UNIVERSITI KUALA LUMPUR
INSTITUTE OF MEDICAL SCIENCE TECHNOLOGY

FINAL EXAMINATION

MARCH 2025 SEMESTER

COURSE CODE	:	HDD20304
COURSE TITLE	:	PATHOLOGY
PROGRAMME NAME	:	DIPLOMA OF MEDICAL LABORATORY TECHNOLOGY
DATE	:	26 JUNE 2025
TIME	:	2:00PM - 5:00PM
DURATION	:	3 HOURS

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. This question paper consist of TWO sections.
4. Section A consist 25 MCQ or EMQ questions. Answer ALL questions.
5. Section B consist of four questions. Answer THREE (3) questions only.
6. Please write your answer on the answer booklet provided.
7. Please answer all questions in English only.
8. Please answer MCQ/EMQ questions using OMR sheet. ☐ *Tick if applicable*
9. Refer to the attached Formula/ Appendies. ☐ *Tick if applicable*

THERE ARE 12 PAGES OF QUESTIONS INCLUDING THIS PAGE

SECTION A (Total: 25 marks)

Answer ALL questions.

Please use the objective answer sheet provided.

1. In the emergency department, Raihan's skin appears cyanotic. Her cyanotic complexion viewed by the physician is known as a(n)_____.

   A. diagnosis

   B. outcome

   C. sign

   D. symptoms

2. How does a transudate differ from an exudate in terms of protein content?

   A. Transudates have higher protein content than exudates.

   B. Protein content is not a distinguishing factor between transudates and exudates.

   C. Transudates have lower protein content than exudates.

   D. They have the same protein content.

3. Which of the following is a major complication of Deep Vein Thrombosis (DVT)?

   A. Pulmonary embolism.

   B. Superficial venous ulcer.

   C. Superficial thrombophlebitis.

   D. Arterial thrombosis.

4. Which of the following is the first stage in the process of carcinogenesis?

   A. Initiation

   B. Promotion

   C. Regression

   D. Progression

5. A 28 year old woman presents to the clinic with complaints of intense itching, particularly at night. She noticed small red bumps and linear burrows on her fingers, wrists, and between her toes. Her husband and 2 year old child also have similar symptoms. Based on the clinical presentation, which of the following is the MOST likely diagnosis?

   A. Psoriasis

   B. Verruca plantaris

   C. Urticaria

   D. Scabies

6. Which of the following conditions is characterized by a 'masked facies', a lack of facial expression?

   A. Myasthenia gravis

   B. Multiple sclerosis

   C. Stroke

   D. Parkinson's disease

7. Which of the following protein is the primary component of amyloid plaques in Alzheimer's disease?

   A. Amyloid-beta (Aβ)

   B. Prion protein (PrP)

   C. Islet amyloid polypeptide (IAPP)

   D. Alpha-synuclein

8. Which of the following is the primary target cell for HIV infection?

   A. Neutrophils

   B. CD4+ T-cells

   C. CD8+ T-cells

   D. Macrophages

9. Which of the following is a hallmark of endometriosis pathology?

   A. Enlarged ovaries with multiple cysts.

   B. Thickened endometrial lining.

   C. Endometrial implants outside the uterus.

   D. Amenorrhea (absence of menstruation).

10. Which of the following is a typical symptom of gastroesophageal reflux disease (GERD)?

    A. Heartburn

    B. Hematemesis

    C. Melena (black stool)

    D. Diarrhea

11. Which of the following is the MOST common cause of peptic ulcers?

    A. Frequent use of NSAIDs

    B. Stress

    C. Excessive alcohol consumption

    D. Helicobacter pylori infection

12. Celiac disease is best described as _____.

    A. a bacterial infection of the small intestine leading to severe fluid loss

    B. an autoimmune disorder triggered by gluten in genetically susceptible individuals

    C. a purely genetic condition

    D. an allergy to wheat, barley, and rye

13. Achalasia is primarily caused by which of the following condition?

    A. Failure of the LES to relax and impaired esophageal peristalsis.

    B. Inflammation of the esophagus.

    C. Malignant tumors in the esophagus.

    D. Excessive acid production in the stomach.

14. Cirrhosis of the liver is characterized by which of the following characteristics?

    A. Inflammation of the liver cells.

    B. Regeneration of healthy liver tissue.

    C. Fibrosis and nodule formation in the liver.

    D. Fatty infiltration of the liver.

15. Which of the following is the primary cause of emphysema?

    A. Air pollution.

    B. Viral or bacterial infections.

    C. Alpha-1 antitrypsin deficiency.

    D. Cigarette smoking.

16. A patient presents with a productive cough producing green sputum. Which of the following etiological agent is the MOST likely cause?

    A. Viral bronchitis.

    B. *Pseudomonas* or *Haemophilus species* pneumonia.

    C. *Klebsiella pneumoniae* infection.

    D. *Streptococcus pneumoniae* infection.

17. Which type of medication is typically used as a first-line treatment for persistent asthma to control and prevent airway inflammation and swelling?

    A. Leukotriene receptor antagonists.

    B. Inhaled corticosteroids (ICS).

    C. Long-acting beta-agonists (LABAs).

    D. Short-acting beta-agonists (SABAs).

18. Which of the following is a cyanotic (Right-to-left shunt) congenital heart defect?

    A. Ventricular septal defects

    B. Atrial septal defects

    C. Tetralogy of Fallot

    D. Patent ductus arteriosus

19. What is the primary characteristic of congestive heart failure (CHF)?

    A. Elevated blood pressure.

    B. Enlargement of the heart chambers.

    C. Excessive blood clotting.

    D. Inability of the heart to pump blood effectively.

20. In the context of a suspected myocardial infarction (MI), which of the following statements regarding Troponin I is most accurate?

