

वि.पि. कोइराला मेमोरियल क्यान्सर अस्पताल
प्राविधिक (स्वास्थ्य) सेवा, मेडिकल (चिकित्सक) समुह, प्याथोलोजी उपसमूह, रजिष्ट्रार पदको खुला र आन्तरिक
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम एवं परीक्षा योजना

१. प्रथम चरण : – लिखित परीक्षा						पूर्णाङ्क :- १००	
पत्र	विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली		प्रश्नसंख्या X अङ्क	समय
प्रथम	प्राविधिक विषय र सम्बन्धित कानूनहरु	१००	४०	वस्तुगत	बहुवैकल्पिक प्रश्न	१०० प्रश्न x १ अङ्क	१ घण्टा ३० मिनेट
२. द्वितीय चरण : – प्रयोगात्मक							
विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली			समय	
प्रयोगात्मक	३०	-	प्रयोगात्मक				
३. तृतीय चरण : – अन्तर्वार्ता							
विषय	पूर्णाङ्क	उतीर्णाङ्क	परीक्षा प्रणाली			समय	
अन्तर्वार्ता	२०	-	मौखिक				

द्रष्टव्य :

- यो परीक्षा योजनालाई प्रथम चरण (लिखित परीक्षा), द्वितीय चरण (प्रयोगात्मक) र तृतीय चरण गरी तीन चरणमा विभाजन गरिएको छ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- लिखित परीक्षामा यथासम्भव पाठ्यक्रमका सबै एकाईबाट प्रश्नहरु सोधिनेछ ।
- विषयगत प्रश्नमा प्रत्येकपत्र/विषयका प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरु हुनेछन् । परिक्षार्थीले प्रत्येक खण्डका प्रश्नहरुको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रम योजना अन्तर्गतका पत्र/विषयका विषयवस्तुमा जेसुकै लेखिएको भएतापनि 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 दोस्रो चरणको परीक्षामा सम्मिलित गराईनेछ । दोस्रा चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरुलाई मात्र तृतीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- वस्तुगत बहुवैकल्पिक (Multiple Choice) प्रश्नहरुको गलत उत्तर दिएमा अङ्क कट्टा गरिने छैन ।
- पाठ्यक्रम लागू मिति :- २०७३/४/३०

यस पत्र/विषयको पाठ्यक्रमबाट यथासम्भव निम्नानुसार प्रश्नहरु सोधिनेछ ।

खण्ड	अङ्कभार	प्रश्न संख्या
		वस्तुगत
A	९०	९० प्रश्न X १ अङ्क = ९०
B	१०	१० प्रश्न X १ अङ्क = १०

बि.पि. कोइराला मेमोरियल क्यान्सर अस्पताल
प्राविधिक (स्वास्थ्य) सेवा, मेडिकल (चिकित्सक) समुह, प्याथोलोजी उपसमुह, रजिष्ट्रार पदको खुला र आन्तरिक
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम एवं परीक्षा योजना

Section (A) – 10 Marks

1. B.P.Koirala Memorial Cancer Hospital, Related Legislations and General Health Issues

- 1.1. B.P.Koirala Memorial Cancer Hospital : History, organizational structure, functions, roles, services, problems and challenges
- 1.2. National Health Policy
- 1.3. B.P.Koirala Memorial Cancer Hospital related act and regulations
- 1.4. Health Service Act, 2053 and Health Service Regulation, 2055
- 1.5. Professional council related acts and regulations
- 1.6. NMC and National Health Agencies
- 1.7. Professional and medical ethics

Technical Subject

Section (B) – 90 Marks

1. General Pathology

- 1.1 **Cellular adaptation, injury and death:** cellular response to injury, growth and differentiation, Morphology of cell injury and necrosis, apoptosis, intracellular accumulations, calcification
- 1.2 **Acute and chronic inflammation:** general features, cells and chemical mediators involved, events, outcome
- 1.3 **Tissue repair and renewal:** Normal cell proliferation and tissue growth, their control, mechanism of tissue regeneration, repair by healing , scar and fibrosis, healing by first and second intention, factors effecting wound healing,
- 1.4 **Hemodynamic disorders:** Normal hemostasis, thrombosis and embolism, Infarction, Shock, Disseminated intravascular coagulation
- 1.5 **Genetic diseases:** Mutations, Mendelian disorders, Karyotyping, Diagnosis of genetic diseases
- 1.6 **Diseases of immunity:** Types of immunity, cell involved, cytokines, Histocompatibility molecules, Hypersensitivity reaction and types, Autoimmune diseases, Immunological immunodeficiency syndromes, AIDS, Amyloidosis
- 1.7 **Neoplasia:** Definition, nomenclature, biology of tumor growth, cell cycle, Molecular basis of cancer, Carcinogenic agents, paraneoplastic syndrome, tumor markers, clinical features of tumors, grading and staging, laboratory diagnosis of cancer
- 1.8 **Environmental and nutritional pathology:** Common environmental and occupational hazards, food safety, nutrition deficiencies.
- 1.9 **Infectious disease:** General principle of microbial pathogenesis, Agents of bioterrorism, Infections in immunocompromised host, Special techniques in diagnosing infectious agent

