

**सशास्त्र प्रहरी बल**  
**प्राविधिक सशास्त्र प्रहरी नायव निरीक्षक (रेडियोग्राफर) पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम**  
**एवं परीक्षा योजना**

पाठ्यक्रमको रूपरेखा :- यस पाठ्यक्रमको आधारमा निम्नानुसार चरणमा परीक्षा लिइने छ :

प्रथम चरण :- लिखित परीक्षा

पूर्णाङ्क :- १००

द्वितीय चरण :- अन्तर्वार्ता

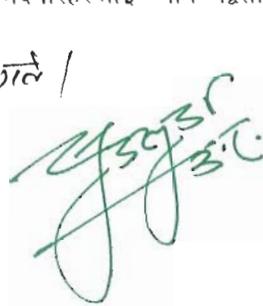
पूर्णाङ्क :- २०

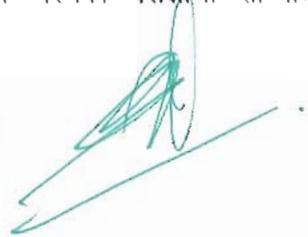
१. प्रथम चरण :- लिखित परीक्षा				पूर्णाङ्क :- १००			
पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
प्रथम	सेवा सम्बन्धी र सामान्य ज्ञान	१००	४०	वस्तुगत	बहुवैकल्पिक प्रश्न	५० प्रश्न X १ अङ्क	२ घण्टा ३० मिनेट
				विषयगत	छोटो उत्तर लामो उत्तर	८ प्रश्न X ५ अङ्क १ प्रश्न X १० अङ्क	
२. द्वितीय चरण :- अन्तर्वार्ता							
	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली			समय
	अन्तर्वार्ता	२०	-	मौखिक			

**द्रष्टव्य :**

- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- लिखित परीक्षामा यथासम्भव पाठ्यक्रमका सबै एकाईबाट प्रश्नहरु सोधिनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरुको 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 ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भए तापनि पाठ्यक्रममा परेका कानून, ऐन, नियम 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 ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति :- २०७२/०४/२३ गते ।







सशास्त्र प्रहरी बल  
प्राविधिक सशास्त्र प्रहरी नायब निरीक्षक (रेडियोग्राफर) पदको खुला प्रतियोगितात्मक लिखित परीक्षाको पाठ्यक्रम

पत्र/विषय :- सेवा सम्बन्धी र सामान्य ज्ञान

खण्ड (A) : 80 Marks

1. Anatomy and Physiology

- 1.1 General introduction of cell and reproduction of the individual
- 1.2 Tissues - epithelial, connective, skeletal, muscular and nervous
- 1.3 General pathology - bacteria, viruses and tumours
- 1.4 Surface and regional anatomy - anatomical position, head, neck, thorax, abdomen and pelvic cavity
- 1.5 Skeleton System
  - 1.5.1 Structure, function, development and growth of bones; and healing of fractures
  - 1.5.2 Skull - skull viewed from the above and the below, skull viewed from the side and the front, interior of the skullcap, interior of the base of the skull, nasal cavity, accessory nasal sinuses, individual bones of the skull
  - 1.5.3 Vertebral column, ribs and sternum
  - 1.5.4 Bones of the upper limb - clavicle, scapula, humerus, radius, ulna, carpal, metacarpal, phalanges, arteries and nerves related to the bones, ossification
  - 1.5.5 Bones of the lower limb - hipbone, pelvis, femur, patella, tibia, fibula, tarsal bones, metatarsal bones, phalanges, arches of the foot, arteries and nerves related to the bones, ossification
  - 1.5.6 Joints of the bones of the lower limb - types of joints, muscles and joints of the head, joints and muscles of the neck and trunk, joints and muscles of the upper limb, joint and muscles of the lower limb
- 1.6 Circulatory System - blood, blood vessels, heart, pulmonary circulation, systemic circulation and veins
- 1.7 Lymphatic System - lymph, lymphatic vessels, lymph nodes, lymphatic drainage of the body, lymphatic tissue and spleen
- 1.8 Respiratory System - nose, pharynx, larynx, trachea, bronchi, lungs, physiology of respiration
- 1.9 Digestive System - mouth, salivary glands, pharynx, oesophagus, stomach, small intestine, large intestine, pancreas, liver, biliary apparatus and function of the alimentary system
- 1.10 Urinary System - kidneys, ureters, urinary bladder, urethra functions of kidneys and control of micturition
- 1.11 Nervous System - nervous tissue, central nervous system, brain, spinal cord, peripheral nervous system and autonomic nervous system
- 1.12 Endocrine System - pituitary, thyroid, parathyroid and adrenal glands
- 1.13 Reproductive System - male and female
- 1.14 Skin and the organs of special sense - eye, ear, nose and tongue