    A. Troponin I is a specific marker for skeletal muscle damage and not useful in diagnosing MI.

    B. Troponin I is an isoenzyme of creatine kinase, primarily found in cardiac muscles.

    C. Troponin I is a cardiac biomarker that is only useful in diagnosing ST-Elevation myocardial infarction (STEMI) and not Non-ST- Elevation myocardial infarction (NSTEMI).

    D. Troponin I is a structural protein found in cardiac muscle cells, and its elevation indicates myocardial cell death.

21. A urinalysis reveals the presence of refractile, envelope-shaped crystals in the urine sediment. What is the MOST likely type of kidney stone this patient has?

    A. Calcium oxalate stones

    B. Uric acid stones

    C. Struvite stones

    D. Cystine stones

22. The primary stage of syphilis is characterized by_____.

    A. a widespread rash

    B. cardiovascular complications

    C. a chancre at the site of infection

    D. neurosyphilis

23. Which of the following is a key feature of the pathogenesis of lupus nephritis?

    A. Antibody-mediated destruction of tubular epithelial cells.

    B. Deposition of immune complexes in the glomeruli triggering inflammation.

    C. Primary involvement of neutrophils in the inflammatory response.

    D. Direct cytotoxic T cell attack on the glomerular basement membrane.

24. A 28 year old woman presents with irregular periods, hirsutism, and acne with oily skin. An ultrasound reveals 'string of pearls; appearance in both ovaries. Based on the clinical presentation and ultrasound findings, which of the following is the MOST likely diagnosis?

    A. Eclampsia

    B. Polycystic ovarian syndrome (PCOS)

    C. Ectopic pregnancy

    D. Endometriosis

25. Which of the following is a common finding in urinalysis of a patient with nephrotic syndrome?

    A. Pyuria (pus in the urine)

    B. Hematuria (blood in the urine)

    C. Proteinuria > 3.5g/day

    D. Hypertension with oliguria

SECTION B (Total: 75 marks)

Answer THREE (3) questions only.

Please use the answer booklet provided.

Question 1

Arthritis is characterised by joint pain and inflammation. The two most common forms of arthritis are osteoarthritis (OA) and rheumatoid arthritis (RA). Differentiate OA & RA based on their description and pathogenesis.

(25 marks)

Question 2

A 42 year old male lecturer at a university presented with muscle weakness affecting mainly their upper limbs, drooping of the left upper eyelid, and mild intermittent oropharyngeal symptoms. Over time, there was further worsening of the above complaints, especially after any physical activity. The patient decided to visit a neurology outpatient clinic to address the disabilities. During his appointment with a neurologist, his physical exams and blood test findings are consistent with the diagnosis for Myasthenia Gravis (MG).

(a) Identify TWO (2) symptoms of MG.

(2 marks)

(b) List THREE (3) differential diagnosis for MG.

(3 marks)

(c) Complete the following points of discussion on the pathogenesis of MG.

- Immune system malfunction
- Antibody binding
- Reduction of AChR's

(8 marks)

(d) Diagnostic tests for myasthenia gravis (MG) primarily focus on detecting specific antibodies in the blood that are associated with the condition. Interpret the purpose and significance of the following diagnostic MG tests listed below.

i. Anti-acetylcholine receptor (AChR) antibody panel

(3 marks)

ii. Single fiber electromyography (sfEMG)

(3 marks)

iii. Edrophonium test (Tensilon test)

(3 marks)

iv. Anti-Agrin antibody

(3 marks)

Question 3

A 22 year old woman presents with amenorrhea, lack of lactation, and palpitations, seven months postpartum. She also reports excessive bleeding after delivery and inability to breastfeed. Physical examination and blood test reveals characteristic of Graves' disease. A pituitary MRI with empty sella, further supports Sheehan's syndrome.

(a) Identify the lactation hormone affected in Sheehan's syndrome.

(1 marks)

(b) Summarize the pathogenesis of Sheehan's syndrome.

(4 marks)

(c) Graves' disease causes hyperthyroidism (overactive thyroid), while Hashimoto's thyroiditis causes hypothyroidism (underactive thyroid). This difference in function is reflected in the types of antibodies produced and their impact on the thyroid gland. Compare Hashimoto thyroiditis with Graves' disease.

(20 marks)

Question 4

A 52 year old man is referred to the gastroenterology department for a history of gastroesophageal reflux disease (GERD). The patient reports a long history of heartburn symptoms, dating back at least 5 years. He denies dysphagia, nausea or vomiting, blood in his stool, or unintentional weight loss. He is a nonsmoker who drinks alcohol in moderation and has no family history of gastrointestinal cancer. Paperwork from the referring physician states that the reason for consultation is: 'screening for Barrett's esophagus'.

(a) Barrett's esophagus pathogenesis involves complex factors, primarily driven by chronic gastroesophageal reflux disease (GERD). Gastroesophageal reflux disease (GERD) on the other hand, may potentially lead to the development of esophageal denocarcinoma (EAC), a type of cancer. Describe the pathogenesis of gastroesophageal reflux disease (GERD) and its progression to esophageal adenocarcinoma.

(5 marks)

(b) Some studies have shown a correlation between untreated GERD and an increased risk of acute pancreatitis. Compare the descriptions, etiologies, clinical features, and diagnostic evaluations between acute and chronic pancreatitis.

(20 marks)

END OF EXAMINATION PAPER