

बी.पी. कोइराला मेमोरियल क्यान्सर अस्पताल
प्राविधिक (स्वास्थ्य) सेवा, मेडिकल (चिकित्सक) समुह, प्याथोलोजी उपसमुह, अधिकृत नवौं तह, रजिष्ट्रार पदको
खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको पाठ्यक्रम

यस पाठ्यक्रम योजनालाई दुई चरणमा विभाजन गरिएको छ :

प्रथम चरण :- लिखित परीक्षा (Written Examination)

पूर्णाङ्क :- २००

द्वितीय चरण :- अन्तर्वार्ता (Interview)

पूर्णाङ्क :- ३०

परीक्षा योजना (Examination Scheme)

प्रथम चरण (First Phase) : लिखित परीक्षा

Paper	Subject	Full Marks	Pass Marks	No. Questions & Weightage	Time Allowed
I	General Subject	100	40	10 × 5 = 50 (Short answer) 5 × 10 = 50 (Long answer)	3.00 hrs
II	Technical Subject	100	40	6 × 10 = 60 (Long answer) 2 × 20 = 40 (Problem Solving)	3.00 hrs

द्वितीय चरण (Second Phase)

Subject	Full Marks	Examination
Interview	30	Oral

द्रष्टव्य :

- यो परीक्षा योजनालाई प्रथम चरण (लिखित परीक्षा) र द्वितीय चरण (अन्तर्वार्ता) गरी दुई चरणमा विभाजन गरिएको छ ।
- लिखित परीक्षाको माध्यम भाषा नेपाली वा अंग्रेजी अथवा नेपाली र अंग्रेजी दुवै हुनेछ ।
- प्रथम र द्वितीय पत्रको लिखित परीक्षा छुट्टाछुट्टै हुनेछ ।
- परीक्षामा सोधिने प्रश्नसंख्या, अङ्क र अङ्कभार यथासम्भव सम्बन्धित पत्र/विषयमा तोकिए अनुसार हुनेछ ।
- विषयगत प्रश्नमा प्रत्येक खण्डका लागि छुट्टाछुट्टै उत्तरपुस्तिकाहरू हुनेछन् । परीक्षार्थीले प्रत्येक खण्डका प्रश्नहरूको उत्तर सोही खण्डका उत्तरपुस्तिकामा लेख्नुपर्नेछ ।
- यस पाठ्यक्रममा जे सुकै लेखिएको भएतापनि पाठ्यक्रममा परेका ऐन, नियमहरू, परीक्षाको मिति भन्दा ३ महिना अगाडी (संशोधन भएका वा संशोधित भई हटाईएका वा थप गरी संशोधित भई कायम रहेका) लाई यस पाठ्यक्रममा परेको सम्झनु पर्दछ ।
- प्रथम चरणको परीक्षाबाट छनौट भएका उम्मेदवारहरूलाई मात्र द्वितीय चरणको परीक्षामा सम्मिलित गराइनेछ ।
- पाठ्यक्रम लागू मिति :- २०७८/०३/०४

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Paper I: General Subject

Section (A): 40% Marks (4×5 marks, 2×10 marks)

1. Administration and Management

- 1.1. Public Administration: concept, scope, functions and challenges
- 1.2. Management: concept, scope, functions, principles, and its practices
- 1.3. Contemporary management issues and challenges
- 1.4. Hospital Management : concept, scope, function, principle and its practices
- 1.5. Human resource management: concept, functions and different aspects
- 1.6. Basic managerial skills: coordination and public relation, communication and counselling, problem solving and decision making, leadership, team building, rapport building, planning, organizing, monitoring and evaluation
- 1.7. Emerging management concepts and their application in the Nepalese Public Management: Time management, Resource management (human, financial and physical), Technology management, Performance management, Stress management, Conflict management, Risk management and Participative management
- 1.8. Planning: concept, principles, nature, types, instrument and steps
- 1.9. Motivation, appreciative inquiry and social responsibility
- 1.10. Positive attitude and self-development
- 1.11. Group dynamic and organizational behavior
- 1.12. Grievance redressal and settlement
- 1.13. Financial Management: Concept, Approaches, Budget Formulation and Implementation, Auditing and topics related to Fiscal administration

