THE TAMIL NADU DR.M.G.R. MEDICAL UNIVERSITY

[MD 0524] **MAY 2024** **Sub. Code: 4008**

M.D. DEGREE EXAMINATION

BRANCH III – PATHOLOGY

PAPER IV – RECENT ADVANCES AND APPLIED ASPECTS

Q.P. Code: 204008

Time : Three Hours **Maximum : 100 Marks**

I. Essay: **(2 x 15 = 30)**

1. Write briefly on recent advances in the classification of CNS tumors.

2. Recent advances in molecular diagnosis of paediatric soft tissue sarcomas.

II. Write short notes on: **(10 x 5 = 50)**

1. HPLC.
2. Molecular alterations in sarcomas.
3. Systemic inflammatory response syndrome (SIRS).
4. DNA microarray.
5. Hemato-lymphoid neoplasms of central nervous system.
6. Liquid biopsy.
7. BRAF mutation and associated tumors.
8. Quality assurance in histopathology.
9. Latest markers for early diagnosis of sepsis.
10. Cancer prognostic markers.

III. Reasoning Out: **(4 x 5 = 20)**

1. A 41-year-female comes to the out patient department with H/o blood mixed discharge from nipple. O/E- she had a lump in the periareolar region of left breast present for 5 months.

   a) What can be the causes for bloody discharge from nipple?
   b) How will you confirm your diagnosis?
   c) What are the positive stains used for confirmations.

2. A 13-year-ole girl comes to out patient department with pain and swelling of right knee joint along with high fever for 5 days.
   a) What is your provisional diagnosis?
   b) What are other possible causes?
   c) How will you investigate the case?

3. A 37-year female seeks medical attention with a large parietal tumour present over anterior abdominal wall for 6 months. On examination, the mass was firm, nontender and fixed to the abdominal wall. The patient stated that the mass was gradually increasing in size. CT showed a well-circumscribed, large mass measuring 9 x 8 x 6 cm originating from the left rectus abdominis muscle.
   a) What is your diagnosis?
   b) What is genetic alteration and morphological patterns?
   c) What are the positive Immunohistochemical markers?

4. A 39-year female presents with well demarcated silvery plaque like scaly cutaneous lesions over elbow, knee and scalp for 2 years along with pain and swelling of both knee joints for more than 6 months.
   a) What is your provisional diagnosis?
   b) What is the morphological features aiding its diagnosis?
   c) How can you confirm you diagnosis?

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[MD 0524]

THE TAMIL NADU DR.M.G.R. MEDICAL UNIVERSITY

[MD 1224] **DECEMBER 2024** **Sub. Code: 4008**
(OCTOBER 2024 EXAM SESSION)

M.D. DEGREE EXAMINATION

PATHOLOGY

PAPER IV – RECENT ADVANCES AND APPLIED ASPECTS

Q.P. Code: 204008

Time : Three Hours **Maximum : 100 Marks**

I. Essay: **(2 x 15 = 30)**

1. Discuss the differential diagnosis of soft tissue tumors with epithelioid morphology.

2. Discuss immunology and stem cell biology.

II. Write short notes on: **(10 x 5 = 50)**

1. Eosinophilic gastritis.
2. NUTM1 rearranged tumors.
3. Pulmonary pathology and sequelae of COVID – 19.
4. Molecular types of Medulloblastoma.
5. Role of Autopsy in evaluating death in clinical sepsis.
6. Minimal residual disease detection in Acute leukemia.
7. Role of autologous stem cell transplantation in haematological malignancies.
8. Artificial Intelligence (AI) in pathology.
9. Biomarkers for Carcinoma prostate.
10. Microwave processing of small biopsies methodology and advantages.

III. Reasoning Out: **(4 x 5 = 20)**

1. 50-year-old male presented with headache, visual disturbances and itching all over the body. CBC showed HB 19g/dl. Serum erythropoietin was low.
   a) What is most probable diagnosis?
   b) Briefly discuss the approach to diagnosis.

2. 70-year-old female patient presented with a 5 cm soft tissue mass in the right shoulder region. FNAC showed myxoid spindle cell tumor.
   a) Differential diagnosis of myxoid spindle cell tumors.
   b) Use of immunohistochemistry in the evaluation.