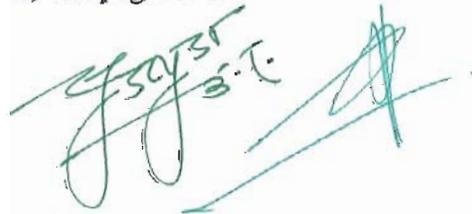
## 2. Radiographic Technique

### 2.1 General radiography

- 2.1.1 Routine Radiography Technique for upper limb : fingers, thumb, hand, wrist forearm, elbow, humerus, shoulder, scapula, clavicle
- 2.1.2 Routine Radiography Technique for the lower limb : toes, foot, calcaneum, ankle, tibia, fibula, knee, femur, hip joint, neck of femur, pelvis
- 2.1.3 Routine Radiographic technique for thoracic cage and its contents : chest, heart, ribs and sternum
- 2.1.4 Routine technique for the abdomen - plain and erect abdomen x-ray
- 2.1.5 Routine technique for the spine - cervical, thoracic, lumbar, sacrum and coccyx, sacro-illiac joint
- 2.1.6 Routine technique for the skull - radiograph anatomical landmarks of the skull and process of routine examination of the bones of skull (cranium, facial bone and mandible)
- 2.1.7 To locate the following by x-rays (scaphoid, foreign body in the hand, head of humerus and axial shoulder, acromio-calvicular joints, sterno-calvicular joints, foreign body in the foot, lateral foot weight bearing, skyline view of patella, tibial Tuberosity)
- 2.1.8 Supplementary views of the chest and abdomen (apical views, lordotic view and decubitus, oblique views for heart size & lateral with barium swallow, thoracic inlet, diaphragm excursion, inhaled or swallowed foreign body, imperforated anus); purposes of these views
- 2.1.9 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-illiac joints, illum, acetabulum, pelvimetry, skeleton survey
- 2.1.10 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)
- 2.1.11 Registration process - steps of registration of patients; importance of a monthly and annual record, filing system and preparing the performance invoices; filing of radiographs and reports (x-ray No, hospital number, patient's name, cross reference bill, with patient's name)

### 2.2 Radiographic examination with contrast media

- 2.2.1 Contrast media – definition, types, methods of introducing, reactions; name of the emergency equipments and drugs needed to cope with reactions
- 2.2.2 Radiographic investigation of gastro-intestinal tract using contrast media - Barium swallow, Barium meal, Barium follow through, Examination of GI tract, Ba-enema, Small bowel enema, Loopogram and state the role of a radiographer during fluoroscopy



## सशस्त्र प्रहरी बल

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- 2.2.3 Investigation of urinary tract and hystero salpinogram - Intravenous Urogram, Cystogram, Micturating cystogram, Urethrogram, Retrograde pyelogram and Hystero salpinogram
- 2.2.4 Radiographic procedure of the Biliary tract - percutaneous transhepatic cholangiography and drainage, Endoscopic retrograde cholangio pancreatography, Operative cholangiography and T. Tube cholangiography
- 2.2.5 Use of portable/mobile x-ray in ward and operation theatre - uses of mobile machine, technique of using ward radiography, technique of using operating theatre radiography, technique to help in Hip pinning and technique of operative-cholangiography
- 2.2.6 Vascular and Neurological examinations - Carotid and vertebral angiogram, Femoral angiogram, Aortogram, Phlebogram and Myelogram
- 2.2.7 Special examinations - Arthrogram, Dacryocystogram, Sinogram/ Fistulogram, Sialogram, Mammogram, Macro-radiography and Soft tissue radiography

### 3. Patient Care and Management

- 3.1 Hospital, Patient and Radiographer - clinical and legal responsibility
- 3.2 Features of general patient care - general preliminaries to the examination, moving chair and stretcher patients, anaesthetized patient, hygiene in the x-ray department, general comfort and reassurance for the patient
- 3.3 Drugs in the x-ray department - poisons and dangerous drugs, units of measurement, drugs used in preparation of the patient, contrast agents used in x-ray examinations, drugs used in resuscitation, labeling and issuing
- 3.4 Sterilization and sterile techniques - methods of sterilization, central sterile supply, preparation of the hands for aseptic procedures
- 3.5 Preparation of the patient - general abdominal preparation, clothing of the patient
- 3.6 First aid in the x-ray department - radiological emergencies, shock, hemorrhage burns, scalds, loss of consciousness, asphyxia, fractures and electric shock
- 3.7 Medico-legal aspects of the radiographer's work - breach of professional confidence, negligence, procedure in the event of an accident and importance of records

