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

[MD 0524] **MAY 2024** **Sub. Code: 4005**

M.D. DEGREE EXAMINATION

BRANCH III – PATHOLOGY

PAPER I – GENERAL PATHOLOGY, PATHOLPHYSIOLOGY, IMMUNOPATHOLOGY AND CYTOPATHOLOGY

Q.P. Code: 204005

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

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

1. Describe normal karyotype. Write in brief about Autosomal disorders and disorders of sex chromosomes. Write a note on role of Karyotyping in diagnosis of such disorder.

2. Tumour suppressor genes and their role in oncogenesis.

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

1. Discuss the pathogenesis of ageing.
2. Molecular diagnosis of genetic diseases.
3. MILAN system in salivary gland lesion cytology.
4. Role of Neutrophils in acute inflammation.
5. Mechanisms of autoimmunity.
6. Pathogenicity of P falciparum infection.
7. Familial hypercholesterolemia.
8. Pneumoconiosis.
9. Lysosomal storage disorders.
10. Macrophage activation syndrome.

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

1. 1 year old male child presented with delay in mile stones muscle weakness, Myoclonic jerks, seizures, recurrent respiratory infection and cherry and spot in the retina.
   a) What is your diagnosis?
   b) What is the genetic abnormality?
   c) What is morphological feature, special stain and classic electron microscopic feature?

2. 60 year old female with claw like flexion deformity with cutaneous ulceration in the terminal phalanges, elangiectasis, esophageal dysmotility, Raynaduds phenomenon respiratory difficulties with mild proteinuria.
   a) What is your probable diagnosis?
   b) What is the etiopathogenesis?
   c) What is the histopahtological feature?
   d) What are the laboratory findings?

3. 12 year old male child presented with fever, sore throat, malaise, fatigue and lymphadenitis. Peripheral smear shows absolute Lymphocytosis with 80% atypical lymphocytes.
   a) What is your diagnosis?
   b) What is the etiopathogenesis?
   c) What are the other lab parameters to aid the diagnosis?
   d) What are the complications?

4. 55 year old male, a transplant recipient was admitted for fever, malaise, headache, neck stiffness nausea and vomiting. Cerebrospinal fluid analysis showed low white blood cell count, low glucose, elevated protein. Culture showed colored with variable sized thick encapsulated yeast forms.
   a) What is your diagnosis?
   b) What is the pathogenesis?
   c) What are the major CN manifestations?
   d) What are the special stains used for confirmation?

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

[MD 1224] **DECEMBER 2024** **Sub. Code: 4005**
(OCTOBER 2024 EXAM SESSION)

M.D. DEGREE EXAMINATION

PATHOLOGY

PAPER I – GENERAL PATHOLOGY, PATHOPHYSIOLOGY, IMMUNOPATHOLOGY AND CYTOPATHOLOGY

Q.P. Code: 204005

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

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

1. Discuss the Pathophysiology of different types of Edema, the pathological changes in organs and their clinical significance.

2. Discuss Viral carcinogenesis. Describe the pathogenesis of HPV induced cancers.

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

1. Anoikis.
2. Fat necrosis.
3. Free radicals in cell injury.
4. Pathological features of Lead poisoning.
5. Common Neoplasms in HIV patients.
6. IgG4 related disease.
7. Mechanisms of allograft rejection.
8. Granuloma.
9. Ancillary tests in serous cavity fluid cytology.
10. Rapid On-Site Evaluation (ROSE) in cytopathology.

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

1. 55-year-old male, a known case of systemic hypertension for 20 years, underwent medical checkup. ECG and Echocardiography showed evidence of Left ventricular enlargement and left ventricular wall thickening.
   a) What is the pathological condition.
   b) Describe the mechanism and the morphological changes.

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2. 25-year-old male presented with black tarry stools. Colonoscopy showed multiple sessile polyps throughout the colon and an ulcero-proliferative growth in the transverse colon. His mother and maternal uncle were treated for colonic cancer.
   a) What is the most probable diagnosis and the associated syndrome.
   b) Describe the pathophysiology.

3. 35-year-old female, living with HIV infection presented with a painless soft swelling in the neck and referred to pathology dept. for FNAC. 2cc of thin pus was aspirated.
   a) What is the most probable diagnosis?
   b) What ancillary tests should be done to confirm the diagnosis?

4. 40-year-old male presented with solitary nodule measuring 2.5cm diameter in the right lobe of thyroid. FNA was done. Smears were hypercellular composed of variably sized follicular epithelial cells with anisokaryosis and abundant eosinophilic, granular cytoplasm arranged in crowded groups and as singly dispersed cells. Colloid was absent. No lymphocytes were seen in the background.
   a) What will be your cytological diagnosis according to Bethesda system of thyroid cytology TBSTC?
   b) What are the differential diagnosis?

