(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

MAIN EXAM

2022/2023 ACADEMIC YEAR

FIRST-YEAR SECOND-SEMESTER EXAMINATION

FOR THE DEGREE OF BACHELOR OF SCIENCE IN OPTOMETRY

COURSE CODE: BML 231

COURSE TITLE: GENERAL AND SYSTEMIC PATHOLOGY

DATE:18/04/2023 **TIME: 3.00-5.00 PM**

INSTRUCTIONS TO CANDIDATES:

ANSWER ALL QUESTIONS SECTIONS A & B

ANSWER ANY TWO QUESTIONS IN SECTION C.

TIME: 2 Hours

SECTION A

1. The investigation and diagnosis of disease from the examination of isolated cells is called as .....
    a) Histopathology
    b) Cytopathology
    c) Haematology
    d) None of these
2. ..... are samples of tissue removed from a patient for diagnostic purposes.
    a) Specimens
    b) Systematic
    c) Diagnosis
    d) d)Biopsies
3. In the histopathology, ...was used for cutting about 3-5 micron.
    a) Endonuclease
    b) Microtome
    c) c)Scissor
    d) d)Cutter
4. In systematic pathology, A specific disease can affect individual organs or systems like .....
    a) Appendicitis
    b) Inflammation
    c) Tumors
    d) Degenerations
5. Pathology term is the study of .....
    a) Diseases
    b) Birds
    c) Red blood cells
    d) Fungus
6. Which of the following stains nucleus and cytoplasm?
    a) Hematoxylin
    b) Eosin
    c) c)Phloem
    d) d)Both a) and b)
7. Who was known for the father of modern pathology?
    a) Rudolf Virchow
    b) Gregor Mendel
    c) Issacs Newton
    d) John Mathew
8. The pathology which is concerned with the reactions of cells and tissues to abnormal stimuli and to inherited defects that are the main causes of disease, this is.....
    a) Taxonomic pathology
    b) Systematic pathology
    c) General pathology

d) Asystematics pathology

9. The study of ..... Remains one of the main domains of pathology.
    a) Organogenesis
    b) Spermatogenesis
    c) c)Neurogenesis
    d) d)Pathogenesis
10. The application of pathology to legal purposes where investigation of death in suspicious circumstances is ..... pathology.
    a) Chemical pathology
    b) Toxicology
    c) c)Forensic science
    d) d)Light microscopy
11. A 48-year-old woman has a malignant lymphoma involving lymph nodes in the para-aortic region. She is treated with a chemotherapeutic agent which results in the loss of neoplastic cells through fragmentation of individual cell nuclei and cytoplasm. Over the next 2 months, the lymphoma decreases in size, as documented on abdominal CT scans. By which of the following mechanisms has her neoplasm primarily responded to therapy?
    a) Coagulative necrosis
    b) Mitochondrial poisoning
    c) Phagocytosis
    d) Acute inflammation
    e) Apoptosis
12. A 53-year-old man has had severe chest pain for the past 6 hours. On physical examination he is afebrile, but has tachycardia. Laboratory studies show a serum troponin I of 10 ng/mL. A coronary angiogram is performed emergently and reveals >90% occlusion of the anterior interventricular (left anterior descending) artery. In this setting, an irreversible injury to myocardial fibers will have occurred when which of the following cellular changes occurs?
    a) Glycogen stores are depleted
    b) Cytoplasmic sodium increases
    c) Nuclei undergo karyorrhexis
    d) Intracellular pH diminishes
    e) Blebs form on cell membranes
13. While in a home improvement center warehouse buying paint, a 35-year-old man hears 'Look out below!' and is then struck on the leg by a falling pallet rack, which strikes him on his left leg in the region of his thigh. The skin is not broken. Within 2 days there is a 5 x 7 cm purple colour to the site of injury. Which of the following substances has most likely accumulated at the site of injury to produce a yellow-brown colour at the site of injury 16 days later?
    a) Lipofuscin
    b) Bilirubin
    c) Melanin
    d) Hemosiderin
    e) Glycogen