### 4. Radiographic Photography

- 4.1 Film - construction and composition of x-ray film, types of x-ray film, characteristic curve, special sensitivity and role of dyeing, film speed, density, contrast, sensitometry, artifacts and its causes
- 4.2 Intensifying Screen - construction and composition, screen speed, sharpness, coating weight, fluorescent material and phosphorescence, new phosphors
- 4.3 Image - production of radiographic image; component of radiographic image - contrast, sharpness, resolution, exposure factors and absorption coefficient

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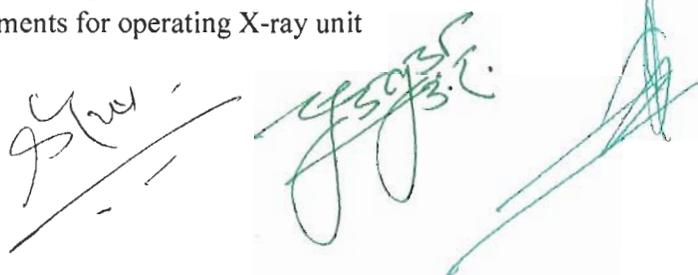
- 4.4 Film processing - manual film processing - processing cycle, tanks and containers for processing chemical, processing units, mixing chemicals, storage of chemicals, film hangers; automatic processor - basic principle and its functioning
- 4.5 Dark room planning - location, layout, radiation protection, safelight filter and sensitivity range
- 4.6 Identification - methods and importance
- 4.7 Silver recovery - general introduction

### 5. Radiographic equipment

- 5.1 Historical background of x-ray and its production - X-ray tube construction; stationary and rotating x-ray tube and recent advancement; Tube rating cooling and care of x-ray tube and its faults
- 5.2 Control panel, x-ray table and tube column - type of x-ray table, different metering equipment, X-ray tube support
- 5.3 Fluoroscopic equipment – conventional and digital fluoroscopy, image intensifier tube
- 5.4 Control of scatter radiation and beam restricting devices - secondary radiation grids, air gap technique
- 5.5 Portable and mobile x-ray units - capacitor discharge and c-arm
- 5.6 Computed and Direct Digital Radiography
- 5.7 Introduction to modern modalities (CT, MRI, mammography)

### 6. Radiation Physics

- 6.1 Atomic structure – nucleus, electron orbits and energy levels
- 6.2 Production and properties of x-ray - general radiation (Bremsstrahlung), characteristic radiation, intensity of x-ray beams, target material, voltage applied
- 6.3 Basic interactions between x-rays and matter - coherent scattering, photoelectric effect, Compton scattering, pair production, photodisintegration
- 6.4 Radiation measurement and units - construction and working of the free air ionization chamber; Thimble ionization chamber and condenser ionization chamber
- 6.5 Radiation protection - historical introduction or why the protection is necessary against the radiation, maximum permissible dose, tabulation of the recommended maximum permissible doses for the different parts of the body, following the code of practice, identifying the protective materials
- 6.6 Personnel monitoring - necessity of personnel monitoring and monitoring instruments (film badge, ionization chamber and thermoluminescent dosimeter)
- 6.7 Safety requirements for operating X-ray unit



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खण्ड (B): 20 Marks

7. सामान्य ज्ञान तथा ऐन, नियमहरू

- 7.1 नेपालको भौगोलिक, ऐतिहासिक, आर्थिक, सामाजिक, सांस्कृतिक अवस्था सम्बन्धी जानकारी
- 7.2 राष्ट्रिय र अन्तर्राष्ट्रिय महत्वका समसामयिक घटनाहरू : राजनैतिक, आर्थिक, वैज्ञानिक, खेलकूद
- 7.3 विद्यमान नेपालको संविधानको सामान्य जानकारी
- 7.4 सशस्त्र प्रहरी बल सम्बन्धी सामान्य जानकारी
- 7.5 सशस्त्र प्रहरी ऐन, २०५८ र सशस्त्र प्रहरी नियमावली, २०७२

यस पत्र/विषयको पाठ्यक्रमबाट यथासम्भव निम्नानुसार प्रश्नहरू सोधिनेछ।

खण्ड	अङ्कभार	प्रश्न संख्या	
		वस्तुगत	विषयगत
A	८०	३० प्रश्न X १ अङ्क = ३०	८ प्रश्न X ५ अङ्क = ४० १ प्रश्न X १० अङ्क = १०
B	२०	२० प्रश्न X १ अङ्क = २०	-