

**CHUKA**



**UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**FIRST YEAREXAMINATION FOR THE AWARD OF DEGREE  
OF BACHELOR OF SCIENCE IN BIOMEDICAL SCIENCE**

**BMET 110: HUMAN MORPHOLOGY AND DEVELOPMENTAL ANATOMY**

**STREAMS: BMET (Y1S2)**

**TIME: 2 HOURS**

**DAY/DATE: MONDAY 08/4/2019**

**2.30 P.M. – 4.30 P.M.**

**INSTRUCTIONS:**

- Do not write anything on the question paper
- Mobile phones and any other reference materials are NOT allowed in the examination room
- Answer question ONE and three other questions
- Number ALL your answers and indicate the order of appearance in the space provided in the cover page of the examination answer booklet

**QUESTION ONE**

The cell is the simplest structural and functional unit of life in the human body.

- (a) Describe the basic structure of the plasma membrane using the aid of a diagram[7 marks]
- (b) State two (2) functions of each of the following cellular organelles:
- |                                  |           |
|----------------------------------|-----------|
| (i) Smooth endoplasmic reticulum | [2 marks] |
| (ii) Lysosomes                   | [2 marks] |
| (iii) Golgi apparatus            | [2 marks] |
- (c) Explain how haploid gametes are produced during oogenesis [6 marks]
- (d) