6 Essential thrombocythemia & thrombocytosis
 - 8.7 Acquired inhibitors of coagulation
 - 8.8 Disseminated intravascular coagulation
 - 8.9 Antiphospholipid syndrome
 - 8.10 Platelet and blood vessel disorders
 - 8.10.1 Autoimmune thrombocytopenic purpura
 - 8.10.2 Drug induced thrombocytopenia
 - 8.10.3 Nonimmune platelet destruction
 - 8.10.4 Thrombotic thrombocytopenic purpura
 - 8.10.5 Platelet function disorders
 - 8.10.6 Congenital and acquired disorders of platelet function
9. **Malignant Lymphoid diseases**
 - 9.1 Classification of malignant lymphoid disorders
 - 9.2 Acute lymphoblastic leukemia (ALL)
 - 9.3 Hodgkin's Lymphoma
 - 9.4 Chronic Lymphoblastic Lymphoma
 - 9.5 Marginal Zone Lymphoma
 - 9.6 Follicular Lymphoma

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- 9.7 Mantle Cell Lymphoma
 - 9.8 DLBCL
 - 9.9 Burkitt's lymphoma
 - 9.10 Primary CNS lymphoma
 - 9.11 T cell and NK cell lymphoma
 - 9.12 MGUS
 - 9.13 Multiple myeloma
 - 9.14 Light chain amyloidosis
 - 9.15 Waldenstrom macroglobulinemia
 - 9.16 Large granular lymphocytic leukemia
 - 9.17 Hairy cell leukemia
 - 9.18 Other malignant diseases: Amyloidosis, Heavy chain diseases
10. **Malignant myeloid diseases**
- 10.1 Classification & clinical manifestations of clonal myeloid disorders
 - 10.2 Polycythemia Vera
 - 10.3 Essential Thrombosis
 - 10.4 Primary myelofibrosis
 - 10.5 Myelodysplastic Syndrome
 - 10.6 Chronic myeloid Leukemia
 - 10.7 Acute Myeloid Leukemia
11. **Therapeutic principles in hematology**
- 11.1 Pharmacology & toxicity of antineoplastic drugs
 - 11.2 Treatment of infections in immunocompromised host
 - 11.3 Principles of antithrombotic therapy
 - 11.4 Principles of immune cell therapy
 - 11.5 Principles of vaccine therapy
 - 11.6 Principles of therapeutic apheresis
 - 11.7 Pain management
12. **Hematological diseases during pregnancy**
13. **Hematological diseases during elderly**

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यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति :

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Paper II : Technical Subject
Section (A) – 50 Marks

1. **Applied Basic Sciences**
 - 1.1 Applied anatomy
 - 1.2 Applied Physiology
 - 1.3 Applied Pathology
 - 1.4 Applied Pharmacology
 - 1.5 Applied immunology
 - 1.6 Applied biostatics
 - 1.7 Applied research methods
 - 1.8 Applied Molecular biology and genetics

2. **Knowledge of outpatient department**
 - 2.1 Initial assessment with logical approach to undifferentiated illness.
 - 2.2 Impact of illness in the context of the family and community
 - 2.3 Sensitive to psychosocial issues related to presentation
 - 2.4 Follow- up management plans especially in chronic disease (e.g. diabetes, hypertension, asthma, COPD, APD ,anxiety/depression, growth and development)
 - 2.5 STD, antenatal and postnatal care, well women and men assessments
 - 2.6 Care of previously treated problems
 - 2.7 Coordination of care

3. **Medicine**
 - 3.1 Chest pain (acute and chronic)
 - 3.2 Palpitations
 - 3.3 Shortness of breath (acute, intermittent and chronic)
 - 3.4 Wheezing/Stridor
 - 3.5 Haemoptysis
 - 3.6 Cough
 - 3.7 Cyanosis
 - 3.8 Swelling of body parts
 - 3.9 Dyspepsia
 - 3.10 Reflux
 - 3.11 Haematemesis and malaena
 - 3.12 Upper and lower abdominal pain (acute and chronic)
 - 3.13 Diarrhoea
 - 3.14 Vomiting
 - 3.15 Abdominal distension
 - 3.16 Constipation
 - 3.17 jaundice
 - 3.18 Dysuria
 - 3.19 Haematuria
 - 3.20 Impotence
 - 3.21 Confusion
 - 3.22 Coma
 - 3.23 Headache
 - 3.24 Convulsions
 - 3.25 Syncope
 - 3.26 paralysis

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- 3.27 paraesthesia
- 3.28 Weakness
- 3.29 Fever
- 3.30 Anorexia
- 3.31 Fatigue
- 3.32 Myalgia
- 3.33 Itch
- 3.34 Rash
- 3.35 Abnormal bleeding
- 3.36 Swollen glands
- 3.37 Joint swelling
- 3.38 Joint pain
- 3.39 Thyroid disease
- 3.40 Diabetes
- 3.41 Tuberculosis
- 3.42 Drug related problem -iatrogenic, poisoning, or abuse including alcohol/smoking
- 3.43 Anaemia
- 3.44 Depression
- 3.45 Hypertension
- 3.46 Spinal dysfunction
- 3.47 Urinary tract infection
- 3.48 Holistic management of patients with HIV/AIDS
- 3.49 palliative care

4. Paediatrics

- 4.1 Neonatal Knowledge-Normal Newborn Care
 - 4.1.1 Prematurity/Postmaturity
 - 4.1.2 Birth trauma/Asphyxia
 - 4.1.3 Respiratory distress
 - 4.1.4 Jaundice
 - 4.1.5 Sepsis
 - 4.1.6 Congenital problems (cardiac, hip, cleftpalate, tracheo-oesophageal fistula, imperforate anus, diaphragmatic hernia)
- 4.2 Acute Life Threatening Problems
 - 4.2.1 Stridor /Airway compromise (Croup/epiglottitis)
 - 4.2.2 Respiratory distress and potential respiratory failure (severe ARI, Asthma)
 - 4.2.3 Circulatory failure/shock including Sepsis and dehydration
 - 4.2.4 Altered Sensorium including Meningitis/ encephalitis / encephalopathies (hepatic, uraemic, hypertensive)
 - 4.2.5 Seizures and status epilepticus
 - 4.2.6 Congestive heart failure
 - 4.2.7 Supraventricular tachycardia
 - 4.2.8 Acute renal failure
 - 4.2.9 Tetanus
 - 4.2.10 Poisoning
 - 4.2.11 Drowning/near drowning
 - 4.2.12 Bleeding disorders
 - 4.2.13 Diabetic Ketoacidosis
 - 4.2.14 Acute Abdominal Pain (distinguish medical and surgical causes)

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- 4.3 Feeding Problems: Understanding of Breastfeeding and Nutrition
 - 4.4 Growth Disorders: Protein Calorie Malnutrition, failure to thrive, short stature
 - 4.5 Common Febrile Illness
 - 4.5.1 ARI (including Pertussis)
 - 4.5.2 Diarrheal diseases (viral, bacterial, Parasitic)
 - 4.5.3 Urinary Tract Infection
 - 4.5.4 Septicemia/Bacteremia
 - 4.5.5 Enteric fever
 - 4.5.6 Malaria
 - 4.5.7 Viral exanthema (measles ,mumps, etc)
 - 4.5.8 Acute tonsilitis
 - 4.5.9 Rheumatic fever/endocarditis
 - 4.5.10 Tuberculosis (TB)
 - 4.5.11 Infective hepatitis
 - 4.5.12 Kala azar
 - 4.5.13 PUO
 - 4.6 Cough - including Asthma/Bronchitis/Bronchiolitis
 - 4.7 Oedema-including renal (nephritic syndrome, nephritis), Kwashiorkor, cardiac
 - 4.8 Chronic abdominal pain
 - 4.9 Jaundice
 - 4.10 Seizure disorders
 - 4.11 Anemia and blood dyscrasias including Leukemias(recognize and refer)
 - 4.12 Arthritis (septic arthritis, osteomyelitis, Juvenile Rheumatoid arthritis)
 - 4.13 Skin disease/rashes(eg; scabies)
 - 4.14 Common eye problems (eg, conjunctivitis)
 - 4.15 Common ear problems(eg, otitis media)
 - 4.16 Developmental delay/cerebral palsy/mental retardation
 - 4.17 Visual/hearing/speech disorders(recognize and refer)
 - 4.18 Dehydration
 - 4.19 Certain diseases can present in different ways, so specifics attention should be paid to
 - 4.19.1 Diabetes mellitus
 - 4.19.2 Hypothyroidism
 - 4.19.3 TB
 - 4.19.4 HIV/AIDS
5. **Dermatology**
- The general practice doctor will be able to manage the following common skin conditions:
- 5.1 Bacterial : Superficial bacterial infections, Skin TB ,Leprosy
 - 5.2 Viral: Herpes simplex, Herpes Zoster, Wart, Molluscum contagiosum
 - 5.3 Fungal: Dermatophyte, Candida, Tinea versicolor, Deep Fungal infection
 - 5.4 Parasites: Scabies, Pediculosis, Leishmaniasis
 - 5.5 Approach : Systemic Causes
 - 5.5.1 Skin Causes – Infective (e.g. Scabies), Urticaria, Dermatitis Herpetiform, Lichen Planus
 - 5.6 Common Skin Problems: Eczema/Dermatitis, Acne, Psoriasis, Drug eruption, Erythema multiforme, Erythema , Nodosum, Purpura, Bullous diseases
 - 5.7 Skin Ulcers: Hair and Nail Disorders:
 - 5.7.1 Alopecia, Onycholysis, Paronychia
 - 5.7.2 Pigmented Skin Lesion including Melanoma.

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- 5.7.3 Common Lumps and Bumps including Skin Cancers:
- 5.7.4 Warts, Keratoacanthoma, Basal Cell, Squamous Cell, Carcinoma
- 5.8 Sexually transmitted disease
 - 5.8.1 Non-specific urethritis/cervicitis, punctate balanoposthitis, candidiasis, trichomoniasis, condyloma accuminata, syphilis, gonorrhea and chancroid
 - 5.8.2 Sexual contact history, past history of STI, medications
 - 5.8.3 Clinical examination and investigation to find other STDs
 - 5.8.4 Contact tracing and treatment of contacts
 - 5.8.5 Regular follow -up of STD cases
6. **Psychiatry**
 - 6.1 Anxiety including Panic and phobic disorders
 - 6.2 Depression
 - 6.3 Conversion/Dissociative disorder
 - 6.4 Psychosis
 - 6.5 Bipolar mood disorder
 - 6.6 Somatic presentations- including pseudo-seizures and multi- symptomatic patients
 - 6.7 Substance Related Disorder
 - 6.8 Childhood Mental Health Conditions
 - 6.9 Concept of diagnostic classification: eg, DSM IV, WHO guidelines
 - 6.10 Concept and simple practice of non -pharmacological approaches to mental health problems
 - 6.11 Drug therapy
 - 6.12 Legal and ethical issues regarding mental competence and detention and relationship with police (recognizing at present there are no laws in Nepal but there is a proposed National Mental Health Act)
 - 6.13 Long term therapy, strategies for optimizing regime and getting compliance
 - 6.14 Liaison with other health workers for management of long term cases
 - 6.15 Practical approach to stabilizing cases before referral
 - 6.16 Common conditions of Primary Care
 - 6.16.1 Anxiety
 - 6.16.2 Depression
 - 6.16.3 Somatic Presentation of mental distress
 - 6.16.4 Culture specific presentation of mental distress
 - 6.16.5 Culture Specific presentation- dhatu, night fall, demon possession, new brides, perceptions about disease
 - 6.16.6 Alcohol and substance misuse
 - 6.16.7 Chronic Tiredness
 - 6.16.8 Sleep disturbances
 - 6.17 Health Promotion and support in chronic mental illness
 - 6.17.1 Monitoring and follow- up in patient with chronic mental illness
 - 6.17.2 Social support for patient and their family
 - 6.17.3 Referral to appropriate specialist care
 - 6.17.4 Work effectively with other workers for the management of people with mental health problems
 - 6.18 Stage of life issues
 - 6.18.1 Behavioral disorders in children
 - 6.18.2 Intellectual disability
 - 6.18.3 Childhood and family problems