2. Histopathology

- 2.1 Gross anatomy, relevant physiology and histology of specimens and tissues of gastrointestinal (GIT), cardiovascular (CVS), respiratory (RS) systems, genitourinary system, male and female reproductive system, Endocrine system, central nervous system, peripheral nervous system, Musculoskeletal system and neurosensory system.
- 2.2 **Skin:** Inflammatory diseases, dermatoses, vesiculobullous diseases, degenerative diseases, tumors And tumor like conditions
- 2.3 **Oral cavity and oropharynx:** Congenital anomalies, inflammatory and non neoplastic diseases, Tumors and tumor like conditions of surface epithelium, odontogenic epithelium , disease of temporomandibular joints. Tumors and tumor like lesions of salivary gland of Salivary gland

- 2.4 **Respiratory system & mediastinum:** Inflammations, cysts, neoplastic diseases of larynx and trachea. Pleuritis, tumors of pleura, Non neoplastic diseases of lung. Lung tumors. Cyst in mediastinum, mediastinal tumors
- 2.5 **Endocrine system;** Congenital anomalies, inflammatory lesions, tumors and tumor like conditions of thyroid, parathyroid, adrenal glands and paraganglia, pituitary, hypothalamus
- 2.6 **Urinary tract:** Congenital anomalies, cystic diseases of kidney, Glomerular lesion associated with nephrotic and nephritic syndrome, vascular lesions, Hereditary diseases, pyelonephritis, interstitial nephritis, Renal transplant rejection, lithiasis. tumors, tumor like conditions.
- 2.7 **Male Reproductive system:** Congenital anomalies, cryptorchidism, atrophy and infertility, Tumors of testes and paratesticular tissue, hydrocele, Prostatitis, Prostatic hyperplasia, Tumors of prostate
- 2.8 **Female reproductive system:** Inflammatory and other non neoplastic disease of vulva and vagina, Pelvic inflammatory diseases, Lesions of cervix. Cervical intraepithelial neoplasia, Tumors of cervix, Menstrual cycle, Endometrial dating, Non neoplastic and neoplastic lesions of uterus. Abortion, ectopic pregnancy, endometriosis Lesion of ovary, polycystic ovarian diseases, ovarian tumors, Gestational trophoblastic diseases, lesions of placenta, Neoplastic and non neoplastic disease of fallopian tubes, Inflammatory, other non neoplastic and neoplastic disease of breast
- 2.9 **Gastrointestinal tract:** Congenital anomalies of GIT, Reflux and other esophagitis, tumors and tumor like conditions of esophagus Gastritis and Peptic ulcers, Polyps of stomach and intestine, tumors and tumor like conditions of stomach, Gastrointestinal stromal tumors, Malabsorption, Diseases associated with malabsorption, inflammatory bowel disease, Intestinal obstruction, AIDS related inflammatory diseases of intestine, tumors and tumor like conditions of intestine, Infections, hemorrhoids, rectal prolapse, diseases of peritoneum and retroperitoneum
- 2.10 **Hepatobiliary System:** Viral hepatitis, Cirrhosis, Alcohol, drug and toxin induced liver injury, Cholestasis, disorders of metabolism, vascular disorders, Liver diseases in pregnancy, Liver involvement in systemic illness, Liver pathology in organ transplant, tumors and tumor like conditions of liver, Cholelithiasis, cholecystitis, Tumors of gall bladder and intra as well as extrahepatic bile ducts, Pancreatitis, tumors and tumor like conditions pancreas, Ampullary carcinoma
- 2.11 **Cardiovascular system:** congenital anomalies, Myocardial infarction, atherosclerosis, vasculitis and other vascular disorders, Hypertension, Tumors of heart and pericardium, Rheumatic heart diseases, infective endocarditis, valvular anomalies, myocarditis and cardiomyopathies, blood vessels tumors,
- 2.12 **Musculoskeletal system:** Fractures, Osteomyelitis, Paget disease, osteopetrosis, tumors and tumor like lesions of bone Non neoplastic diseases of joints, gout,

बि.पि. कोइराला मेमोरियल क्यान्सर अस्पताल
प्राविधिक (स्वास्थ्य) सेवा, मेडिकल (चिकित्सक) समुह, प्याथोलोजी उपसमूह, रजिष्ट्रार पदको खुला र आन्तरिक
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम एवं परीक्षा योजना

rheumatoid arthritis, osteoarthritis, tumors and tumor like lesions of joints,
histopathological evolution of bonemaro biopsies