14. A 54-year-old man with a chronic cough has a squamous cell carcinoma diagnosed in his right lung. While performing a pneumonectomy, the thoracic surgeon notes that the hilar lymph nodes are small, 0.5 to 1.0 cm in size, and jet black in colour throughout. Which of the following is the most likely cause for this appearance to the hilar nodes?
    a) Anthracotic pigment
    b) Lipochrome deposits
    c) Melanin accumulation
    d) Hemosiderosis
    e) Metastatic carcinoma
15. A 50-year-old woman with a history of unstable angina suffers an acute myocardial infarction. Thrombolytic therapy with tissue plasminogen activator (tPA) is administered to restore coronary blood flow. In spite of this therapy, the extent of myocardial fiber injury may increase because of which of the following cellular abnormalities?
    a) Cytoskeletal intermediate filament loss
    b) Decreased intracellular pH from anaerobic glycolysis
    c) Increased free radical formation
    d) Mitochondrial swelling
    e) Nuclear chromatin clumping
    f) Reduced protein synthesis
16. A 12-year-old boy has had multiple episodes of ear pain accompanied by fever. On examination his right tympanic membrane is red and bulging with yellow exudate. Laboratory studies of the exudate show culture positive for *Hemophilus influenzae*. A year later he has conductive hearing loss on the right, and a head CT scan shows a mass in the right middle ear. Which of the following materials is most likely to be seen in the tissue curetted from his middle ear?
    a) Lipofuscin pigment
    b) Russell bodies
    c) Neutrophil granules
    d) Cholesterol crystals
    e) Anthracotic pigment
17. A 43-year-old man has complained of mild burning substernal pain following meals for the past 3 years. Upper GI endoscopy is performed and biopsies are taken of an erythematous area of the lower esophageal mucosa 3 cm above the gastroesophageal junction. There is no mass lesion, no ulceration, and no hemorrhage noted. The biopsies show the presence of columnar epithelium with goblet cells. Which of the following mucosal alterations is most likely represented by these findings?
    a) Dysplasia
    b) Hyperplasia
    c) Carcinoma
    d) Ischemia
    e) Metaplasia

18. A 19-year-old woman gives birth to her first child. She begins breast feeding the infant. She continues breast feeding for almost a year with no difficulties and no complications. Which of the following cellular processes that began in the breast during pregnancy allowed her to nurse the infant for this period of time?
    a) Stromal hypertrophy
    b) Epithelial dysplasia
    c) Steatocyte atrophy
    d) Ductal epithelial metaplasis
19. An 84-year-old man dies from complications of Alzheimer disease. At autopsy, his heart is small (250 gm) and dark brown on sectioning. Microscopically, there is light brown perinuclear pigment with H&E staining of the cardiac muscle fibers. Which of the following substances is most likely increased in the myocardial fibers to produce this appearance of his heart?
    a) Glycogen from a storage disease
    b) Cholesterol from atherosclerosis
    c) Calcium deposition following necrosis
    d) Lipochrome from 'wear and tear'
    e) Hemosiderin from iron overload
20. In an experiment, a series of immunohistochemical stains are employed to identify different cellular components. One particular stain identifies the presence of intermediate filaments within cells. This cytokeratin stain is most likely to be useful for which of the following diagnostic purposes?
    a) Cytoskeletal alterations indicate impending cell death
    b) A neoplasm is determined to be a carcinoma
    c) Contractile properties of the cells can be assessed
    d) A history of chronic alcoholism can be confirmed
    e) The degree of metaplasia or dysplasia can be assessed

SECTION B

1. Define the following terminologies (5 Marks)
    a) Inflammation
    b) Hyperplasia
    c) Forensic pathology
    d) Hypertrophy
    e) Ischemia
2. State the mechanism of disease causation and development (5 Marks)
3. Discuss the importance of inflammation in the human body (5 Marks)
4. State the cardinal signs of inflammation (5 Marks)
5. Explain stages of wound healing and repair (5 Marks)
6. Write short notes on necrosis and its types (5 Marks)
7. State eye signs and symptoms that indicates a need for a blood transfusion (5 Marks)
8. List the neoplasia of the eye (5 Marks)

SECTION C

1. Explain in detail the causes of neoplasia (20 Marks)
2. Discuss how the disorder of blood and their effect on the eye or vision (20 Marks)
3. Discuss Hordeolum diseases under the following
    a) Definition
    b) Types
    c) Etiology
    d) Risk factors
    e) Clinical presentation
    f) Complication
    g) Diagnosis techniques
    h) Treatment
    i) Prevention and control
    j) Pathology special