



(University of Choice)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

(MAIN CAMPUSES)

**UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR**

END OF SEMESTER TWO EXAMINATIONS

FOR

**1. THE BACHELOR OF SCIENCE
IN MEDICAL LABORATORY SCIENCES**

**2. THE BACHELOR OF SCIENCE
IN HUMAN NUTRITION AND DIETETICS**

COURSE CODE: BML 123 /HND 208

COURSE TITLE: SYSTEMIC HUMAN PHYSIOLOGY / PHYSIOLOGY II

DATE: 24TH MAY 2019

TIME: 8.00 -10.00 AM

INSTRUCTIONS:

ANSWER ALL QUESTIONS IN THIS EXAMINATION

TIME: 2 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 5 Printed Pages. Please Turn Over

SECTION A: MULTIPLE CHOICE QUESTIONS**[20 MARKS]**

1. Which one of the following hormones stimulates the empty follicle after ovulation
 - (a) Relaxin
 - (b) Androgen binding protein (ABP)
 - (c) LH
 - (d) FSH

2. Identify an angiogenic stimulator
 - (a) Basic FGF
 - (b) Heparin
 - (c) IL 23
 - (d) Tachykinin

3. A cardiogenic hock can result from
 - (a) Heart murmurs
 - (b) Inhibins
 - (c) Low output
 - (d) Volumetric contraction

4. One feature of the spermatic arteries is
 - (a) Is composed of primitive germ cells and leydig cells
 - (b) They are tortuous
 - (c) Blood flow resembles pampiniform plexus flow
 - (d) Is impermeable to steroids

5. An aspect involved in the class I pathway of antigen processing is
 - (a) Endosomes
 - (b) Lysosomes
 - (c) Proteosome complex
 - (d) Membrane proteins

6. Select an agent of extrinsic control of vascular resistance and blood flow
 - (a) Surface active antigen
 - (b) Myoglobin
 - (c) Angiotensin II
 - (d) Nexus synapse

7. One antagonist of the pneumotaxic respiratory center is
 - (a) The apneustic center
 - (b) Phrenic centers
 - (c) E neurons
 - (d) Rhythmicity center

8. Which agent prevents the respiratory distress syndrome
 - (a) Dipalmitoyl lecithin
 - (b) Haemochrome
 - (c) Legumain
 - (d) Aryl sulfatase A

9. The following statements are TRUE concerning the female reproductive system EXCEPT
 - (a) A new-born girl is born with approximately 300 000 – 400 000 primary oocytes
 - (b) The corpus luteum secretes both oestrogen and progesterone
 - (c) The cumulus oophorus is the mound that supports the ovum in the secondary follicle
 - (d) Meiotic division in the secondary oocyte is halted at metaphase II and is never completed unless fertilisation occurs

10. One of the GIT plexuses that interconnect with other plexuses that innervate smooth muscles is
 - (a) Serosal plexus
 - (b) Auerch's
 - (c) Myxenteric
 - (d) Mucosal plexus

11. CD8+ CTLs release a microbicidal agent called
 - (a) Adra-laminin
 - (b) Vitronectin
 - (c) Granulysin
 - (d) Protectin

12. Which one of the following cells of the gastric glands is CORRECTLY matched its their function
 - (a) Goblet cells – secrete hydrochloric acid
 - (b) Argentaffen cells – secrete serotonin and histamine
 - (c) G cells – secrete pepsinogen
 - (d) Chief cells – secrete mucus

13. Identify a CORRECT statement about antigen processing and presentation pathways
 - (a) Cytosolic and nuclear antigens are presented in the context of MHC class I molecules
 - (b) Extracellular proteins are degraded in the proteasome complex
 - (c) Intracellularly produced proteins are degraded in the lysosomes and endosomes
 - (d) Cytosolic antigens are coupled to ubiquitin before being loaded onto MHC class II molecules

14. Select a substance that inhibits the process of angiogenesis
 - (a) Platelet factor 4
 - (b) Angiogenin
 - (c) Interleukin-18
 - (d) Acidic fibroblast growth factor (FGF)

15. Select an intermediate involved in testosterone synthesis
 - (a) Gs-cAMP
 - (b) Androstedione
 - (c) 17 alpha hydroprogesterone
 - (d) Alpha pregnenolone

16. Identify a statement which is TRUE about the composition of blood
 - (a) Its viscosity ranges between 6.6 and 7.8 and flows thicker than water
 - (b) Its temperature within the thorax is approximately 38.4⁰C
 - (c) It is composed of formed elements and a fluid portion called serum
 - (d) It makes up 18 % of total body weight

18. Collagen mutations can lead to
 - (a) Osteopontin downregulation
 - (b) Chondroplasias
 - (c) Danlos syndrome
 - (d) Bone metaplasias

19. Annual hydroxyapatite turn over in adults is
 - (a) 25%
 - (b) 21%
 - (c) 19%
 - (d) 15%

20. One agent involved in infant micturition is
- (a) CNS-Spinal reflexes
 - (a) Occipital reflexes
 - (b) Theca interna
 - (c) Cortical-smooth muscle impulses

SECTION B: SHORT ANSWER QUESTIONS**[40 MARKS]**

1. Provide a well labeled diagram of the human sperm cell **(4 marks)**
2. Describe the activities of calcitriol **(4 marks)**
3. Illustrate the components of a normal ECG during a heart beat **(4 marks)**
4. Explain the function of the atrial natriuretic peptide (ANP). **(4 marks)**
5. Explain the importance of the strong acidic pH (less than 2.0) provided in the stomach by HCL **(4 marks)**
6. Outline the functions of the active metabolite called calcitriol **(4 marks)**
7. Identify the functions of the musculoskeletal system **(4 marks)**
8. Describe muscle and sphincter changes that brings about adult micturition **(4 marks)**
9. Define non-disjunction and describe four effects of different chromosomal patterns caused by non-disjunctions in progeny **(4 marks)**
10. Identify and describe the effects of four agents in the extrinsic control of vascular resistance and blood flow **(4 marks)**

SECTION C: LONG ANSWER QUESTIONS**[40 MARKS]**

1. Briefly describe the intestinal border brush **(10 marks)**
2. Discuss testosterone synthesis structure and hormonal activities **(10 Marks)**
3. Discuss the mechanics of breathing and activities of the brain respiratory centers **(20 marks)**