



*(University of Choice)*

**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)  
UNIVERSITY EXAMINATIONS (MAIN PAPER)  
2023/2024 ACADEMIC YEAR**

**FOURTH YEAR FIRST SEMESTER EXAMINATIONS**

**FOR THE DEGREE  
OF  
BACHELOR OF SCIENCE IN MEDICAL LABORATORY  
SCIENCES**

**COURSE CODE: BML 418**

**COURSE TITLE: GENERAL PATHOLOGY**

**DATE: 6<sup>TH</sup> DECEMBER 2023**

**TIME: 8.00-10.00AM**

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**INSTRUCTIONS TO CANDIDATES**

This paper is divided into three sections, A B and C, respectively: Multiple Choice Questions (MCQs), Short Answer Questions (SAQs) and Long Answer Questions (LAQs). Answer all questions.

**DO NOT WRITE ON THE QUESTION PAPER**

**TIME: 2 Hours**

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 4 Printed Pages. Please Turn Over

**SECTION A: Multiple Choice Questions (20 Marks)**

1. What is the characteristic cell in tissue inflammation caused by worms?
  - A. Neutrophils
  - B. Eosinophils
  - C. Lymphocytes
  - D. Macrophages
2. Platelet derived growth factor is best known for-----
  - A. Activating fibroblast in wound healing
  - B. Activating the complement cascade
  - C. Aiding the maturation of granulomas
  - D. Causing epithelium to heal over breaks
  - E. Producing hemostasis in minor injuries
3. The type of necrosis that occurs in acute pancreatitis is-----
  - A. Liquefaction
  - B. Fat
  - C. Coagulation
  - D. Fibrinoid
4. The change of columnar epithelium of the bronchi into mature squamous epithelium is called-----
  - A. Hyperplasia
  - B. Hypertrophy
  - C. Dysplasia
  - D. Metaplasia
5. Which one of the following is a feature of irreversible cell injury?
  - A. Glycogen stores depleted
  - B. Cytoplasmic sodium increases
  - C. Blebs form on cell membranes
  - D. Nuclei undergoes karyorrhexis
6. Which one of the following processes that occur in the breast allows a mother to feed the infant?
  - A. Stromal hyperplasia
  - B. Ductal epithelial metaplasia
  - C. Lobular hyperplasia
  - D. Steatocyte hypertrophy
7. Which one of the following is the most likely pathologic alteration following occlusion of the left cerebral artery by a sterile thrombus?
  - A. Wet gangrene with secondary bacterial infection
  - B. Cerebral softening from liquefactive necrosis
  - C. Pale infarction with coagulative necrosis
  - D. Predominantly the loss of glial cells
8. What does a putrefaction bacteria on a necrotic tissue result in?
  - A. Coagulation
  - B. Infarction
  - C. Gangrene
  - D. Embolism

9. Which one of the following Enzyme is involved in the inactivation of free radicals?
  - A. Vitamin E
  - B. Superoxide dismutase
  - C.  $\alpha$ -antitrypsin
  - D. A & B
10. Select the wrong statement about Apoptosis;
  - A. Appear cheesy in appearance
  - B. Seen in toxic cell death
  - C. Occurs in single cells or in small cluster of cells
  - D. Does not elicit an inflammatory reaction
11. Prostaglandins are formed from Arachidonic acid through the action of which one of the following enzyme pathway?
  - A. Cyclooxygenase
  - B. Lipoxygenase
  - C. Phospholipase A
  - D. Glutathione reductase
12. Infertility and short stature in a woman with 45X karyotype are typical of-----
  - A. Klinefelter syndrome
  - B. Turner syndrome
  - C. Down syndrome
  - D. Achondroplasia dwarfism
13. Mutations in mitochondrial gene are-----
  - A. Common cause of disease
  - B. Inherited from the mother
  - C. Affects only males
  - D. Autosomal recessive
14. Which one of the following is a autosomal recessive disorder?
  - A. Familial polyposis coli
  - B. Cystic fibrosis
  - C. Neurofibromatosis
  - D. Hemophilia A
15. The process of regeneration is-----
  - A. Not restored prior to function
  - B. Occurs in tissues composed of labile and stable cells
  - C. Healing by proliferation of stromal elements
  - D. Invariability leads to scar formation
16. Which one of the following does not include causes of hypovolemic shock?
  - A. Severe vomiting
  - B. Myocardial infarction
  - C. Severe trauma
  - D. Extensive burning
17. Which one of the following is not true regarding venous thrombi?
  - A. Commonly due to stasis
  - B. Always cause infarction

- C. Commonly occur in the deep leg veins
  - D. Grow in the direction of blood flow
18. Acute Pulmonary Oedema of the heart failure results from-----
- A. Increased Plasma Colloid Osmotic Pressure
  - B. Decreased Plasma Colloid Osmotic Pressure
  - C. Increased Vascular Permeability
  - D. Increased Vascular Hydrostatic Pressure
19. A 23 year old woman is seen for a lump in her breast that she palpated on self breast examination. History reveals that her mother and her aunt both had breast and ovarian cancer. Given this presentation, you suspect the patient may have a mutation in which of the following genes involved in DNA repair?
- A. BRACA-1
  - B. ras
  - C. bcl-2
  - D. p53
20. Which one of the following chromosomal translocation is associated with chronic myeloid leukemia?
- A. t(14;18)
  - B. t(9;22)
  - C. t(11;14)
  - D. t(8;14)

**SECTION B: Short Answer Questions (40 Marks)**

1. Describe the roles of mitochondria in apoptosis (5Mks).
2. Discuss the entry and genetic components of HIV virus (5Mks)
3. State five benign pathological conditions of the connective tissue and their derivatives (5mks).
4. Outline five indications for prenatal genetic analysis (5Mks)
5. Explain five clinical consequences of obesity (5mks)
6. Describe techniques used in the molecular diagnosis of Mendelian disorders (5mks)
7. Apoptosis and necrosis represent irreversible alterations of cells. These two distinct processes of cell death can be distinguished by light and electron microscopy. Outline FIVE main ultra-structural distinguishing features of each (5 marks).
8. Describe the pathogenesis of Myasthenia gravis (5Mks)

**SECTION C: Long Answer Questions (60 Marks)**

1. Describe the main strategies of immune evasion of cancer (20 marks)
2. Describe the etiology, pathogenesis, morphologic changes and clinical effects of each of the below mentioned diseases.
  - a) Cystic fibrosis (6Mks)
  - b) Malaria (8Mks)
  - c) Chronic alcoholism (6Mks)
3. a) Discuss four cellular adaptation mechanisms to stressful stimuli giving physiologic and pathological examples in each case (12 marks)
- b) Describe the differences between acute and chronic inflammation (8 marks).