2.13 **Neurosensory system**;, Tumors of brain and meninges, Neuropathies, Disaeses of
peripheral nerves, tumors and tumor like lesions of eye and ear

2.14 **Lymphoreticular system**: Lymph node evaluation, patterns of hyperplasia,
Inflammatory/hyperplastic disease of lymph node, Malignant lymphomas,
metatstic tumors, Congenital anomalies of spleen, neoplastic and nonneoplastic
diseases of spleen, Hypersplenism

3. **Cytopathology**

3.1 Role of Diagnostic Cytology

3.2 Structure and function of cells, morphological features of dysplasia

3.3 Basic Cytogenetics and the Role of Genetics in Cancer Development

3.4 Chromosomal aberration in cancer

3.5 Clinical application of conventional cytogenetics and molecular methods in
cytology

3.6 Evaluation of various samples in conventional smears and liquid based
preparations

3.7 Cell blocks and its use in cytological diagnosis

3.8 Immunochemistry and Molecular Biology in Cytological Diagnosis

3.9 Digital Analysis of Cells and Tissues

3.10 Flow Cytometry

3.11 Advanced techniques in diagnostic cytopathology

4. **Haematology**

4.1 Formation and development of Erythrocytes, Leucocytes, thrombocytes

4.2 Classification of leukemia

4.3 Interpretation of clinical features, peripheral smears and bone marrow findings
to diagnose different types of leukemia.

4.4 Diagnosis of acute myeloid leukemia and subtype it.

4.5 Diagnosis of acute lymphoblastic leukemia and subtyping it.

4.6 Interpretation of clinical features, lab findings, peripheral smears and bone
marrow findings to diagnose different myeloproliferative disorders.

4.7 Interpretation of clinical features, lab findings, peripheral smears and bone
marrow findings to diagnose different myelodysplastic syndrome.

4.8 Interpretation of clinical features, lab findings, peripheral smears and bone
marrow findings to diagnose different mature T and B-cell neoplasms.

4.9 Interpretation of clinical features, lab findings, peripheral smears and bone
marrow findings to diagnose Hodgkin lymphoma.

4.10 Role of flow cytometry in hematopathology

5. **Histo/cyto techniques:**

5.1 Theory of routine(H/E , Pap)and special stains and their practical implication

बि.पि. कोइराला मेमोरियल क्यान्सर अस्पताल
प्राविधिक (स्वास्थ्य) सेवा, मेडिकल (चिकित्सक) समुह, प्याथोलोजी उपसमुह, रजिष्ट्रार पदको खुला र आन्तरिक
प्रतियोगितात्मक परीक्षाको पाठ्यक्रम एवं परीक्षा योजना

- 5.2 Preparation, reagent preparation, procedure and quality control of all routine and special stains used in Histopathology/cytopathology
 - 5.3 Grossing technique of various surgical specimens
 - 5.4 Technique of processing various tissues including bone for histological studies, Errors in sectioning and remedies
 - 5.5 Frozen section and their uses, processing tissue for frozen section and its interpretation
 - 5.6 Stains for bacteria, AFB,
 - 5.7 Fine needle aspiration techniques involved in preparation of smear and staining
 - 5.8 Different types of cytology specimens, their preservation and transport, Processing of various cytology specimen, smear preparation and staining
 - 5.9 Liquid based cytology; principle, instruments, procedure advantage, disadvantage
 - 5.10 Cytocentrifuge and its uses in diagnostic cytopathology
 - 5.11 Immunochemistry: Principle, procedure, uses, quality control, Immunohistochemical markers of various neoplasms
 - 5.12 Principle and use of flow cytometry in cytopathology
 - 5.13 Molecular methods in histopathology and cytopathology
 - 5.14 Principle, method and use of Insitu Hybridization, recent methods in hybridization techniques
 - 5.15 Enzyme histochemistry: principle, reagent and specimen preparation, procedure and application
 - 5.16 Electron microscopy
- 6. Laboratory management:**
- 6.1 Laboratory Accreditation, Key component of accreditation, ISO 15189 and others laboratory related accrediting bodies
 - 6.2 Ethics in medicine
 - 6.3 Health and Safety measures (Physical/Chemical/Biological/Radiation)
 - 6.4 Waste disposal
 - 6.5 Management of under resourced laboratory
- 7. Blood Banking**
- 7.1 Indications for blood and component transfusion
 - 7.2 Blood components – indications, preparation, storage, transport
 - 7.3 Blood grouping and compatibility testing – major, minor, Coomb's cross match, factors influencing the results of blood grouping
 - 7.4 Coomb's test (direct, indirect) – application, procedure, Rh antibody titre
 - 7.5 Hazards of blood transfusion.