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- 6.18.4 Adolescent depression and somatization disorders
- 6.18.5 Perinatal mental illness
- 6.18.6 At risk -drinking other dangerous behavior in young men and women
- 6.18.7 Mid-life crises, menopause,sexual problems
- 6.18.8 Adjustment disorders and chronic physical illness, disability
- 6.18.9 Dementia
- 6.18.10 Dying and bereavement

7. **Emergency Medicine**

- 7.1 Triage serious & non-serious problem.
- 7.2 Manage Major and minor Trauma
- 7.3 Manage life threatening medical, surgical, paediatric, gynaecological /obstetric emergencies
- 7.4 Describe concept of Disaster Plan & management
- 7.5 Manage Medico Legal Cases
- 7.6 Develops systematic approach to undifferentiable presentation (unconscious patients, chest pain; abdominal pain, dyspnea, etc.)
- 7.7 Organize and manage emergency services
- 7.8 Use emergency equipment and supplies available in Nepal
- 7.9 Develop knowledge about the Emergency Drugs particularly analgesia

Section (B) – 50 Marks

8. **Anaesthesia**

- 8.1 Cardiopulmonary resuscitation(basic and advanced cardiac life support)
- 8.2 Pre-operative assessment,including assessing ASA Physical status to know whether a GP anaesthetic is appropriate
- 8.3 Pre-anesthetic prescribing
- 8.4 General anesthetic prescribing
- 8.5 Local anesthesia and regional blocks
- 8.6 Post-operative recovery and monitoring
- 8.7 Pain management Intravenous fluid management(Pre and post surgery)
- 8.8 Airway management using facemask, oral airway and intubation
- 8.9 Regional anesthetic blocks, spinal, epidural and peripheral
- 8.10 Ketamine anesthetics(total intravenous anesthesia)
- 8.11 General anesthesia using draw- over technique
- 8.12 Ether anesthesia (EMO)

9. **Surgery**

9.1 **Skin and subcutaneous tissue**

- 9.1.1 Diagnosis and management of inflammatory condition of skin like cellulites, boils, carbuncle, etc.
- 9.1.2 Diagnosis and excision of sebaceous cysts, lipomas, etc
- 9.1.3 Diagnosis and management of squamous cell carcinoma, basal cell carcinoma and malignant melanoma

9.2 **Burns**

- 9.2.1 Initial resuscitation
- 9.2.2 management of fluid
- 9.2.3 Surgical Management -debridement and grafting

- 9.3 **Lymph Nodes**
 - 9.3.1 Describe the differential diagnosis of lymph node enlargement
- 9.4 **Arterial disorders**
 - 9.4.1 Describe the feature of chronic limb ischaemia including Buerger's disease
 - 9.4.2 Diagnose acute limb ischaemia
 - 9.4.3 Diagnose and manage dry gangrene
 - 9.4.4 Diagnose and manage DVT
- 9.5 **Salivary gland**
 - 9.5.1 Diagnosis and management of parotid and submandibular abscess
 - 9.5.2 Differential diagnosis of parotid and submandibular lump (biopsy is inappropriate)
- 9.6 **Thyroid**
 - 9.6.1 Differential diagnosis of solitary thyroid nodule
 - 9.6.2 Features of nodular goiter, its complications and indications for surgery
 - 9.6.3 Features of thyrotoxicosis, its complications and indications for surgery
 - 9.6.4 Management of hypothyroidism
- 9.7 **Breast**
 - 9.7.1 Method of Breast self examination
 - 9.7.2 Differential diagnosis of breast lump
 - 9.7.3 Triple investigation
 - 9.7.4 Principles of management of breast carcinoma
 - 9.7.5 Differential diagnosis of nipple discharge and indication for surgery
 - 9.7.6 Breast pain
- 9.8 **Upper GI Tract**
 - 9.8.1 Dysphagia : differential diagnosis, Investigations required
 - 9.8.2 Principle of management of oesophageal carcinoma,
 - 9.8.3 Gastro-oesophageal reflux disease: medical management
 - 9.8.4 Peptic ulcer disease: symptomatology, indications for endoscopy, medical management, complications and indications for surgery.
 - 9.8.5 Management of Ulcer GI Bleeding
 - 9.8.6 Management of Gastric carcinoma (Operative details not required)
- 9.9 **Hepatobiliary**
 - 9.9.1 Jaundice : Pathophysiology, differential diagnosis
 - 9.9.2 Liver abscess
 - 9.9.3 Tumors of liver : differential diagnosis
 - 9.9.4 Gallstone disease and its complications
- 9.10 **Pancreas**
 - 9.10.1 Acute pancreatitis: aetiology, definitions of mild and severe pancreatitis, management, complications and indications for surgery
 - 9.10.2 Chronic pancreatitis
- 9.11 **Small Intestine**
 - 9.11.1 Features of small bowel obstruction, its differential diagnosis and management
 - 9.11.2 Enteric fever and its complication
 - 9.11.3 Appendicitis, appendicular mass and appendicular diagnosis abscess
- 9.12 **Large bowel/Rectum and Anal Canal**
 - 9.12.1 Features of large bowel obstruction and its differential diagnosis
 - 9.12.2 Ulcerative colitis
 - 9.12.3 Bleeding per rectum, differential diagnosis
 - 9.12.4 Hemorrhoids including complications
 - 9.12.5 Perianal abscess

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- 9.13 **Hernia**
 - 9.13.1 Inguinal and Femoral
 - 9.13.2 Incisional hernia
- 9.14 **Urology**
 - 9.14.1 Haematuria:differential diagnosis and investigation
 - 9.14.2 Phimosis,paraphimosis
 - 9.14.3 Stones in renal tract:indications for surgery
 - 9.14.4 BHP
 - 9.14.5 Acute urinary retention
 - 9.14.6 Kidney Infection
 - 9.14.7 Vasectomy
 - 9.14.8 Scrotal swelling: differential diagnosis and investigation Undescendedtestis ,Diagnosis and Management of Testicular Torsion
 - 9.14.9 Urethral Strictures
- 10. **Orthopaedics**
 - 10.1 Traumatic condition: Recognition of what need to be done acutely and when referral may be more appropriate where possible
 - 10.1.1 Injuries of the upper limb: (Manage/ Consider Referral if Possible)
 - 10.1.2 Injuries of the lower limb and pelvis: (Manage/Refer)
 - 10.2 Non- Traumatic condition:
 - 10.2.1 Infective condition : Most important, Acute infection: Acute osteomyelitis; Acute septic arthritis; Chronic osteomyelitis; Tubercular infections including spine
 - 10.2.2 Degenerative condition and office orthopaedics
 - 10.3 Approach to diagnosis and conservative management where possible, with referral if possible and benefit from orthopedic consultation.
 - 10.3.1 Osteoarthritis
 - 10.3.2 Gout/Pseudogout
 - 10.3.3 Acute and Chronic low back and cervical pain
 - 10.3.4 Regional Musculo-skeletal condition Shoulder, Elbow, Wrist, Hip, Knee,Ankle
 - 10.4 Other Rarer Condition
 - 10.4.1 Congenital Deformities
 - 10.4.2 Neoplastic condition
 - 10.4.3 Metabolic and other condition
 - 10.4.4 Auto-immune diseases
- 11. **Obstetrics & Gynaecology**
 - 11.1 Antenatal period(normal and abnormal pregnancy)
 - 11.1.1 Normal/ low risk pregnancy and High risk pregnancy
 - 11.2 Labour and delivery
 - 11.3 Postpartum(Normal puerperium/Abnormal puerperium)
 - 11.4 Gynaecology(Local management/Referral)
 - 11.5 Medical condition during Pregnancy
 - 11.5.1 DM: Hypertension
 - 11.5.2 Heart disease
 - 11.5.3 Jaundice
- 12. **Family Planning**
 - 12.1 Male and female reproductive anatomy physiology

निजामती कर्मचारी अस्पताल

प्राविधिक सेवा, फ्यामिलि मेडिसिन एण्ड इमर्जेन्सी समूह, फ्यामिलि मेडिसिन एण्ड इमर्जेन्सी उपसमूह, सिनीयर रजिष्ट्रार (स्पेशलिष्ट) पद, नवौं तहको सिमित प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

- 12.2 The current status of family planning and voluntary surgical contraception in Nepal, including legal status, cultural barriers, myths and prejudices
 - 12.3 The rationale for vasectomy and tubal ligation, their benefits and disadvantages.
 - 12.4 Recognize eligible candidates for voluntary surgical contraception and provide information and counseling services to ensure informed client consent.
 - 12.5 Follow the principles of infection prevention and control and preoperative management for vasectomy and/or the minilap
 - 12.6 Demonstrate the use of aseptic technique, appropriate anaesthesia and analgesia
 - 12.7 Demonstrate the basic surgical skills required for vasectomy and /or minilap.
 - 12.8 Manage post- operative patients, including any complication related to anaesthesia, surgery and early and late complications.
 - 12.9 Techniques for reversal of vasectomy of tubal ligation
 - 12.10 Utilize the common methods of contraception including Depo-Provera, Norplant, Intra-uterine devices, Oral contraceptives
 - 12.11 Follow up patient who accept various methods of contraception
13. **Ultrasound**
- 13.1 The different components of Ultrasound equipment and their function
 - 13.2 Take proper care of the Ultrasound equipment including sterilization of transducers
 - 13.3 Identify artifacts and their usefulness and those that degrade the ultrasound image
 - 13.4 The ultrasound orientation of the image, scanning techniques and preparation of the patients
 - 13.5 Identify key obstetrics, medical and surgical condition on ultrasound
14. **Dentistry**
- 14.1 Prevent common dental diseases
 - 14.2 Recognize and manage common dental problems
 - 14.3 Manage dental emergencies
 - 14.4 Recognize and manage acute dental and periodontal conditions.
 - 14.5 Perform minor procedures.
 - 14.6 Recognize conditions that need to be referred for further therapeutic measures.
 - 14.7 Temporomandibular joint dislocation
 - 14.8 Post dental extraction bleeding
 - 14.9 Gingivitis
 - 14.10 Syncope
 - 14.11 Periodontitis
 - 14.12 Dental caries
 - 14.13 Precancerous condition

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प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, मेडिसिन समूह, जनरल मेडिसिन उपसमूह अधिकृत नवौं (९) तह (खुल्ला र आन्तरिक) को प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम
Paper II : Technical Subject

Part I : General Subject

1. Research and Paper publication

- 1.1. Planning and carrying out health research
- 1.2. Methodology, design, variables, sampling, data collection, data entry, descriptive statistics, research reports, random number
- 1.3. Interpretation of the results of health research.
- 1.4. Bio-statistics, Probability, probability distributions, hypothesis tests, estimation, parametric and non-parametric statistics, regression and correlation, longitudinal studies
- 1.5. Dissemination of the results
- 1.6. Principles of paper publications and search and critical review of literature, types of papers, common headings, tables and graphs, reference writing
- 1.7. Medical ethics, including introduction to ethical theories, medical ethics, professional ethics, ethics in research, ethics in health policy

2. Medical education and training

- 2.1. General principal, curricular components, the fundamentals of educational process.
- 2.2. Curriculum Development and Education Strategies
- 2.3. Identification of learning resources to meet the learning objectives,
- 2.4. Teaching/Learning Methods
- 2.5. Teaching-Learning Aids: Use of overhead projectors, slides, models etc in the teaching learning objectives
- 2.6. Classroom Presentation skills
- 2.7. Evaluation and Assessment of Learning: methods of evaluation, questions type
- 2.8. Organization, Management and Leadership
- 2.9. Continuing Professional Development (CPD)
- 2.10. Basics of Educational medicine.
- 2.11. Evidence based medical practice
- 2.12. Problem oriented medical record

3. Acts/Regulations related to Health

- 3.1. Human organ transplant act, Consumer protection act
- 3.2. Primary health care.
- 3.3. Rational use of drugs, drug policies.
- 3.4. NMC and National Health Agencies.