3. 40-year-old female presented with painful flaccid blisters and erosions in the skin and buccal mucosa. Skin biopsy showed suprabasal acantholysis.
   a) What is the most probable diagnosis?
   b) Discuss the immunofluorescence findings.
   c) Differential diagnosis of the lesion.

4. 40/M with history of recent travel to North India, presented with high grade fever, rigors and chills.
   a) What is the most probable diagnosis?
   b) Newer diagnostic techniques.

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[MD 1224]

THE TAMIL NADU DR.M.G.R. MEDICAL UNIVERSITY

[MD 0525] **MAY 2025** **Sub. Code: 4008**

M.D. DEGREE EXAMINATION

PATHOLOGY

PAPER IV – RECENT ADVANCES AND APPLIED ASPECTS

Q.P. Code: 204008

Time : Three Hours **Maximum : 100 Marks**

I. Essay: **(2 x 15 = 30)**

1. Write about Tissue micro array and its current perspectives in proteomics and pathology.

2. Classify Pituitary tumours as per the new WHO classification and discuss about their newer entities added on it.

II. Write short notes on: **(10 x 5 = 50)**

1. Liquid biopsy – Advantages and application.
2. Stem Cell Transplantation.
3. Role of epigenetics in cancer.
4. MicroRNAs in pathology.
5. Updates in Role of Vitamin D in health and diseases.
6. Flow cytometric multi parameter analysis in haematology.
7. Immunofluorescence in Renal pathology.
8. Role of artificial intelligence in tumor diagnosis.
9. Discuss Immuno histochemical approach to detect tumours of unknown primary.
10. Latest prognostic markers applied in breast carcinoma.

III. Reasoning Out: **(4 x 5 = 20)**

1. A 65-year-old female, presented with de novo AML with a complex karyotype. Flow cytometry showed variable expression of side scatter CD 13, CD 33, CD 65, Dim to bright CD 45, cytogenetic abnormalities showed Monosomy 7.

   a) What is your diagnosis?
   b) Write about its blood and bone marrow picture.

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2. A 50-year-old male with a mass in the Brain, suspected of glial tumour / pleomorphic Xantho astrocytoma.
   a) What markers will be useful in differentiating them?
   b) What are the other uses of the biomarker?
   c) What main signaling pathway is involved?

3. 50-year-old male presented with generalized lymphadenopathy, hepatosplenomegaly and polyp like lesions of colon. Histopathological examination of the enlarged lymph nodes showed homogenous population of lymphocytes with Immunophenotype CD 19+, CD 20+, CD 5+ and CD 23 negative.
   a) What is the diagnosis?
   b) Describe its pathogenesis.
   c) What other markers are useful?

4. A 25-year-old woman born out of consanguineous marriage, presented with ulcer, discoloration, itching of lower leg. On examination she has splenomegaly with features of anemia.
   a) What is the diagnosis?
   b) What are the changes you expect in RBC's?
   c) What are other tests to confirm the diagnosis?

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[MD 0525]

THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY

[MD 1025] **OCTOBER 2025** **Sub. Code: 4008**

M.D. DEGREE EXAMINATION

PATHOLOGY

PAPER IV – RECENT ADVANCES AND APPLIED ASPECTS

Q.P. Code: 204008

Time : Three Hours **Maximum : 100 Marks**

I. Essay: **(2 x 15 = 30)**

1. Discuss Pathogenesis and molecular genetics of Obesity.
2. Describe about Liquid biopsy. Write about its in-invasive and rapid retrieval means as well as significance in biomarker usage in circulating tumour cells.

II. Write short notes on: **(10 x 5 = 50)**

1. Classification of Salivary gland Tumours.
2. Application of Flow Cytometry in tumor diagnosis.
3. Principles and Uses of Whole Genome sequencing.
4. Karyotyping in soft tissue sarcomas.
5. Role of Immunohistochemistry in diagnosis of non-Hodgkin's lymphoma.
6. Stem Cell Transplantation.
7. Immunofluorescence in Dermatopathology.
8. Utility of Telepathology.
9. IHC and Genetics of Papillary Carcinoma thyroid.
10. Granulocyte transfusion.

