(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF MEDICAL LABORATORY SCIENCES (DIRECT ENTRY/UPGRADING)

MAIN EXAMINATION

COURSE CODE: BML 427

COURSE TITLE: CLINICAL PHYSIOLOGY

DATE: 31ST MAY 2019 **TIME:** 3.00 -5.00 PM

INSTRUCTIONS TO CANDIDATES

This paper is divided into three sections, **A B** and **C,** carrying respectively: Multiple Choice questions (**MCQs**), short answer questions (**SAQs**) and long answer questions (**LAQs**).

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

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SECTION A: MULTIPLE CHOICE QUESTIONS (20 MARKS)

1. A patient is diagnosed with a tumor involving the β- cells of the pancreatic islets. Which of the following events may be observed in this patient?
   a. Hyperglycemia
   b. Glycosuria
   c. Hypoglycemic coma
   d. Increased water loss in urine
2. Why is low- dose aspirin administered to patients at risk of developing myocardial infarction?
   a. To relieve pain
   b. To dilate the coronary artery
   c. To avoid gastric irritation
   d. To prevent clot formation due to platelet aggregation

3. Which of the following is diagnostically significant in prostatic carcinoma?
   a. Elevated plasma levels of testosterone
   b. Elevated plasma levels of follicle- stimulating hormone
   c. Elevated plasma levels of luteinizing hormone
   d. Elevated plasma levels of prostate- specific antigen

4. What is the underlying cause of Respiratory Distress Syndrome?
   a. Failure of mucus secretion in the respiratory tract
   b. Failure in the function of the pulmonary mucociliary escalator
   c. Inadequacy of pulmonary surfactant
   d. All of the above
5. Anemia is one of the major conditions that occur in chronic renal failure. Which of the following is the most effective way to correct this anemic state?
   a. Providing the patient with iron supplements
   b. Administration of Vitamin B_{12} to the patient
   c. Giving the patient a blood transfusion
   d. Administration of recombinant erythropoietin to the patient

6. Based on the red blood cell count a patient is diagnosed with polycythemia. Which of the following is **TRUE** about the hematocrit value of this patient?
   a. Lower than normal
   b. Higher than normal
   c. Within normal limits
   d. Difficult to tell

7. Which of the following conditions can be treated using angioplasty?
   a. Valvular incompetence in the heart

b. Cardiac failure
c. Thrombosis in the coronary artery
d. Pulmonary edema

8. Which of the following is **NOT** associated with high plasma levels of Human Chorionic Gonadotropin (hCG)?
   a. Hydatidiform mole
   b. Pregnancy (during the first semester)
   c. Ductal carcinoma of the breast
   d. Choriocarcinoma
9. Which of the following mediators of inflammation is implicated in the immunopathology of bronchial asthma?
   a. Prostaglandins
   b. Leukotrienes
   c. Thromboxanes
   d. Prostacyclins
10. Which of the following is used as a marker of myocardial injury?
    a. Plasma levels of myosin
    b. Plasma levels of actin
    c. Plasma levels of albumin
    d. Plasma levels of troponin
11. Cytological evaluation of an FNA aspirate of the thyroid gland from a patient with goiter reveals a hypercellular aspirate. What is the correct diagnosis of this patient's condition?
    a. Colloid goiter
    b. Medullary carcinoma of the thyroid gland
    c. Adenomatous goiter
    d. Papillary carcinoma of the thyroid gland
12. Which of the following causes diabetes insipidus?
    a. Excessive secretion of ACTH
    b. Excessive secretion of ADH
    c. Inadequate secretion of aldosterone
    d. Inadequate secretion of ADH
13. Which of the following is responsible for the secretion of surfactant within the alveoli?
    a. Goblet cells in the upper respiratory tract
    b. Type I alveolar epithelial cells
    c. Type II alveolar epithelial cells
    d. Mesenchymal cells in the bronchiolar smooth muscle

14. Why are Angiotensin II receptor antagonists used in the reduction of cardiac work in patients who have previously suffered a myocardial infarction?
    a. Because they reduce the rate of contraction of the heart
    b. Because they reduce the force of contraction of the heart
    c. Because they improve the blood supply to the heart
    d. Because they reduce the total peripheral resistance of the vascular system

15. In what part of the brain is there a lesion in the Sheehan syndrome?
    a. The hypothalamus
    b. The anterior pituitary
    c. The posterior pituitary
    d. The brainstem
16. Which of the following conditions is characterized by alveolar collapse?
    a. Chronic bronchitis
    b. Small airway disease
    c. Pulmonary emphysema
    d. Atelectasis
17. Why is hypoalbuminemia a characteristic feature of the nephrotic syndrome?
    a. Because of failure by the liver to synthesize albumin
    b. Because albumin leaks from the vascular system into the interstitial fluid compartment
    c. Because of albumin loss in urine
    d. Because of production of antibodies against albumin
18. Which of the following is a primary consequence of heart failure?
    a. A reduced peripheral resistance
    b. A reduced heart rate
    c. A reduced blood supply to the heart
    d. A reduced stroke volume
19. Which of the following stimulates spermatozoa maturation in the testicular germinal epithelium?
    a. Luteinizing hormone
    b. Follicle- stimulating hormone
    c. Testosterone
    d. Androstenedione
20. Which of the following parts of the renal nephron is **NOT** directly affected by arteriosclerosis?
    a. The afferent arteriole
    b. The efferent arteriole
    c. The renal tubules
    d. The glomeruli

SECTION B: SHORT ESSAY QUESTIONS (40 marks). <u>Attempt All the Questions in this Section</u>.

1. Explain why the following endocrine disorders lead to hypertension:
    a. Conn's syndrome (3 marks)
    b. Cushing's syndrome (3 marks)
    c. Pheochromocytoma (4 marks)

2. Briefly discuss the pathophysiology of respiratory distress syndrome. (10 marks)

3. Explain the measures that need to be undertaken to prevent graft rejection in renal transplant surgery. (10 marks)
4. a. Explain the term “Ischemic Heart Disease”. (3 marks)
   b. Explain the role of hyperlipidemia in the development of ischemic heart disease. (7 marks)

SECTION C: LONG ESSAY QUESTIONS (40 marks). Attempt **BOTH** Questions.

1. Discuss the endocrine disturbances that may occur in a patient with chronic renal failure. (20 marks)

2. Discuss the pathophysiology of bronchopneumonia. (20 marks)