4. Epidemiology and control of communicable diseases:

- 4.1. Public health and epidemiology.
- 4.2. Problem and control of communicable disease, common terminology and principle.
- 4.3. TB Control.
- 4.4. HIV/AIDS control.
- 4.5. Malaria control.
- 4.6. Kala-azar control.

5. Problem and control of non-communicable diseases and of accidents and poisoning:

- 5.1. Epidemiology and control of IHD
- 5.2. Epidemiology and control of hypertension

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- 5.3. Epidemiology and control of diabetes
- 5.4. Epidemiology and control of chronic respiratory disease
- 5.5. Epidemiology and control of cancers
- 5.6. Epidemiology and control of accident
- 5.7. Disaster management
- 5.8. Epidemiology and prevention of poisoning including snake bite, poison information and networking.

Part II : Technical Subject

1. Pharmacology, poisoning and critical care medicine

- 1.1. Principles of pharmacology therapy
- 1.2. Pharmacology of different medicines
- 1.3. Acute and chronic poisoning and their management
- 1.4. Principles of critical care medicine
- 1.5. Oxygen delivery
- 1.6. Major manifestations, monitoring and management of critical illness
- 1.7. Nutrition

2. Infection

- 2.1. Basic of infection
- 2.2. Major manifestations of infections
- 2.3. Principles of management of infection, including different antimicrobial agent and prevention of infection.
- 2.4. Diseases due to different organism like virus, bacteria, protozoa, helminthes

3. Diabetes and nutritional and metabolic disease and other endocrine disease

- 3.1. Diabetes mellitus: Classification, epidemiology, aetiology, pathophysiology, clinical feature, diagnosis, management, acute and long-term complications of diabetes, special problems in management, prospects in diabetes.
- 3.2. Obesity
- 3.3. Nutritional factors in health and disease
- 3.4. Other metabolic disorders
- 3.5. Thyroid disease: functional anatomy, physiology, investigation and major manifestations, management and prevention
- 3.6. Other endocrine disease, including functional anatomy, physiology, investigations, major manifestations, management and prevention.

4. Cardiovascular system and disease as required for General Physicians

- 4.1. Functional anatomy, physiology and investigations
- 4.2. Major manifestation and heart disease
- 4.3. Disorders of heart rate, rhythm and conduction
- 4.4. Ischemic heart disease
- 4.5. Vascular disease
- 4.6. Diseases of heart valves
- 4.7. Congenital heart disease
- 4.8. Diseases of the myocardium
- 4.9. Diseases of the pericardium

5. Respiratory system and diseases as required for General Physicians

- 5.1. Functional anatomy, physiology and investigations

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- 5.2. Major manifestations of lung disease
 - 5.3. Obstructive pulmonary diseases
 - 5.4. Infections of the respiratory system
 - 5.5. Tumors of the bronchus and lung
 - 5.6. Interstitial and infiltrative pulmonary disease, including occupational lung disease
 - 5.7. Pulmonary vascular disease
 - 5.8. Diseases of the nasopharynx, larynx and trachea
 - 5.9. Disease of the pleura, diaphragm and chest wall
- 6. GI and liver system & diseases as required for General Physicians**
- 6.1. Functional anatomy, physiology and investigations
 - 6.2. Major manifestation of gastrointestinal and liver disease
 - 6.3. Diseases of the mouth and salivary glands
 - 6.4. Diseases of the esophagus
 - 6.5. Diseases of the stomach and duodenum
 - 6.6. Diseases of the small intestine, colon, rectum and anal canal
 - 6.7. Diseases of the pancreas
 - 6.8. Diseases of the liver
 - 6.9. Gall bladder and other biliary diseases
 - 6.10. Disease of the peritoneal cavity
- 7. Water, electrolyte and acid-base balance and nephrology system and disorders as required for General Physicians**
- 7.1. Physiology and electrolytes, water and acid-base
 - 7.2. Major electrolyte and acid-base disorders
 - 7.3. Functional anatomy, physiology and investigations of the kidneys and urinary system
 - 7.4. Major manifestations of renal disease
 - 7.5. Renal vascular disease
 - 7.6. Glomerular disease
 - 7.7. Tubulo-interstitial disease
 - 7.8. Congenital abnormalities of the kidneys
 - 7.9. Renal involvement in systemic diseases
 - 7.10. Infections of the kidney and urinary tract
 - 7.11. Obstruction of the urinary tract
 - 7.12. Urinary tract calculi and nephrocalcinosis
 - 7.13. Drugs and the kidney
 - 7.14. Tumors of the kidney and genitourinary tract
- 8. Hematology, immunology and joint, bone and connective tissue system and disease**
- 8.1. Inflammation
 - 8.2. Organization and function of the immune system
 - 8.3. Hematopoiesis, physiology of the blood and clotting
 - 8.4. Investigations of diseases of the blood
 - 8.5. Major manifestations of blood diseases
 - 8.6. Anemias
 - 8.7. Lymphoproliferative and myeloproliferative disorders
 - 8.8. Bleeding disorders
 - 8.9. Venous thrombosis
 - 8.10. Blood transfusion

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- 8.11. Functional anatomy, physiology and investigation of the diseases of the connective tissues, joints and bones.
- 8.12. Diseases of the connective tissues, joints and bones

- 9. Nervous system and Psychiatric disorders as required for General Physicians**
 - 9.1. Functional anatomy, physiology and investigations of neurology
 - 9.2. Major manifestations of nervous system and psychiatric disease
 - 9.3. Diseases of the nervous system
 - 9.4. Diseases of the spine and spinal cord
 - 9.5. Diseases of the nerves and muscles
 - 9.6. Classification and etiology of psychiatric disorders
 - 9.7. The clinical interview
 - 9.8. The psychiatry disorders and syndromes and their management

- 10. Genetics, Oncology & Palliative care, Geriatrics and Skin system and disorders as required for General Physicians**
 - 10.1. Genetics and disease, particularly molecular features of infective disease
 - 10.2. Investigation of the molecular basis of disease
 - 10.3. Modern molecular methods in human disease
 - 10.4. Types of genetic disease
 - 10.5. Genetic factors in common diseases
 - 10.6. Epidemiology, etiology, clinical presentations, investigations and management of the oncology diseases.
 - 10.7. Palliative anticancer medicine
 - 10.8. Normal ageing
 - 10.9. Major manifestations of disease in frail older people
 - 10.10. Rehabilitation
 - 10.11. Functional anatomy and physiology of the skin
 - 10.12. Major manifestations and investigations of skin disease
 - 10.13. Skin diseases
 - 10.14. The skin and systemic disease

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(स्पेसलिष्ट) पद, नवौं तहको सिमित प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, अबस्ट्रेटिक्स तथा गाइनेकोलोजी समूह, नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

Paper II : Technical Subject
Section (A) – 50 Marks

1. Obstetrics

- 1.1 Anatomy: Knowledge of anatomy of abdomen and pelvis applied to surgical procedures undertaken by the obstetrician and gynaecologist.
- 1.2 Pathology: Infection, inflammation therapeutic intervention (especially by the use of irradiation, cytotoxic drugs and hormones), disturbances in blood flow, loss of body fluids and neoplasia. Knowledge about changes in haemostasis in health and disease of a pregnant women.
- 1.3 Pharmacology: Knowledge of those drugs used in obstetrics and gynaecology Hormonal contraceptives in pregnancy and gonadotrophins and drugs contraindicated in pregnancy.
- 1.4 Immunology: Immunological changes in pregnancy; fetal development of the immune system, with particular knowledge of rhesus and isoimmunisations.
- 1.5 Infectious diseases: Knowledge of infectious diseases affecting pregnant and non-pregnant woman and fetus in utero. Knowledge of epidemiology, diagnostic techniques, prophylaxis, immunization and the use of antibiotics and antiviral agents.
- 1.6 Epidemiology and statistics: Collect data apply methods of statistical analysis. Knowledge of setting up clinical trials and the ability to interpret data through commonly used terms and techniques, interpretation of results of research, investigations, clinical trials design and medical audit.
- 1.7 Diagnostic imaging: Understand the application of ultrasound, computerized tomographic scanning and magnetic resonance imaging.
- 1.8 Radiodiagnosis: Basic chest skull and abdominal radiography in different views. Contrast radiography of different organic like IVP, Ba-series, Hysterosalpingography. Radiology of bones and joints.
- 1.9 Recent advances in radiology like CT, MRI and radioisotope scanning, Genetics and embryology. Detailed knowledge of normal and abnormal karyotypes, of the inheritance of genetic disorders and of the genetic causes of early abortion to diagnosis fetal abnormality, intrauterine treatment of the fetus genetics and embryology. Demonstrate the ability to explain to patients and discuss its practical and ethical implications.
- 1.10 Normal pregnancy: Changes maternal and fetal physiology during normal pregnancy, antepartum care its, aim and methods changes of implementation, i.e. organization of intrapartum care, including obstetrical analgesia and anaesthesia and anaesthesia, and of the normal puerperium. Importance of Nutrition during pregnancy and puerperium. Understand the importance of breast feeding and postpartum contraception.
- 1.11 Abnormal pregnancy: Knowledge of all aspects of abnormality during pregnancy, labor and puerperium and their management. Understand effects of pre-existing disease (obstetrical, gynaecological medical or surgical) on pregnancy and demonstrate the ability to provide informative counseling before, during and after pregnancy. Knowledge of neonatal resuscitation and of the principles of neonatal management, Respiratory distress syndrome (RDS), prematurity and congenital abnormality.

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(स्पेसलिष्ट) पद, नवौं तहको सिमित प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम
Section (B) – 50 Marks

2. Gynaecology

- 2.1 Prepubertal gynaecology: Knowledge of normal and abnormal sexual development paediatric pathology and its management, normal puberty and its disorders and their management.
- 2.2 Adolescent gynaecology: Disorder of behaviour and sexual function counseling for safe living
- 2.3 Menstruation: Physiology of normal menstruation, pathophysiology of menstrual disorders their investigation and management. Menopause and its management.
- 2.4 Infertility: Causes of infertility, investigation and management of the infertile couple, techniques involved in assisted reproduction.
- 2.5 Infection: Sexually transmitted diseases including AIDS.
- 2.6 Abortion: Cause of abortion, its management, complication of therapeutic abortion and its legal aspects.
- 2.7 Contraception: Various method of permanent and temporary contraceptives, their uses and side effect.
- 2.8 Psychosexual medicine: Management of psychosexual problems including puerperal psychosis and the psycho social impact of violence against women
- 2.9 Urogynaecology: Surgical and non- surgical management urogynaecological problems.
- 2.10 Gynaecological oncology: Epidemiology and aetiology and the principles of carcinogenesis, tumor immunology and pathology. Diagnostic techniques and staging of gynaecological tumors. Treatment including surgery, radiotherapy, chemotherapy, and terminal care of patients dying due to gynaecological malignancy.
- 2.11 Breast: Problems of lactation and its management, Breast Lump and its management.
- 2.12 Obstetrical and Gynaecological surgery: Principle of obstetric and gynaecological (surgery) procedures preoperative assessment and post operative care.
- 2.13 Ethics and the law: Basic ethical and legal issues involved in contemporary obstetrical and gynecological practice, Introduction to ethical theories, medical ethics, Professional ethics, Ethics in research, Ethics in health policy.
- 2.14 Recent advances and subspeciality: Uro-gynaecology, Infertility, Gynaecology oncology,
- 2.15 Community obstetrics and gynaecology:
 - 2.15.1 Knowledge about basics community disease profile
 - 2.15.2 Definitions and causes of maternal morbidity and mortality and perinatal mortality, neonatal mortality and infant mortality rate
 - 2.15.3 Effect of socio cultural behavior in Reproductive health.
 - 2.15.4 National Health Programmes related to Maternal and child health, continuing health services for maternal care and child health, organizing health care delivery and referral system.
 - 2.15.5 Future vision to reduce maternal morbidity and mortality and perinatal mortality.

