लोक सेवा आयोग

नेपाल स्वास्थ्य सेवा, प्याथोलोजी समूह जनरल प्याथोलोजी उपसमूह, एघारौं (११) तहको खुला र आन्तरिक प्रतियोगितात्मक परीक्षाको 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.
1.1.4. Identify and describe the gross anatomical alterations in the surgically removed specimens.

1.1.5. Correlate the gross pathological diagnosisof 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.
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 haemaglobin.
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 B_{12}
  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 thromboplastine 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.
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. Haemaglutination
8.1.3. Immunoelecrophoresis
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.