Section (B): 40% Marks (4×5 marks, 2×10 marks)

2. General Health Issues

- 2.1. Present Constitution of Nepal (health and welfare issues)
- 2.2. National Health Policy
- 2.3. Health sector in current periodical plan
- 2.4. Health Service Act, 2053 and Health Service Regulation, 2055
- 2.5. Professional council related acts and regulations
- 2.6. Act Regulating Narcotics
- 2.7. NMC and National Health Agencies
- 2.8. Indigenous and traditional faith healing and health practices
- 2.9. International health agencies: Role and responsibilities of WHO, UNICEF, UNFPA and interagency relationships
- 2.10. Health and Human Right including Women's Right, Children's Right, Professional's Right, Client Right and Informed consent
- 2.11. Gender issues and health
- 2.12. Urbanization and health impacts
- 2.13. National health training system
- 2.14. Supervision, types and its usage in Health Sector

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- 2.15. Monitoring and Evaluation System in Health
- 2.16. Health Management Information System
- 2.17. Health economics - basic terms, health insurance and financing in Health Care
- 2.18. Federal governance and decentralization in health
- 2.19. Evidence Based Medicine / Critical Appraisal of Scientific Literature
- 2.20. Principles of Research Methodology and Scientific paper writing/publication
- 2.21. Professional and medical ethics
- 2.22. Informed Consent and Medico legal Issues
- 2.23. Medical Audit and Quality Assurance
- 2.24. Information technology and Tele medicine
- 2.25. Drug act and regulation
- 2.26. Rational use of drugs, national drug policy and importance of essential drug list
- 2.27. Ethics, Integrity and Accountability of health professionals
- 2.28. Private sector health institution its regulation and management
- 2.29. Health institution development and management
- 2.30. Patient safety & Breaking Bad News
- 2.31. Cancer Registry: Hospital and Community Based Cancer Registry
- 2.32. Preventive Oncology
 - 2.32.1. Epidemiology
 - 2.32.2. Primary prevention (Cancer Awareness, Cancer Education, Vaccination)
 - 2.32.3. Secondary Prevention (Screening, Screening Methods)
- 2.33. Multidisciplinary Approach in Cancer Management

Section (C): 20% Marks (2×5 marks, 1×10 marks)

3. Organizational Knowledge

- 3.1. B.P.Koirala Memorial Cancer Hospital : History, organizational structure, functions, roles, services, possibilities, problems and challenges
- 3.2. Service provided by B.P.Koirala Memorial Cancer Hospital-service types, quality, technology, citizen engagement in service design
- 3.3. Relations between Government and other national and international related organizations
- 3.4. Health manpower recruitment and development in B.P.Koirala Memorial Cancer Hospital
- 3.5. B.P.Koirala Memorial Cancer Hospital related act and regulations

Paper II : Technical Subject
Section (A) – 50 % 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:** Histochemistry of Muscle biopsy, Muscle diseases, atrophies, neuromuscular junction disorders, myopathies Fractures, Osteomyelitis, Pagets disease, osteopetrosis, tumors and tumor like lesions of bone Non neoplastic diseases of joints, gout, rheumatoid arthritis, osteoarthritis, tumors and tumor like lesions of joints, histopathological evolution of bonemarrow biopsies
- 2.13 **Neurosensory system;** Congenital anomalies, cerebrovascular accidents, inflammatory and infectious diseases of CNS, meningitis, Tumors of brain and

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meninges, Neuropathies, Disaeses of peripheral nerves, Inflammatory and infectious disease of eye and ear, 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

Section (B) – 50 % Marks

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 its subtype
- 4.5 Diagnosis of acute lymphoblastic leukemia and its subtype
- 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
- 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

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- 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, fungus
- 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 Cyto centrifuge 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
- 5.17 WHO histopathology classification of diseases
- 5.18 Latest TNM staging

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