



*(University of Choice)*

**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

**(MAIN CAMPUS)**

**UNIVERSITY EXAMINATIONS  
2023/2024 ACADEMIC YEAR**

**FIRST YEAR FIRST TRIMESTER  
EXAMINATIONS**

**FOR THE DEGREES OF BSC IN:**

- 1. CLINICAL MEDICINE**
- 2. NURSING SCIENCES**
- 3. MEDICAL LAB. SCIENCE**
- 4. PHYSIOTHERAPY**
- 5. MEDICAL BIOTECHNOLOGY**

**COURSE CODE: PML 116**

**COURSE TITLE: CELL BIOLOGY AND GENETICS**

**DATE: 5<sup>TH</sup> DECEMBER 2023      TIME: 8:00-10:00 AM**

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**INSTRUCTIONS:**

**ANSWER ALL QUESTIONS IN SECTION A, B AND C**

**SUPPORT YOUR ANSWERS WITH DIAGRAMS, WHERE POSSIBLE**

**TIME: 2 HOURS**

MMUST observes ZERO tolerance to examination  
cheating

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This Paper Consists of 6 Printed Pages. Please Turn Over

## SECTION A: MULTIPLE CHOICE QUESTIONS (20 MARKS)

1. What is a cell?
  - a) smallest and advanced unit of life
  - b) smallest and basic unit of life
  - c) largest and basic unit of life
  - d) largest and advanced unit of life
2. Which of the following is a functional unit of a body?
  - a) Mitochondria
  - b) Cytoplasm
  - c) Spleen
  - d) Cell
3. What is cell biology?
  - a) Study of cell division only
  - b) Study of cancerous cell
  - c) Study of cell structure and function
  - d) Study of metaphase of a cell
4. Which of the following is used by cells to interact with other cells?
  - a) Cell tubules
  - b) Cell junctions
  - c) Cell adhesions
  - d) Cell detectors
5. In which of the following type of cells the cell junction is abundant?
  - a) Cardiac cells
  - b) Prokaryotic cells
  - c) Hepatic cells
  - d) Epithelial cells
6. What is epithelial mesenchymal transition?
  - a) Loss of migration and gain of adhesion
  - b) Formation of mesenchymal cells
  - c) Loss of adhesion and gain of migration
  - d) Lysis of cell
7. In which of the following type of cells the Gap junctions are absent?
  - a) Sperm cells
  - b) Brain cells
  - c) Reproductive cells
  - d) Cardiac cells
8. In which of the following type of cells Sarcoplasmic reticulum is found?
  - a) muscle cells
  - b) liver cells
  - c) kidney cells
  - d) neurons

9. Which of the following are phagocytic cells?

- a) neutrophils, mast cells
- b) mast cells, macrophages
- c) mast cells, antibodies
- d) neutrophils, macrophages

10. Which of the following is known as the powerhouse of a cell?

- a) Mitochondria
- b) Cytoplasm
- c) Lysosome
- d) Nuclei

11. Which of the following is known as the suicide bag of a cell?

- a) Mitochondria
- b) Golgi Complex
- c) Lysosome
- d) Nuclei

12. Lysosomes are produced by which of the following cell organelles?

- a) Mitochondria
- b) Endoplasmic Reticulum
- c) Golgi Complex
- d) DNA

13. Which of the following cell organelle is responsible for transporting, modifying, and packaging proteins and lipids?

- a) Mitochondria
- b) Endoplasmic Reticulum
- c) Golgi Complex
- d) DNA

14. Which of the following cell doesn't contain a cell wall?

- a) Plant cell
- b) Bacteria
- c) Fungi
- d) Animal cell

15. Who is the father of cell biology?

- a) George N. Papanicolaou
- b) George Emil Palade
- c) Robert Hooke
- d) None of the above

16. DNA is stored in which of the following cell organelle?

- a) Cell wall
- b) Cell Membrane
- c) Nucleus
- d) Cytoplasm

17. In which of the following cell nucleus is not present?

- a) Eukaryotic cell
- b) Prokaryotic cell
- c) Both of the above
- d) None of the above

18. Which of the following organisms doesn't have a cell?

- a) Virus
- b) Bacteria
- c) Fungi
- d) Algae

19. Who proposed the cell theory?

- a) Theodor Schwann, Watson and Robert Hooke
- b) Theodor Schwann, Matthias Schleiden and Robert Hooke
- c) Theodor Schwann, Matthias Schleiden and Rudolf Virchow
- d) NTheodor Schwann, Rudolf Virchow and Robert Hooke

20. RNA is present in which of the following cell organelles?

- a) Cell wall
- b) Ribosome
- c) Nucleus
- d) Cytoplasm
- e) Golgi complex

#### SECTION B: SHORT ANSWER QUESTIONS

(40 MARKS)

1. Elucidate the mechanisms involved in post translational modification (5 MARKS)
2. Prevail upon distinguishing features of uniporters, symporters and antiporters (5 MARKS)
3. Describe mechanisms that characterise the anaphase stage of cell division (5 MARKS)
4. What are the steps of cell material trafficking involved during endocytosis such as clathrin coated endocytosis (5 MARKS)
5. What does Northern Blotting entail (5 MARKS)
6. Elucidate features of the tRNA molecule (5 MARKS)
7. What is meant cellular regeneration and hyperplasia (5 MARKS)
8. Give the defining features of assortative mating (5 MARKS)

#### SECTION C: LONG ANSWER QUESTIONS MARKS)

(40

1. Provide features of cell nuclear enclosure and material trafficking (20 MARKS)
2. Expound of structural and functional features of scanning transmission electron microscopes (20 MARKS)