निजामती कर्मचारी अस्पताल
प्राविधिक सेवा, सर्जरी समूह, अर्थोपेडिक सर्जरी उपसमूह, सिनीयर रजिष्ट्रार (स्पेसलिष्ट) पद, नवौं तहको सिमित
प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, सर्जरी समूह, अर्थोपेडिक उपसमूह, नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम
Paper II : Technical Subject
Section (A) – 50 Marks

1. **Applied Basic Sciences**
 - 1.1 Applied anatomy
 - 1.2 Applied Physiology
 - 1.3 Applied Pathology
 - 1.4 Applied Pharmacology
 - 1.5 Applied immunology
 - 1.6 Applied biostatics
 - 1.7 Applied research methods
 - 1.8 Applied Molecular biology and genetics
2. **Recent Advances**
 - 2.1 Arthroscopy
 - 2.2 Endoscopic surgery (Spine, Knee, etc)
 - 2.3 Illizarov external fixator
 - 2.4 Total joint replacement
 - 2.5 Limb sparing surgery
 - 2.6 Bone Banking, Laser surgery, etc.
3. **Emergencies: Orthopedics**
 - 3.1 Acute Osteomyelitis
 - 3.2 Septic Arthritis
 - 3.3 Compartmental Syndrome
 - 3.4 Cauda Equina Syndrome
 - 3.5 Necrotizing fasciitis
4. **Emergencies : Trauma**
 - 4.1 All fractures and dislocations
 - 4.2 Open fractures
 - 4.3 Crush injuries
 - 4.4 Hand injuries
 - 4.5 Spinal injuries

Section (B) – 50 Marks

5. **Principles and practice of : Orthopedic Surgery**
 - 5.1 General orthopedics
 - 5.2 Regional Orthopedics
 - 5.3 Pediatric Orthopedics
 - 5.4 Orthopedic Oncology
 - 5.5 Orthopedic Neurology
 - 5.6 Sports Medicine
 - 5.7 Physical Medicine and Rehabilitation

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6. **Principles and practice of : Trauma Surgery**

- 6.1 General principles of Trauma including Pathophysiology
- 6.2 General practice of Trauma: Early management of injured, Management of Polytrauma, Disaster, Mass casualty, and management of Neglected trauma
- 6.3 Definite management of Musculoskeletal injuries; their operative treatment and rehabilitation

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प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, सर्जरी समूह जनरल सर्जरी उपसमूह, नवौं (९) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम
Paper II : Technical Subject
Section (A) – 50 Marks

1. Basic & Applied

1.1 Applied Surgical Anatomy

- 1.1.1 Required to have acknowledge of the structure and function of all system of the body (where applicable to common clinical conditions in surgery)
- 1.1.2 Knowledge of histology to understand the function to tissue and organs as well as growth, degeneration and repair
- 1.1.3 Embryological basis of common congenital anomalies

1.2 System

- 1.2.1 Nervous system
- 1.2.2 Respiratory system
- 1.2.3 Cardiovascular system
- 1.2.4 Digestive system
- 1.2.5 Endocrine system
- 1.2.6 Musculoskeletal system
- 1.2.7 General – e.g. Acid-base balance, fluid and electrolyte balance, nutrition, metabolic response to trauma and sepsis, etc.

2. Applied Physiology

3. Surgical Pathology

- 3.1 Knowledge of the surgical pathology and microbiology in the context of surgery including inflammation, infection, neoplasm, response on the tissues to injury, disturbance of growth, degeneration processes, repair and regulation
- 3.2 Immunology and Genetics
- 3.3 Neoplastic diseases
- 3.4 Gross and histopathology of common surgical conditions
- 3.5 Nervous system
- 3.6 Respiratory system
- 3.7 Cardiovascular system
- 3.8 Genito-urinary system
- 3.9 Gastrointestinal system
- 3.10 Muscleskeletal system

4. Critical Care

- 4.1 Basics of pathophysiology, approach and management of critical surgical situation e.g. Trauma, shock, sepsis, organfailure
 - 4.1.1 Clinical pictures
 - 4.1.2 Investigation
 - 4.1.3 Diagnosis confirmation
 - 4.1.4 Management–use of equipments
 - 4.1.5 Monitoring–complications
 - 4.1.6 Counseling – communication
 - 4.1.7 Follow-up

5. Recent advance

- 4.2 Research-inside country
- 4.3 Recent advance–international

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प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

- 4.4 Not published research work
- 4.5 Future national vision

Section (B) – 50 Marks

6. Surgical Management

- 6.1 Principle of management of common general surgical conditions
 - 6.1.1 Clinical practice (History and examinations)
 - 6.1.2 Investigation
 - 6.1.3 Provisional Diagnosis and differentials
 - 6.1.4 Treatment-Conservative, operative, palliative
 - 6.1.5 Monitoring
 - 6.1.6 Follow-up–of the patients with general surgical condition of following systems
 - 6.1.6.1 Nervous system
 - 6.1.6.2 Respiratory system
 - 6.1.6.3 Cardiovascular system
 - 6.1.6.4 Gastrointestinal system
 - 6.1.6.5 Genitourinary system
 - 6.1.6.6 Endocrine and breast
 - 6.1.6.7 Musculo-skeletal system and soft tissue
 - 6.1.6.8 Trauma/Polytrauma

7. Principles of Surgery

- 7.1 Knowledge of the General principle and practice of Surgery
 - 7.1.1 Imaging techniques/interventional Radiology
 - 7.1.2 Endoscopy/Laparoscopy
 - 7.1.3 Surgery at extremes of life
 - 7.1.4 Theatre techniques
 - 7.1.4.1 Aseptic techniques–sterilization
 - 7.1.4.2 Anesthesia in general, maintenance of homeostasis
 - 7.1.4.3 Basic techniques–suturing material dressing plaster
 - 7.1.4.4 Diathermy and electrosurgical devices
 - 7.1.4.5 Tourniquet
 - 7.1.5 Wound healing, dehiscence, scar, contractures
 - 7.1.6 Post operative complication and management
 - 7.1.7 Sepsis's surgery
 - 7.1.7.1 Acute and Chronic, inflammation
 - 7.1.7.2 Wound infection and septicemia
 - 7.1.7.3 TB, Leprosy, AIDS, Bacterial infection
 - 7.1.7.4 Antiseptic, Antibiotic policies

8. Operation Surgery

- 8.1 **Nervous System**
 - 8.1.1 Exposure to extradural haematoma
 - 8.1.2 Skull traction
 - 8.1.3 Nerve repair and transplant
 - 8.1.4 Trauma–skull, strive
- 8.2 **Respiratory System**
 - 8.2.1 F.B. in respiratory tract
 - 8.2.2 Tracheostomy, cricothyroidotomy

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प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

- 8.2.3 Chest Drainage
- 8.2.4 Thoractomy
- 8.2.5 Chesttrauma (variety of injuries)
- 8.3 **Cardiovascular**
 - 8.3.1 Cardiac Tamponade
 - 8.3.2 Exposure to artery and vein,embolectomy
 - 8.3.3 Amputations
- 8.4 **Gastrointestinal System**
 - 8.4.1 All type of GI Surgery of all magnitude and types
 - 8.4.2 Different combination of operation
 - 8.4.3 Except-transplantation
- 8.5 **Genitourinary system**
 - 8.5.1 Suprapubic bladder drainage
 - 8.5.2 Cystoscopy
 - 8.5.3 Exposure of kidney, calculus, obstructive uropathy
 - 8.5.4 Perinephric abscess
 - 8.5.5 Scrotal/testicular operation
 - 8.5.6 Ectopic pregnancy/otherpelvicsurgery
- 8.6 **Endocrine and breast**
 - 8.6.1 Thyroid/parathyroid
 - 8.6.2 Breast surgery (noreconstruction)
- 8.7 **Musculoskeletal and soft tissue**
 - 8.7.1 Simple skeletal traction
 - 8.7.2 Compartmental syndrome
 - 8.7.3 Bone infection
- 8.8 **Plastic**
 - 8.8.1 Simple ceftlip repair
 - 8.8.2 Skin grafting /flaps
 - 8.8.3 Skin lesion
 - 8.8.4 Lymph node and biopsy
- 8.9 **Other**
 - 8.9.1 Venesection centralline
 - 8.9.2 Laryngoscope, E Tintubation
 - 8.9.3 FNAC /tru-cut needle biopsy
 - 8.9.4 Defibrillation

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परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, मेडिसिन समूह, जनरल मेडिसिन उपसमूह अधिकृत एघारौं (११) तह (खुल्ला र अन्तरसेवा प्रतिस्पर्धा) को प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
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- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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परीक्षाको लागि पाठ्यक्रम
Paper II : Technical Subject

Part I : General Subject

1. Research and Paper publication

- 1.1. Planning and carrying out health research
- 1.2. Methodology, design, variables, sampling, data collection, data entry, descriptive statistics, research reports, random number
- 1.3. Interpretation of the results of health research.
- 1.4. Bio-statistics, Probability, probability distributions, hypothesis tests, estimation, parametric and non-parametric statistics, regression and correlation, longitudinal studies
- 1.5. Dissemination of the results
- 1.6. Principles of paper publications and search and critical review of literature, types of papers, common headings, tables and graphs, reference writing
- 1.7. Medical ethics, including introduction to ethical theories, medical ethics, professional ethics, ethics in research, ethics in health policy

2. Medical education and training

- 2.1. General principal, curricular components, the fundamentals of educational process.
- 2.2. Curriculum Development and Education Strategies
- 2.3. Identification of learning resources to meet the learning objectives,
- 2.4. Teaching/Learning Methods
- 2.5. Teaching-Learning Aids: Use of overhead projectors, slides, models etc in the teaching learning objectives
- 2.6. Classroom Presentation skills
- 2.7. Evaluation and Assessment of Learning: methods of evaluation, questions type
- 2.8. Organization, Management and Leadership
- 2.9. Continuing Professional Development (CPD)
- 2.10. Basics of Educational medicine.
- 2.11. Evidence based medical practice
- 2.12. Problem oriented medical record

3. Acts/Regulations related to Health

- 3.1. Human organ transplant act, Consumer protection act
- 3.2. Primary health care.
- 3.3. Rational use of drugs, drug policies.
- 3.4. NMC and National Health Agencies.

4. Epidemiology and control of communicable diseases:

- 4.1. Public health and epidemiology.
- 4.2. Problem and control of communicable disease, common terminology and principle.
- 4.3. TB Control.
- 4.4. HIV/AIDS control.
- 4.5. Malaria control.
- 4.6. Kala-azar control.

5. Problem and control of non-communicable diseases and of accidents and poisoning:

- 5.1. Epidemiology and control of IHD
- 5.2. Epidemiology and control of hypertension

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- 5.3. Epidemiology and control of diabetes
- 5.4. Epidemiology and control of chronic respiratory disease
- 5.5. Epidemiology and control of cancers
- 5.6. Epidemiology and control of accident
- 5.7. Disaster management
- 5.8. Epidemiology and prevention of poisoning including snake bite, poison information and networking.

Part II : Technical Subject

1. Pharmacology, poisoning and critical care medicine

- 1.1. Principles of pharmacology therapy
- 1.2. Pharmacology of different medicines
- 1.3. Acute and chronic poisoning and their management
- 1.4. Principles of critical care medicine
- 1.5. Oxygen delivery
- 1.6. Major manifestations, monitoring and management of critical illness
- 1.7. Nutrition

2. Infection

- 2.1. Basic of infection
- 2.2. Major manifestations of infections
- 2.3. Principles of management of infection, including different antimicrobial agent and prevention of infection.
- 2.4. Diseases due to different organism like virus, bacteria, protozoa, helminthes

3. Diabetes and nutritional and metabolic disease and other endocrine disease

- 3.1. Diabetes mellitus: Classification, epidemiology, aetiology, pathophysiology, clinical feature, diagnosis, management, acute and long-term complications of diabetes, special problems in management, prospects in diabetes.
- 3.2. Obesity
- 3.3. Nutritional factors in health and disease
- 3.4. Other metabolic disorders
- 3.5. Thyroid disease: functional anatomy, physiology, investigation and major manifestations, management and prevention
- 3.6. Other endocrine disease, including functional anatomy, physiology, investigations, major manifestations, management and prevention.

4. Cardiovascular system and disease as required for General Physicians

- 4.1. Functional anatomy, physiology and investigations
- 4.2. Major manifestation and heart disease
- 4.3. Disorders of heart rate, rhythm and conduction
- 4.4. Ischemic heart disease
- 4.5. Vascular disease
- 4.6. Diseases of heart valves
- 4.7. Congenital heart disease
- 4.8. Diseases of the myocardium
- 4.9. Diseases of the pericardium

5. Respiratory system and diseases as required for General Physicians

- 5.1. Functional anatomy, physiology and investigations

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- 5.2. Major manifestations of lung disease
 - 5.3. Obstructive pulmonary diseases
 - 5.4. Infections of the respiratory system
 - 5.5. Tumors of the bronchus and lung
 - 5.6. Interstitial and infiltrative pulmonary disease, including occupational lung disease
 - 5.7. Pulmonary vascular disease
 - 5.8. Diseases of the nasopharynx, larynx and trachea
 - 5.9. Disease of the pleura, diaphragm and chest wall
- 6. GI and liver system & diseases as required for General Physicians**
- 6.1. Functional anatomy, physiology and investigations
 - 6.2. Major manifestation of gastrointestinal and liver disease
 - 6.3. Diseases of the mouth and salivary glands
 - 6.4. Diseases of the esophagus
 - 6.5. Diseases of the stomach and duodenum
 - 6.6. Diseases of the small intestine, colon, rectum and anal canal
 - 6.7. Diseases of the pancreas
 - 6.8. Diseases of the liver
 - 6.9. Gall bladder and other biliary diseases
 - 6.10. Disease of the peritoneal cavity
- 7. Water, electrolyte and acid-base balance and nephrology system and disorders as required for General Physicians**
- 7.1. Physiology and electrolytes, water and acid-base
 - 7.2. Major electrolyte and acid-base disorders
 - 7.3. Functional anatomy, physiology and investigations of the kidneys and urinary system
 - 7.4. Major manifestations of renal disease
 - 7.5. Renal vascular disease
 - 7.6. Glomerular disease
 - 7.7. Tubulo-interstitial disease
 - 7.8. Congenital abnormalities of the kidneys
 - 7.9. Renal involvement in systemic diseases
 - 7.10. Infections of the kidney and urinary tract
 - 7.11. Obstruction of the urinary tract
 - 7.12. Urinary tract calculi and nephrocalcinosis
 - 7.13. Drugs and the kidney
 - 7.14. Tumors of the kidney and genitourinary tract
- 8. Hematology, immunology and joint, bone and connective tissue system and disease**
- 8.1. Inflammation
 - 8.2. Organization and function of the immune system
 - 8.3. Hematopoiesis, physiology of the blood and clotting
 - 8.4. Investigations of diseases of the blood
 - 8.5. Major manifestations of blood diseases
 - 8.6. Anemias
 - 8.7. Lymphoproliferative and myeloproliferative disorders
 - 8.8. Bleeding disorders
 - 8.9. Venous thrombosis
 - 8.10. Blood transfusion

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- 8.11. Functional anatomy, physiology and investigation of the diseases of the connective tissues, joints and bones.
 - 8.12. Diseases of the connective tissues, joints and bones
- 9. Nervous system and Psychiatric disorders as required for General Physicians**
- 9.1. Functional anatomy, physiology and investigations of neurology
 - 9.2. Major manifestations of nervous system and psychiatric disease
 - 9.3. Diseases of the nervous system
 - 9.4. Diseases of the spine and spinal cord
 - 9.5. Diseases of the nerves and muscles
 - 9.6. Classification and etiology of psychiatric disorders
 - 9.7. The clinical interview
 - 9.8. The psychiatry disorders and syndromes and their management
- 10. Genetics, Oncology & Palliative care, Geriatrics and Skin system and disorders as required for General Physicians**
- 10.1. Genetics and disease, particularly molecular features of infective disease
 - 10.2. Investigation of the molecular basis of disease
 - 10.3. Modern molecular methods in human disease
 - 10.4. Types of genetic disease
 - 10.5. Genetic factors in common diseases
 - 10.6. Epidemiology, etiology, clinical presentations, investigations and management of the oncology diseases.
 - 10.7. Palliative anticancer medicine
 - 10.8. Normal ageing
 - 10.9. Major manifestations of disease in frail older people
 - 10.10. Rehabilitation
 - 10.11. Functional anatomy and physiology of the skin
 - 10.12. Major manifestations and investigations of skin disease
 - 10.13. Skin diseases
 - 10.14. The skin and systemic disease

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तहको सिमित प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम

(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, अबस्ट्रेटिक्स तथा गाइनेकोलोजी समूह, एघारौं (११) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

Paper II : Technical Subject
Section (A) – 50 Marks

1. Obstetrics

- 1.1 Anatomy: Knowledge of anatomy of abdomen and pelvis applied to surgical procedures undertaken by the obstetrician and gynaecologist.
- 1.2 Pathology: Infection, inflammation therapeutic intervention (especially by the use of irradiation, cytotoxic drugs and hormones), disturbances in blood flow, loss of body fluids and neoplasia. Knowledge about changes in haemostasis in health and disease of a pregnant women.
- 1.3 Pharmacology: Knowledge of those drugs used in obstetrics and gynaecology Hormonal contraceptives in pregnancy and gonadotrophins and drugs contraindicated in pregnancy.
- 1.4 Immunology: Immunological changes in pregnancy; fetal development of the immune system, with particular knowledge of rhesus and isoimmunisations.
- 1.5 Infectious diseases: Knowledge of infectious diseases affecting pregnant and non-pregnant woman and fetus in utero. Knowledge of epidemiology, diagnostic techniques, prophylaxis, immunization and the use of antibiotics and antiviral agents.
- 1.6 Epidemiology and statistics: Collect data apply methods of statistical analysis. Knowledge of setting up clinical trials and the ability to interpret data through commonly used terms and techniques, interpretation of results of research, investigations, clinical trials design and medical audit.
- 1.7 Diagnostic imaging: Understand the application of ultrasound, computerized tomographic scanning and magnetic resonance imaging.
- 1.8 Radiodiagnosis: Basic chest skull and abdominal radiography in different views. Contrast radiography of different organic like IVP, Ba-series, Hysterosalpingography. Radiology of bones and joints.
- 1.9 Recent advances in radiology like CT, MRI and radioisotope scanning, Genetics and embryology. Detailed knowledge of normal and abnormal karyotypes, of the inheritance of genetic disorders and of the genetic causes of early abortion to diagnosis fetal abnormality, intrauterine treatment of the fetus genetics and embryology. Demonstrate the ability to explain to patients and discuss its practical and ethical implications.
- 1.10 Normal pregnancy: Changes maternal and fetal physiology during normal pregnancy, antepartum care its, aim and methods changes of implementation, i.e. organization of intrapartum care, including obstetrical analgesia and anaesthesia and anaesthesia, and of the normal puerperium. Importance of Nutrition during pregnancy and puerperium. Understand the importance of breast feeding and postpartum contraception.
- 1.11 Abnormal pregnancy: Knowledge of all aspects of abnormality during pregnancy, labor and puerperium and their management. Understand effects of pre-existing disease (obstetrical, gynaecological medical or surgical) on pregnancy and demonstrate the ability to provide informative counseling before, during and after pregnancy. Knowledge of neonatal resuscitation and of the principles of neonatal management, Respiratory distress syndrome (RDS), prematurity and congenital abnormality.

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तहको सिमित प्रतियोगितात्मक परीक्षाको लागि पाठ्यक्रम
Section (B) – 50 Marks

2. Gynaecology

- 2.1 Prepubertal gynaecology: Knowledge of normal and abnormal sexual development paediatric pathology and its management, normal puberty and its disorders and their management.
- 2.2 Adolescent gynaecology: Disorder of behaviour and sexual function counseling for safe living
- 2.3 Menstruation: Physiology of normal menstruation, pathophysiology of menstrual disorders their investigation and management. Menopause and its management.
- 2.4 Infertility: Causes of infertility, investigation and management of the infertile couple, techniques involved in assisted reproduction.
- 2.5 Infection: Sexually transmitted diseases including AIDS.
- 2.6 Abortion: Cause of abortion, its management, complication of therapeutic abortion and its legal aspects.
- 2.7 Contraception: Various method of permanent and temporary contraceptives, their uses and side effect.
- 2.8 Psychosexual medicine: Management of psychosexual problems including puerperal psychosis and the psycho social impact of violence against women
- 2.9 Urogynaecology: Surgical and non- surgical management urogynaecological problems.
- 2.10 Gynaecological oncology: Epidemiology and aetiology and the principles of carcinogenesis, tumor immunology and pathology. Diagnostic techniques and staging of gynaecological tumors. Treatment including surgery, radiotherapy, chemotherapy, and terminal care of patients dying due to gynaecological malignancy.
- 2.11 Breast: Problems of lactation and its management, Breast Lump and its management.
- 2.12 Obstetrical and Gynaecological surgery: Principle of obstetric and gynaecological (surgery) procedures preoperative assessment and post operative care.
- 2.13 Ethics and the law: Basic ethical and legal issues involved in contemporary obstetrical and gynecological practice, Introduction to ethical theories, medical ethics, Professional ethics, Ethics in research, Ethics in health policy.
- 2.14 Recent advances and subspeciality: Uro-gynaecology, Infertility, Gynaecology oncology,
- 2.15 Community obstetrics and gynaecology:
 - 2.15.1 Knowledge about basics community disease profile
 - 2.15.2 Definitions and causes of maternal morbidity and mortality and perinatal mortality, neonatal mortality and infant mortality rate
 - 2.15.3 Effect of socio cultural behavior in Reproductive health.
 - 2.15.4 National Health Programmes related to Maternal and child health, continuing health services for maternal care and child health, organizing health care delivery and referral system.
 - 2.15.5 Future vision to reduce maternal morbidity and mortality and perinatal mortality.

