

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF  
SCIENCE IN BIOMEDICAL SCIENCE TECHNOLOGY**

**BMET 221: PATHOPHYSIOLOGY**

**STREAMS: BSC. BIOC**

**TIME: 2 HOURS**

**DAY/DATE: THURSDAY 19/12/2024**

**11.30 A.M. – 1.30 P.M.**

**INSTRUCTIONS:**

- Answer question **ONE (COMPULSORY)** and any other **TWO** questions.
- Sketch diagrams may be used whenever they may help to illustrate your answer.
- Do not write anything on the question paper.
- This is a closed book exam. **No** reference materials are allowed in the examination room.
- There will be **No** use of mobile phones or any other unauthorized materials.
- Write your answers legibly and use your time wisely.

**Question 1 (Compulsory) (30 marks)**

- a) Using a diagram, highlight the structural adaptations of the mitochondrion that gives it ability for its functions. (5 Marks)
- b) Highlight any FIVE roles of membrane proteins. (5 Marks)
- c) Using a diagram, illustrate the formation of phospholipids and briefly describe all its components. (5 marks).
- d) Explain any THREE main functions of mitosis. (6 Marks)
- e) Explain any THREE main roles of cellular compartmentalization. (6 Marks)
- f) Discuss ANY THREE possible exceptions to cell theory. (3 marks)

**Question 2 (20 marks)**

- a) Describe how cilia are structurally equipped to produce cell movement. (10 Marks)

- b) Explain any TEN differences between a normal and a cancerous cell. (10 marks)

**Question 3 (20 marks)**

- a) Using a well labelled diagram, describe the structure of a cell membrane and explain why it is referred to as 'fluid mosaic'. (10 Marks)
- b) Explain any FIVE clinical applications of tumor markers. (10 Marks)

**Question 4 (20 marks)**

- a) Describe the structure of cytoskeleton of a cell. (6 Marks)
- b) Explain why receptor – mediated endocytosis is said to be more selective than phagocytosis or pinocytosis. (8 marks)
- c) State ANY FOUR strategies that can help reduce the risk of cancer. (4 marks)
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