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[MD 1224]

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

[MD 0525] **MAY 2025** **Sub. Code: 4005**

M.D. DEGREE EXAMINATION

PATHOLOGY

PAPER I – GENERAL PATHOLOGY, PATHOPHYSIOLOGY, IMMUNOPATHOLOGY AND CYTOPATHOLOGY

Q.P. Code: 204005

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

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

1. Discuss in detail the immunology of transplant rejection. Describe the pathological findings in renal transplant rejection.

2. Describe in detail about molecular mechanism of carcinogenesis. Add a note on the steps of metastatic and its molecular mechanism.

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

1. Enumerate list of growth factors and cytokines in wound healing.
2. Classify Chemical mediators of inflammation. Discuss the role of complement system of Eicosanoids in inflammation.
3. Discuss the role of the Paris system of classifications of urine cytology.
4. Discuss the pathology of Lysosomal storage diseases.
5. Micro RNA and its role in Gene Silencing.
6. Stem Cells in tissue homeostasis.
7. Obesity and its neuro-humoral mechanisms.
8. Pre analytical preparations and handling of effusion fluid cytology.
9. Etiopathogenesis, types and morphology of Amyloidosis.
10. Molecular biology of Paediatric soft tissue tumors.

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

1. 15-year-old short statured female had webbing of neck. Low posterior hairline and pigmented nevi with failure to develop secondary sex characteristics.
   a) What is the syndrome?
   b) What is its molecular pathogenesis?
   c) What are prenatal testing methods?
   d) What is the tumor that they are prone to develop?

2. 12-year-old boy presented with short stature, bone pain and beaded ribs.
   a) What is your diagnosis?
   b) What is the pathophysiology of this condition?
   c) Discuss the metabolism of the causative substance.

3. 52-year-old female had respiratory difficulty, end inspiratory crackles without wheezing. Radiography shows small nodules with ground glass shadows. Patient eventually developed Corpulmonale.
   a) What is your diagnosis?
   b) Enumerate different types.
   c) Discuss the morphology.

4. 1 month old child presented with intestinal obstruction due to meconium ileus and prolonged neonatal jaundice. Mother of the child was complaining of abnormal sweating in the child.
   a) What is your diagnosis?
   b) What is the genetic defect in this condition?
   c) What is the morphology of various organs.

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[MD 0525]

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

[MD 1025] **OCTOBER 2025** **Sub. Code: 4005**

M.D. DEGREE EXAMINATION

PATHOLOGY

PAPER I – GENERAL PATHOLOGY, PATHOPHYSIOLOGY, IMMUNOPATHOLOGY AND CYTOPATHOLOGY

Q.P. Code: 204005

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

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

1. A 25-year-old female had a Caesarean section and developed postoperative infection. She was non ambulant for 8-10 days and complained of right calf muscle pain with swelling and warmth of the right leg. On the 10^{th} postoperative day, she complained of acute chest pain. What is your probable diagnosis? What are the risk factors, etiopathogenesis, complications and Laboratory diagnosis of this condition?

2. Describe the morphological and biochemical features of apoptosis and its role in physiological and pathological processes giving appropriate examples.

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

1. Epithelial Mesenchymal Transition in tissue healing.
2. Tumor specific antigens.
3. Diseases due to single gene defect.
4. Polyps of colon.
5. Natural killer cells.
6. Cryptorchidism.
7. Rapid onsite evaluation.
8. Systemic inflammatory response syndrome.
9. Transplant rejection.
10. Pathophysiological categories of Edema.

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

1. A 33-year male smoker comes to Surgical outdoor with severe pain in both lower limbs, particularly during walking, with bilateral wasting of calf muscles and ulceration over right great toe.
   a) What is your provisional diagnosis? How will you justify your diagnosis?
   b) What is the pathogenesis?
   c) What are the morphological features?
   d) What is the typical clinical presentation?

2. A 36-year homosexual male, HIV +ve for 7 years, developed rapidly progressive multiple reddish nodules over ankle and calf of right leg with right popliteal and inguinal lymphadenopathy.
   a) What is your diagnosis?
   b) What is the etiological agent?
   c) What are the subtypes?
   d) What is the morphological feature? How can you confirm the diagnosis?

3. A 32-year female complains of intermittent attacks of diarrhea, cyanosis and flushing for 4 years along with repeated attacks of bronchoconstriction. She also admits of dry cough and occasional haemoptysis for same duration. Chest X-ray shows a small-circumscribed nodule in the left lung.
   a) What is the most probable diagnosis?
   b) What is the morphological feature?
   c) How will you proceed for confirmation of your diagnosis? What is the newer marker used for diagnosis?
   d) Comment on molecular cytogenetics of this condition?

4. A 68-year male, smoker, presented with breathlessness, cough and chest pain for 2 months. O/E: Ptosis with puffy face, swelling and congestion of upper part of chest and neck, hoarseness of voice, clubbing along with tender swelling of right wrist joint.
   a) What is the most likely diagnosis?
   b) How can you explain all the features?
   c) Enlist the latest classification and add a note on the morphology.

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

[MD 0526] **MAY 2026** **Sub. Code: 4005**

M.D. DEGREE EXAMINATION

PATHOLOGY

PAPER I – GENERAL PATHOLOGY, PATHOPHYSIOLOGY, IMMUNOPATHOLOGY AND CYTOPATHOLOGY

Q.P. Code: 204005

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

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

1. Write about Immunodeficiency syndrome. Discuss about Primary Immunodeficiency and describe about X Linked Agammaglobulinemia of Bruton.

2. Obesity – Describe this metabolic syndrome in detail, pathogenesis, associated cancer and other complications in detail.

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

1. Role of Endothelium in Hemostasis and thrombin.
2. Antiphospholipid Syndrome (APS).
3. PCR and detection of DNA alterations.
4. Lupus nephritis.
5. Warburg effect.
6. Post covid syndrome.
7. Vitamin D deficiency.
8. Prognostic factors in Neuroblastoma.
9. Mechanism of Apoptosis.
10. Chemokines.

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

1. 30-year-old underwater construction workers, who on rapid ascent to ambient pressure, presented with edema, pulmonary hemorrhage and excruciating joint pain and rashes.
   a) What is your diagnosis?
   b) What is the pathogenesis?

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2. 13-year-old female treated by chemo for lymphocytic lymphoma with meningeal relapse. Allogenic bone marrow transplantation performed on 54th day. She complained intermittent abdominal pain, diarrhea, vomiting and skin rashes.
   a) What is the probable diagnosis?
   b) Histopathology of the above condition.

3. 40-year-old male presented with history of mild fever with rigor and passing dark colour urine after admission. He also had cloudy consciousness.
   a) What is the diagnosis?
   b) What is the role of PBF in diagnosis?
   c) Describe the morphology.

4. 20-year-old adult presented with convulsion, progressive mental deterioration, hepatosplenomegaly and pancytopenia. Liver biopsy shows macrophage accumulation with crumpled tissue paper appearance.
   a) What is your diagnosis?
   b) Pathogenesis of the condition.
   c) What are the subtypes?

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[MD 0526]

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

[MD 0926] **SEPTEMBER 2026** **Sub. Code: 4005**

M.D. DEGREE EXAMINATION

PATHOLOGY

PAPER I – GENERAL PATHOLOGY, PATHOPHYSIOLOGY, IMMUNOPATHOLOGY AND CYTOPATHOLOGY

Q.P. Code: 204005

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

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

1. Classify Autoimmune diseases. Discuss etiopathogenesis and pathology of SLE.

2. What is angiogenesis? Discuss in detail the mechanism of angiogenesis. Describe the growth factors involved and the regulation of angiogenesis.

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

1. Components of extracellular matrix.
2. Mechanisms of Apoptosis.
3. Arachidonic acid metabolites and their principal actions in inflammation.
4. Pathogenesis of septic shock.
5. Telomeres.
6. Paraneoplastic syndromes.
7. Sirtuins.
8. Genomic imprinting.
9. The Bethesda system for reporting Thyroid cytopathology.
10. Functional leucocyte abnormalities.

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

1. A 25-year-old male presented with hepatosplenomegaly and pancytopenia. Bone marrow biopsy showed clusters of large cells fibrillary type of cytoplasm likened to crumpled tissue paper.
   a) What is the name of the diagnostic cell?
   b) Mention the pattern of inheritance.
   c) What is the biochemical basis of the lesion?
   d) Describe the clinical subtypes and diagnosis of the disease.

2. A 40-year-old man met with a road traffic accident and suffered multiple fractures of long bones. He was in a stable condition until 3 days after the injury. Than he developed sudden onset of breathlessness, diffuse petechial rash, delirium followed by loss of consciousness and death.
   a) What is your diagnosis?
   b) Discuss the pathogenesis of the condition.
   c) What are the changes expected in lung and brain in autopsy.
   d) How will you demonstrate histopathologically the substance implicated in the condition?

3. A 45-year-old female presented with dry eyes, dry mouth, dryness of nasal mucosa and enlargement of parotid gland.
   a) What is your diagnosis?
   b) Discuss the pathogenesis and morphology of the involved parotid gland.

4. A 30-year-old female had a three year history of joint pain, photosensitivity and rash in a sun exposed distribution. She had proteinuria and high titers of antinuclear antibodies.
   a) What is your probable diagnosis?
   b) Explain the patients renal disease.
   c) What are the blood vessel changes seen in this disease?

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[MD 0526]