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(लोक सेवा आयोग, नेपाल स्वास्थ्य सेवा, रेडियोलोजी समूह रेडियोडाइग्नोसिस उपसमूह, एघारौं (११) तहको खुला र आन्तरिक प्रतियोगितात्मक लिखित परीक्षाको लागि तोकिएको Technical Subject को पाठ्यक्रम)

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

१. प्रथम चरण (First Phase): लिखित परीक्षा योजना (Written Examination Scheme)

Paper / Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time
II - Technical Subject	100	50	10 × 10 = 100	2.00 hrs

२. द्वितीय चरण (Second Phase)

Subject	Marks	Examination System
Interview	20	Oral

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुन सक्नेछ ।
- विषयगत प्रश्नहरूको हकमा एउटै प्रश्नका दुई वा दुई भन्दा बढी भाग (Two or more parts of a single question) वा एउटा प्रश्न अन्तर्गत दुई वा बढी टिप्पणीहरू (Short notes) सोध्न सकिने छ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि पाठ्यक्रममा परेका कानून, ऐन, नियम, विनियम तथा नीतिहरू परीक्षाको मितिभन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागु मिति :

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Paper II : Technical Subject

1. Basic Science

1.1 Anatomy

- 1.1.1 Respiratory system
- 1.1.2 Coardiovascular system
- 1.1.3 Gastrointestinal system
- 1.1.4 Hepatobiliitary System
- 1.1.5 Genito urinary system
- 1.1.6 Skeletal System
- 1.1.7 Cross sectional anatomy
- 1.1.8 Central Nervous system

1.2 Radiation Physics

- 1.2.1 Electromagnetic radiation & its properties
- 1.2.2 Radiation measurement and units
- 1.2.3 Production and properties of X-ray
- 1.2.4 Interaction of Radiation with matter
- 1.2.5 Properties of X-ray film, film processing
- 1.2.6 Intensifying and fluorescent screens.
- 1.2.7 X-ray absorption on the radiographic image.
- 1.2.8 Gird & filter.
- 1.2.9 Principles of Fluroscopy and IIT.
- 1.2.10 Principle of Diagnosttic ultrasound
- 1.2.11 Principle of CT
- 1.2.12 Principle of MRI
- 1.2.13 Principle of Nuclear Medicine and Imaging
- 1.2.14 Radiation Hazards and its effects

2. Radiology

2.1 Cardiovascular

- 2.1.1 Normal heart and pericardium
- 2.1.2 Pulmonary circulation
- 2.1.3 Acquired heart diseases
- 2.1.4 Congenital heart diseases

2.2 Respiratory

- 2.2.1 Normal Chest
- 2.2.2 Tumors of the lung
- 2.2.3 Inflammatory diseases of the lung
- 2.2.4 Remaining diseases of lung, pleura and soft tissue and bony thoracic cage of chest
- 2.2.5 Chest Trauma
- 2.2.6 Chest Childereen

2.3 Gastrointestinal tract and abdomen

- 2.3.1 Diseases of Pharynx, esophagus, stomach and duodenum
- 2.3.2 Diseases of small bowel and large bowel Acute abdomen
- 2.3.3 Diseases of biliary tract
- 2.3.4 Diseases of Liver, spleen & pancreas

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2.4 Urogenital Tracts

- 2.4.1 Congenital lesions
- 2.4.2 Cystic diseases of the kidney
- 2.4.3 Tumours of the kidney and ureter
- 2.4.4 Renal calculi and Nephrocalcinosis
- 2.4.5 Renal Vascular diseases
- 2.4.6 Diseases of Bladder and prostate
- 2.4.7 Gynaecological diseases and obstetrical study

2.5 Diseases related to ENT, Eye, Teeth and soft tissues

2.6 Central Nervous System

- 2.6.1 Normal and abnormal skull
- 2.6.2 Diseases of brain and spine
- 2.6.3 Congenital diseases
- 2.6.4 Brain and spinal tumor

2.7 Bone & Joints

- 2.7.1 Congenital skeletal anomalies
- 2.7.2 Diseases of bone and joints
- 2.7.3 Tumors and tumors like conditions of bone
- 2.7.4 Skeletal disorders of metabolic and endocrine diseases
- 2.7.5 Skeletal trauma

2.8 Endocrine and metabolic diseases

- 2.8.1 Ultrasound imaging of the whole body
- 2.8.2 CT Imaging of the whole body
- 2.8.3 MRI Imaging of the whole body
- 2.8.4 Radiological Procedures
 - 2.8.4.1 Urinary tract
 - a) IVI
 - b) MCU
 - c) RGP and RGU
 - d) Nephrotomography
 - 2.8.4.2 Biliary tract and pancreas
 - a) OCG
 - b) T-toube cholangiography
 - c) ERCP, PTC and PTBD
- 2.8.5 GIT
 - 2.8.5.1 Barium swallow, barium meal, barium follow through, small bowel enema, barium enema, sinogram, loopogram, fistulogram.
- 2.8.6 Reproductive system- HSG
- 2.8.7 Vascular system
 - 2.8.7.1 Angiography
 - 2.8.7.2 Venography
 - 2.8.7.3 Lymphangiography
- 2.8.8 CNS- Myelography
- 2.8.9 Interventional procedures

निजामती कर्मचारी अस्पताल

प्रशासन सेवा, सवारी समूह, सवारी चालक पद, प्रारम्भिक तहको सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- ५०

द्वितीय चरण :- प्रयोगात्मक परीक्षा

पूर्णाङ्क :- ५०

अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	५०	२०	वस्तुगत	बहुवैकल्पिक प्रश्न	२५ प्रश्न x २ अङ्क	२५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली		समय
प्रयोगात्मक परीक्षा	५०	२५	प्रयोगात्मक/ अभ्यास		
अन्तर्वार्ता	२०	-	मौखिक		

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

निजामती कर्मचारी अस्पताल
प्रशासन सेवा, सवारी समूह, सवारी चालक पद, प्रारम्भिक तहको सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
Paper I : Technical subject

१. सुरक्षित यातायात सम्बन्धी ज्ञान

- १.१ सवारी चलाउँदा साथमा राख्नु पर्ने कागजपत्रहरु सम्बन्धी ज्ञान (सवारी चालक अनुमती पत्र, सवारी दर्ता प्रमाण पत्र, प्रदूषण मुक्त प्रमाण पत्र (तोकिएका सडकको लागि) , बाटो इजाजत पत्र, सवारी जाँचपास प्रमाणपत्र, आदि)
- १.२ सवारी चालकको अवस्था (स्वस्थ, नथाकेको, राम्ररी देख्न सक्ने, रक्सी तथा लागू पदार्थ सेवन नगरेको)
- १.३ सवारी चलाउँदा ध्यान दिनुपर्ने (सवारी सडकको बायाँ तर्फ चलाउने, सकभर बायाँ साइड च्याप्ने, अन्य सडक प्रयोगकर्ताले बुझ्ने संकेत दिने, उपयुक्त गतिमा सवारी चलाउने, ट्राफिक चिन्ह तथा संकेतको पालना, हर्नको सकभर कम प्रयोग, पदयात्रुको ख्याल राख्ने)
- १.४ सवारी साधन रोक्ने ठाउँ (तोकिएको ठाउँमा मात्र, जेब्रा क्रसिङको १५ मीटर दुबै तर्फ नरोक्ने, सडकको एकदम छेउ च्यापेर रोक्ने, मोडमा, पुलमा र सिंगललेन सडकमा नरोक्ने)
- १.५ चोकहरुमा सवारी चलाउँदा, राती सवारी चलाउँदा, सवारी पछ्याडि हटाउँदा, सवारी बिग्रँदा उछिन्ने (ओभरटेक) कार्य जस्ता कार्यहरु गर्दा के के कुराहरुमा ध्यान दिनुपर्छ सो सम्बन्धी जानकारी ।
- १.६ सवारीको भार (सवारी साधनको कानूनी अधिकतम भार, सामान सुरक्षित रुपमा राख्ने तरिका, सवारीको बढी भारको असरहरु, सवारीको लम्बाई, सिट क्षमता)
- १.७ दुर्घटना परेमा गर्ने कार्यहरु

२. ट्राफिक ज्ञान

- २.१ प्रहरीले दिने हातको संकेत
- २.२ ट्राफिक चिन्ह (आदेशमूलक, चेतावनीमूलक र जानकारीमूलक)
- २.३ सडक रेखाहरु (लम्बाई भागका रेखाहरु, सडक छेउका रेखाहरु, चौडाई भागका रेखाहरु, पदयात्रुले बाटो काट्ने ठाउँ जनाउने रेखाहरु)
- २.४ ट्राफिक बत्तीका संकेतहरु
- २.५ ऐनाको प्रयोग
- २.६ हर्नको प्रयोग
- २.७ उछिन्ने कार्य
- २.८ मोडहरु लिने (दायाँ, बायाँ र पूरा मोड्ने)
- २.९ लेन अनुशासन
- २.१० प्राथमिकता (गोल घुम्तीमा, बत्ती संकेत भएको चोकमा, मूल सडकमा, प्राथमिकता प्राप्त सवारीहरु)

३. यान्त्रिक ज्ञान

- ३.१ परिचय
 - ३.१.१ सवारीको फ्रेम तथा चेसिसको भिन्नता बारे जानकारी
 - ३.१.२ सवारी तथा यातायात व्यवस्था नियमावली, २०५४ अनुसारको यात्रुवाहक सवारीको वर्गीकरण
 - ३.१.३ सवारी तथा यातायात व्यवस्था नियमावली, २०५४ अनुसारको मालवाहक सवारीको वर्गीकरण
 - ३.१.४ सवारीको तौलको आधार हलुका सवारी र भारी सवारी
- ३.२ इन्जिन
 - ३.२.१ पेट्रोल इन्जिन तथा डिजेल इन्जिन स्टार्ट हुने र चल्ने तरिका
 - ३.२.२ विभिन्न किसिमका इन्धनहरु र त्यसबाट हुने प्रदूषणका बारेमा परिचयात्मक जानकारी

निजामती कर्मचारी अस्पताल

प्रशासन सेवा, सवारी समूह, सवारी चालक पद, प्रारम्भिक तहको सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

- ३.२.३ स्पार्क प्लगको काम
- ३.२.४ मोबिल पुरानो भयो वा कम भयो भने इन्जिनमा हुनसक्ने विकृति बारे ज्ञान
- ३.३ क्लच : परिचय र काम, त्यसमा आउनसक्ने त्रुटीहरू र समाधानका उपायहरू
- ३.४ गियर : काम र परिचय, त्यसमा आउनसक्ने त्रुटीहरू र समाधानका उपायहरू
- ३.५ फ्लाई व्हील (Fly wheel): काम वा प्रयोजन
- ३.६ प्रोपेलर शाफ्ट (Propeller shaft): यसको काम
- ३.७ डिफरेन्सियल (Differential): काम र प्रयोजन
- ३.८ एक्सेल (Axle): काम
- ३.९ ब्रेक (Brake): प्रयोजन र किसिम
- ३.१० टायर (Tyre): प्रयोजन, टायरको साइज, टायर भित्र हावाको चाप बारे ज्ञान
- ३.११ स्टेयरिङ (Steering): प्रयोजन, स्टेयरिङ फ्रि प्ले र यसको आवश्यकता बारे ज्ञान
- ३.१२ इग्निशन प्रणाली (Ignition System): पेट्रोल र डिजेल इन्जिनको गाडीमा हुने यसको त्रुटीबारे जानकारी
- ३.१३ रेडियटर र पंखा (Radiator & Fan) तथा ब्याट्री (Battery)
- ३.१४ सवारी मर्मत बारे छोटो जानकारी : दैनिक मर्मत, गाडी चलेको आधारमा गरिने मर्मत, ओभरहल (Overhaul) तथा यी मर्मत संभारको आवश्यकता तथा फाइदाहरू

४. निजामती कर्मचारी अस्पताल र यसको नियमावली सम्बन्धी सामान्य जानकारी

प्रयोगात्मक परीक्षाको लागि

अभ्यास १: राजमार्गमा कम्तीमा ५ कि. मी. को दूरीसम्म चलाउने (१५)