III. Reasoning Out: **(4 x 5 = 20)**

1. A 10-year-old boy presented with osteolytic lesion in the skull, skin nodule FNAC of the skin nodule showed plenty of eosinophils and histocytes.
   a) What is your probable diagnosis?
   b) Discuss the classification and syndromes associated.
   c) Write in detail about the morphology and markers used to confirm.

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2. A 50-year-old female came with complaints of swelling in left breast. The lump occupies all quadrants and engorged veins are seen in the overlying skin of the tumor. FNAC discloses spindle cell proliferation with scant duct epithelial cells.
   a) What is your probable diagnosis?
   b) What are the differential diagnosis?
   c) What is the significance of proliferative marker?
   d) How will you grade based on Bethesda system?

3. A 25-year-old male presented multiple bilateral neck nodes. H/O fever with night sweats present.
   a) What is the diagnosis?
   b) Discuss about the types and the morphology.
   c) Write in briefly about differential diagnosis.
   d) Possible investigations required to substantiate your diagnosis?

4. 20-year-old female presented with epistaxis and menorrhagia. Examination revealed normal platelet count, prolonged bleeding time, prolonged PTT and reduced Ristocetin cofactor activity.
   a) What is your diagnosis?
   b) What is the pathogenesis of this condition?
   c) What are the tests done to confirm the diagnosis?

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THE TAMIL NADU Dr. M.G.R. MEDICAL UNIVERSITY

[MD 0526] **MAY 2026** **Sub. Code: 4008**

M.D. DEGREE EXAMINATION

PATHOLOGY

PAPER IV – RECENT ADVANCES AND APPLIED ASPECTS

Q.P. Code: 204008

Time : Three Hours **Maximum : 100 Marks**

I. Essay: **(2 x 15 = 30)**

1. Lymphoma – update.
2. Discuss the role of tele pathology, image analysis and photomicrography in the laboratory diagnosis of diseases.

II. Write short notes on: **(10 x 5 = 50)**

1. Stromal cells and cancer microenvironments.
2. Next generation DNA Sequencing.
3. Biomedical waste management.
4. Genomic instability syndromes.
5. Next generation Immunohistochemistry.
6. Protein C Pathway.
7. Micro RNAS in cancer.
8. Whole slide imaging and its applications.
9. Current concepts in the pathogenesis of endometrial hyperplasia.
10. Audit in pathology.

III. Reasoning Out: **(4 x 5 = 20)**

1. A 29-year-old male comes to outpatient department with weakness, weight loss and chronic diarrhoea for more than 3 months. O/E, patient is cachectic with high fever and has cervical lymphadenopathy. Careful examination and history taking reveals: H/o intravenous drug abuse for more than 2 years.
   a) What is your provisional diagnosis?
   b) What is the pathogenesis?
   c) How can you confirm your diagnosis?
   d) What are the complications that can occur?

2. A 45-year-old male developed a dull aching pain in the epigastric region. The pain usually occurred on empty stomach and subsided on ingestion of food. An endoscopy was done that showed a discontinuity in the mucosa <2cm in size along the lesser curvature.
   a) What is your diagnosis?
   b) What is the etiopathogenesis?
   c) Give the gross and microscopic features of this lesion?

3. 50-year-old male patient complained of anorexia, nausea and vomiting and right upper quadrant pain of the abdomen of 15 days duration. He also noticed yellow discoloration of the sclera. He also gave a history of vomiting fresh blood on one occasion. He has been a chronic alcoholic. On examination he has hepatosplenomegaly and free fluid in the abdomen. USG showed shrunken liver with diffuse parenchymal disease.
   a) State your diagnosis?
   b) What would the histology of the liver show?
   c) How would you classify the lesion in his liver?

4. A 35-year-old male presented to the OPD with tinnitus, diplopia, ankylosis and arthritis of the right knee joint and grey discoloration of the ear cartilage. USG should multiple gallstones. He also had darkening of the urine on standing for long time.
   a) What is your diagnosis?
   b) What is the pathogenesis?
   c) What is the histologic feature?
   d) How do you confirm the diagnosis?

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[MD 0526]