- प्रति घण्टा ६० कि. मी. भन्दा कम गतिमा एकनासले चलाउने
- गियरहरु आवश्यकता अनुसार बदल्ने
- ढिलो चलिरहेका गाडीहरुलाई उपयुक्त ठाउँमा उछिन्ने
- आफू भन्दा छिटो गाडीहरुलाई सुरक्षित तरिकाले साइड दिने
- गाडी रोक्ने, यू-टर्न गर्ने, ब्याक गर्ने र फिर्ता चलाई ल्याउने

अभ्यास २: शहरी सडकमा कम्तीमा ५ कि. मी. चलाउने (१५)

- प्रति घण्टा ४० कि. मी. भन्दा कम गतिमा एकनासले चलाउने
- गियरहरु आवश्यकता अनुसार बदल्ने
- कम्तीमा ३/३ वटा दायाँमोड (right turn), बायाँमोड (left turn) र पुरामोड (U-turn) लिने
- उपलब्ध भएमा ट्राफिक संकेत (traffic Signal) भएको चोकबाट भएर गाडी चलाउने

अभ्यास ३ : उकालोमा पार्क गर्ने र पुनः चलाउने (१०)

- सडकको किनारा लगाएर सवारी रोक्ने
- इग्निसन बन्द गर्ने
- इग्निसन पुनः चालु गर्ने र सवारी अगाडि बढाउने

अभ्यास ४: ग्यारेज पार्क गर्ने (१०)

- नियन्त्रित तरिकाले सवारी हाँक्ने
- ब्याक गरी सवारी चलाउने र ग्यारेजको तोकिएको ठाउँमा लगेर पार्क गर्ने ।

निजामती कर्मचारी अस्पताल
प्रशासन सेवा, सवारी समूह, सवारी चालक पद, प्रारम्भिक तहको सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
सवारी चालक प्रयोगात्मक परीक्षा निरीक्षकको लागि निर्देशिका

अभ्यास १: राजमार्गमा कम्तीमा ५ कि. मी. को दूरीसम्म चलाउने

(१५)

- परीक्षार्थीले सफल भएमा धेरैजसो सवारी चलाउनुपर्ने राजमार्गको खण्डमा प्रयोगात्मक परीक्षा लिने व्यवस्था मिलाउने ।
- सडकमा रहेका ट्राफिक चिन्हहरूलाई ध्यान दिन परीक्षार्थीलाई सुरुमै निर्देशन दिनु पर्दछ ।
- अङ्कहरू निम्नानुसार दिने :
 - सडक बीच सेतो लामो धर्सा भएमा त्यसलाई नकाटेमा (२)
 - आफ्ना लेनमा नचलाउनु, घुम्तीमा विपरित लेनमा नचलाएमा (२)
 - बस्ती भित्र, घुम्तीमा र ठाडो ओरालोमा उछिन्ने काम नगरेमा (२)
 - घुम्तीमा, ओरालोमा र सडकका चौडाई कम भएको ठाउँमा गाडीहरूलाई साइड नदिएमा (१)
 - घुम्ती, साँघुरो बाटो, पुल र चौवाटोमा नरोकेमा (२)
 - जहिले पनि सडक भन्दा बाहिर छेउ लगाई रोक्नु पर्नेमा सडकमै सवारी नरोकेमा (२)
 - गाडी मोड्दा र यू-टर्न गर्दा ऐनाहरूको प्रयोग नगरी भ्यालबाट टाउको बाहिर निकालेर नहेर्ने गरेमा (२)
 - यू-टर्न गर्नु अघि सडकमा अन्य सवारी आएका छन् कि भनी हेर्ने गरेमा (२)

अभ्यास २: शहरी सडकमा कम्तीमा ५ कि. मी. चलाउने

(१५)

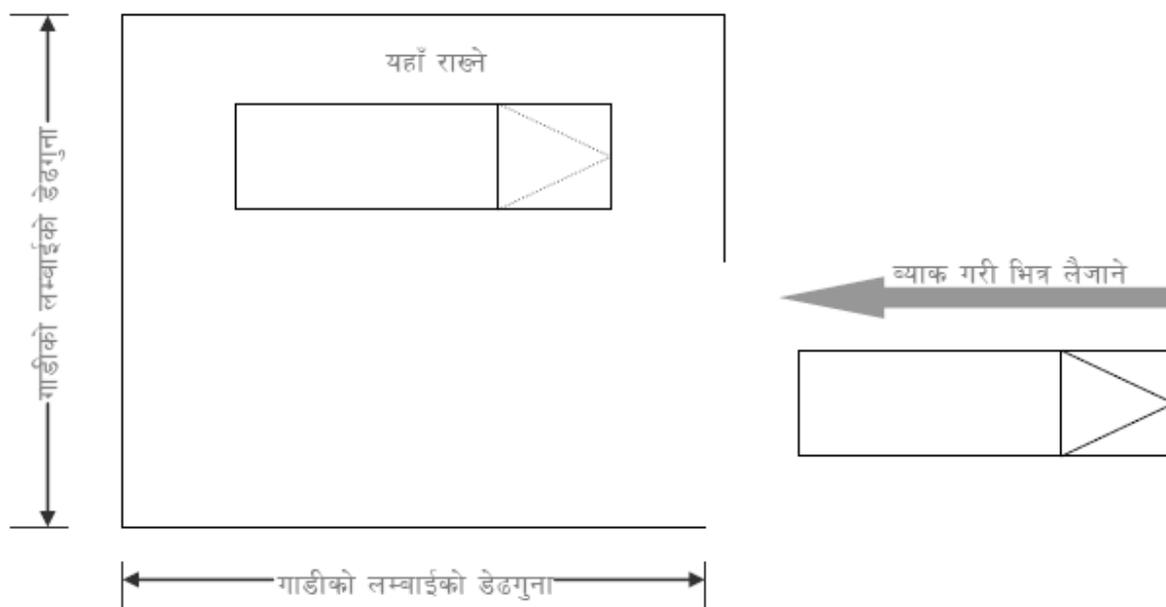
- परीक्षार्थीले सफल भएमा धेरै जसो सवारी चलाउनुपर्ने शहरी सडकको व्यस्त भागमा प्रयोगात्मक परीक्षा लिने व्यवस्था मिलाउने ।
- शहरमा ट्राफिक संकेत भएको चोक भएमा त्यहाँबाट समेत सवारी चलाउन लगाउने ।
- अङ्कहरू निम्नानुसार दिने :
 - सडकमा रहेका आदेशमूलक ट्राफिक चिन्हहरू (जस्तै: प्रवेश निषेध, पार्क निषेध, रोक्न निषेध, दायाँ मोड्न इत्यादि) लाई वास्ता गर्नु पर्ने (१)
 - सडक बीचमा भएको सेतो लामो धर्सालाई काटेर उछिन्ने काम नगर्ने (१)
 - आफ्नो लेनमा चलाउने (१)
 - चौवाटोको धेरै नजिक, रोक्न निषेध गरेको ठाउँ र जेब्रा क्रसिङमा नरोक्ने (१)
 - जेब्रा क्रसिङमा उभिएका पदयात्रुलाई पहिले जान दिएर गाडी चलाएमा (२)
 - धेरैजसो हर्न बजाउनु सट्टा सवारीको गति घटाउनु प्रभावकारी हुन्छ, त्यसैले अति आवश्यक परेको समयमा वाहेक अन्य समयमा हर्न नबजाएमा (१)
 - ट्राफिक संकेत पहेँलो भएको समयमा जेब्रा क्रसिङ वरिँ गाडी भएतापनि नरोकी गाडी अगाडि नबढाउने (संकेत पहेँलो भएको समयमा गाडीले जेब्रा क्रसिङ पार गरिसकेको अवस्थामा भने गाडी रोक्न हुँदैन) (२)
 - ट्राफिक संकेत रातो भएको समयमा नचलाउने (२)
 - गाडी मोड्दा र पछाडि लगदा ऐनाको प्रयोग नगरी भ्यालबाट टाउको निकालेर नहेर्ने (२)
 - गाडी मोड्दा साइडलाइट र पछाडि लगदा ब्याक लाइटको प्रयोग नगर्ने (२)

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प्रशासन सेवा, सवारी समूह, सवारी चालक पद, प्रारम्भिक तहको सिमित प्रतियोगितात्मक परीक्षाको पाठ्यक्रम
अभ्यास ३: उकालोमा पार्क गर्ने र पुनः चलाउने (१०)

- उकालो सडकमा सवारी रोक्न लगाउने र इग्निसन बन्द गर्न लगाउने
- इग्निसन पुनः चालु गर्न र सवारी अगाडि बढाउन लगाउने
- अङ्कहरू निम्नानुसार दिने :
 - सडकको सकभर छेउमा नरोकी अन्य सवारीको आवागमनमा बाधा पुग्ने गरी रोक्न नहुने (२)
 - स्टार्ट बन्द गरी इग्निसनवाट साँचो भिक्नुजेल निम्न काम गरेको हुनुपर्ने ह्याण्ड ब्रेक लगाएको, पहिलो गियरमा राखेको, पाङ्ग्रामा टेका दिएको, अगाडिको पाङ्ग्राहरु सिधा नराखि बङ्ग्याएको, सडकमा पेटी भए अगाडिको पाङ्ग्राहरुलाई त्यसमा अड्याएको (३)
 - इग्निसन पुनः चालु गरी सवारी अगाडि बढाउन खोज्दा स्टार्ट बन्द हुन नदिने (२)
 - सवारी अगाडि बढाउन खोज्दा केही पछाडि नसर्नुपर्ने (३)

अभ्यास ४: ग्यारेज पार्क गर्ने (एल पार्किङ गर्ने) (१०)



नोट:

- यो परीक्षाका लागि सवारीको डेढ गुणा लम्बाई र डेढ गुणा नै चौडाई भएको चिन्ह लगाउनु पर्दछ । यसरी चिन्ह लगाईएको ठाउँ (ग्यारेज) भित्र परीक्षार्थीलाई गाडी ब्याक गर्न लगाइ पार्क गर्न लगाउनु पर्दछ ।
- परीक्षा लिइने स्थान समतल हुनु पर्दछ ।
- अङ्कहरू निम्नानुसार दिने :
 - सिधा तोकिएको रेखामा उल्टा हाक्न सक्ने हुनुपर्ने (केन्द्र भन्दा टाढा किनारा, किनारा लग्नु) (२)
 - उल्टा हाँक्दा चारैतिर दृष्टि पुऱ्याउन सक्नुपर्ने (१)
 - लगाइएको चिन्हको ट्राफिक कोन, डण्डा वा डोरी वा टेपलाई छुन नहुने (२)
 - स्टेयरिङ्ग एकनासले घुमाउन सक्नुपर्ने (१)
 - सवारीलाई पार्क गर्न तोकिएको स्थानको माझमा राख्न सक्ने हुनुपर्ने (२)
 - पार्क गर्न अति लामो समय लिन नहुने (१)
 - ऐनाहरुको प्रयोग नगरी भ्यालबाट टाउको बाहिर निकालेर हेर्न नहुने (१)

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यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- २०

प्रथम चरण (First Phase) : परीक्षा योजना (Examination Scheme)

पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली	प्रश्नसंख्या X अङ्क	समय
प्रथम	Technical Subject	१००	५०	वस्तुगत बहुवैकल्पिक प्रश्न	५० प्रश्न x २ अङ्क	४५ मिनेट

द्वितीय चरण (Second Phase)

विषय	पूर्णाङ्क	परीक्षा प्रणाली
अन्तर्वार्ता	२०	मौखिक

द्रष्टव्य :

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरूको गलत उत्तर दिएमा प्रत्येक गलत उत्तर बापत २० प्रतिशत अङ्क कट्टा गरिनेछ । तर उत्तर नदिएमा त्यस बापत अङ्क दिइने छैन र अङ्क कट्टा पनि गरिने छैन ।
- वस्तुगत बहुवैकल्पिक हुने परीक्षामा परीक्षार्थीले उत्तर लेख्दा अंग्रेजी ठूलो अक्षर (Capital letter) A, B, C, D मा लेख्नुपर्नेछ । सानो अक्षर(Small letter) a, b, c, d लेखेको वा अन्य कुनै सङ्केत गरेको भए सबै उत्तरपुस्तिका रद्द हुनेछ ।
- बहुवैकल्पिक प्रश्नहरू हुने परीक्षामा कुनै प्रकारको क्याल्कुलेटर (Calculator) प्रयोग गर्न पाइने छैन ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम तथा नीतिहरू परीक्षाको मिति भन्दा ३ महिना अगाडि (संशोधन भएका वा संशोधन भई हटाईएका वा थप गरी संशोधन भई) कायम रहेकालाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।

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Paper I : Technical subject

भाग १- खानेपानी

- १.१ ग्रेभिटी फ्लो सिस्टम
- १.१.१ योजना अवधि, जनसंख्या तथा पानीको माग
- परिचय
 - योजना अवधि
 - दैनिक पानीको माग
- १.१.२ खानेपानी आयोजना
- परिचय
 - पानीको मुहानको छनौट
- १.१.३ इन्टेक
- परिचय
 - इन्टेकका किसिम
 - इन्टेकको सुरक्षा वा मर्मत सम्भार
- १.१.४ ब्रेक प्रेसर ट्याङ्की (वि.पि.टी.)
- परिचय तथा आवश्यकता
 - ब्रेक प्रेसर ट्याङ्की बनाउने ठाउँ
 - ब्रेक प्रेसर ट्याङ्कीको किसिम
 - ब्रेक प्रेसर ट्याङ्कीको निर्माण कार्य
- १.१.५ रिजर्भ्वार् ट्याङ्की
- परिचय तथा आवश्यकता
 - रिजर्भ्वार् ट्याङ्की बनाउने ठाउँ
 - रिजर्भ्वार् ट्याङ्की निर्माण कार्य
- १.१.६ फेरो सिमेण्ट रिजर्भ्वार् ट्याङ्की
- परिचय
 - फाइदा र बेफाइदाहरु
 - फेरो सिमेण्ट ट्याङ्कीको निर्माण
- १.१.७ पाइपलाइन
- परिचय
 - पाइप लाइनका किसिम
 - पाइप लाइन बिछ्याउनु, खन्ने र पुर्ने काम
 - पाइप गाड्नु पर्ने आवश्यकता
 - पाइप लाइनमा हुने रोकावटहरु
 - पाइप लाइनमा रोकावट पत्ता लगाउने तथा हटाउने उपायहरु
- १.१.८ सार्वजनिक धारा
- परिचय
 - धारा बनाउने ठाउँ
 - सार्वजनिक धाराको निर्माण कार्य
- १.२ निर्माण
- १.२.१ परिचय
- १.२.२ सिमेण्ट
- हाइड्रेशन
 - जम्ने प्रकृया
 - कडा हुने प्रकृया
 - सिमेण्ट राख्ने तरिका

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- १.२.३ बालुवा
- १.२.४ गिट्टी
- १.२.५ पानी
- १.२.६ सिमेण्ट मसाला
- १.२.७ ढुंगाको गारो
- १.२.८ कंकट
 - कंकट ओसारने काम
 - फर्मा तयार पार्ने
 - कंकट खन्याउने तरिका
 - कंकट खाँदने तरिका
 - कंकट ब्योरिङ गर्ने काम
 - फर्मा हटाउने काम
- १.२.९ टिपकार (प्वाइन्टिङ गर्ने काम)
- १.२.१० प्लाष्टर गर्ने काम ।
- १.२.११ सिमेण्ट पनिङ लगाउने काम
- १.३ पाइप फिटिङ
 - १.३.१ पाइप
 - परिचय
 - पाइपका किसिम
 - पाइपका गुण तथा अवगुण
 - १.३.२ सि.आई/जि.आई/एच.डि.पि. फिटिङ
 - परिचय
 - प्रकार
 - काम र महत्व
 - १.३.३ पाइप फिटिङ तथा जडान
 - १.३.४ ट्यूबवेल
 - परिचय
 - भूमिगत जल
 - स्यालो तथा डिप ट्यूबवेल
 - ट्यूबवेलमा प्रयोग हुने सामग्री
 - ट्यूबवेल जडानको विधि
 - मर्मत तथा सम्भार
 - ट्यूबवेल केयरटेकर तथा उपभोक्ता समिति
 - १.३.५ इनार
 - परिचय
 - प्रकार
 - निर्माण विधि
 - मर्मत तथा सम्भार

भाग २ - सरसफाइ

- २.१ पानी
 - परिचय
 - पानीका श्रोत
 - स्वस्थ पानी
- २.१.१ पानी सुरक्षित राख्ने तरिका
- २.१.२ मुहान देखि मुखसम्म पानी कसरी सुरक्षित राख्न सकिन्छ
- २.१.३ सरसफाइ

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प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

- परिचय
 - किसिम र आवश्यकता
 - सरसफाइको महत्व
 - घरबाट निस्किएको फोहर पानीको व्यवस्थापन
 - फोहर मैलाको व्यवस्थापन
 - ठोस, प्लाष्टिक र सिसा जस्ता फोहरको व्यवस्थापन
- २.१.४ पानीजन्य सरुवा रोग
- परिचय
 - सरुवा रोगको किसिम
 - रोग सार्ने माध्यम
 - सरुवा रोगबाट बच्ने उपाय
 - खोप, पौष्टिक आहार, भाडापखाला र जुका सम्बन्धी जानकारी
- २.१.५ चर्पी
- परिचय
 - चर्पीको आवश्यकता
 - चर्पीका किसिम
 - चर्पीको निर्माण विधि
 - चर्पीको फाइदा
 - चर्पीको मर्मत सम्भार
 - चर्पीको प्रयोग विधि
- २.१.६ सुधारिएको चुल्हो
- परिचय
 - फाइदा र बेफाइदा
 - बनाउने तरिका

३. निजामती कर्मचारी अस्पताल र यसको नियमावली सम्बन्धी सामान्य जानकारी



लोक सेवा आयोग

(पाठ्यक्रम तथा मूल्यांकन शाखा)



पत्र संख्या :- ०७९/८०
चलानी नं.



फोन नं.:- ४७७०५५०
फ्याक्स नं.:-४७७९४९०
केन्द्रीय कार्यालय
कमलपोखरी, काठमाडौं ।

क्र.सं.	सिनियर रजिष्ट्रार (स्पेशलिष्ट)	नवौ	प्राविधिक	फ्यामिली मेडिसिन एण्ड इमर्जेन्सी	फ्यामिली मेडिसिन एण्ड इमर्जेन्सी
९	सिनियर रजिष्ट्रार (स्पेशलिष्ट)	नवौ	प्राविधिक	सर्जरी	अर्थोपेडिक सर्जरी
१०	रजिष्ट्रार	आठौ	प्राविधिक	मेडिसिन	इन्टरनल मेडिसिन
११	रजिष्ट्रार	आठौ	प्राविधिक	मेडिसिन	रेडिएशन अन्कोलोजी
१२	रजिष्ट्रार	आठौ	प्राविधिक	पेडियाट्रीक्स	पेडियाट्रीक्स
१३	रजिष्ट्रार	आठौ	प्राविधिक	सर्जरी	अर्थोपेडिक सर्जरी
१४	रजिष्ट्रार	आठौ	प्राविधिक	फ्यामिली मेडिसिन एण्ड इमर्जेन्सी	फ्यामिली मेडिसिन एण्ड इमर्जेन्सी
१५	रजिष्ट्रार	आठौ	प्राविधिक	अबस्ट्रेटिक्स एण्ड गाइनेकोलोजी	अबस्ट्रेटिक्स एण्ड गाइनेकोलोजी
१६	रजिष्ट्रार	आठौ	प्राविधिक	सर्जरी	जनरल सर्जरी
१७	रजिष्ट्रार	आठौ	प्राविधिक	प्याथोलोजी	जनरल प्याथोलोजी
१८	रजिष्ट्रार	आठौ	प्राविधिक	अटोरिनोल्यारिज्ञोलोजी	अटोरिनोल्यारिज्ञोलोजी
१९	रजिष्ट्रार	आठौ	प्राविधिक	डर्माटोलोजी	डर्माटोलोजी
२०	रजिष्ट्रार	आठौ	प्राविधिक	रेडियोलोजी	रेडियो डाइग्नोसिस एण्ड इमेजीङ्
२१	रजिष्ट्रार	आठौ	प्राविधिक	एनेस्थेसियोलोजी	एनेस्थेसियोलोजी
२२	प्रशासकीय अधिकृत	छैटौ	प्रशासन	प्रशासन	सामान्य प्रशासन
२३	फिजियोथेरापिस्ट	छैटौ	प्राविधिक	फिजियोथेरापी	फिजियोथेरापी
२४	रेडियोग्राफी टेक्नोलोजिस्ट	छैटौ	प्राविधिक	रेडियोलोजी	रेडियोग्राफी
२५	प्रशासन सहायक पाचौ	सहायक पाचौ	प्रशासन	प्रशासन	सामान्य प्रशासन
२६	स्टाफ नर्स	सहायक पाचौ	प्राविधिक	नर्सिङ	नर्सिङ
२७	प्रशासन उपसहायक	सहायक चौथो	प्रशासन	प्रशासन	सामान्य प्रशासन
२८	लेखा उपसहायक	सहायक चौथो	प्रशासन	प्रशासन	आर्थिक प्रशासन
२९	रेडियोग्राफर	सहायक पाचौ	प्राविधिक	रेडियोलोजी	रेडियोग्राफी

(Handwritten signature)



लोक सेवा आयोग

(पाठ्यक्रम तथा मूल्यांकन शाखा)

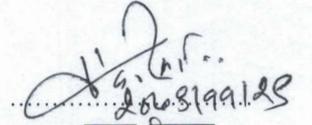


पत्र संख्या :- ०७९/८०
चलानी नं.



फोन नं.:- ४७७०५५०
फ्याक्स नं.:-४७७९४९०
केन्द्रीय कार्यालय
कमलपोखरी, काठमाडौं ।

३०	फार्मसी सहायक	सहायक पाचौं	प्राविधिक	फार्मसी	फार्मसी
३१	ल्याव टेक्निसियन	सहायक पाचौं	प्राविधिक	प्याथोलोजी	मेडिकल ल्याव टेक्नोलोजी
३२	फिजियोथेरापी सहायक	सहायक पाचौं	प्राविधिक	फिजियोथेरापी	फिजियोथेरापी
३३	वायोमेडिकल टेक्निसियन	सहायक पाचौं	प्रशासन	इन्जिनियरिङ तथा मेन्टेनेन्स	वायोमेडिकल
३४	ओ.पी.डी. सहायक	सहायक चौथो	प्राविधिक	नर्सिङ	ओ.पी.डी.
३५	डेन्टल हाइजिनीस्ट	सहायक चौथो	प्राविधिक	डेन्टिष्ट्री	डेन्टल हाइजिन
३६	प्लम्बर	प्रारम्भिक	प्रशासन	इन्जिनियरिंग तथा मेन्टेनेन्स	स्यानिटेसन
३७	सवारी चालक	प्रारम्भिक	प्रशासन	सवारी	


मदन रिमाल
(मनोविज्ञानवेत्ता)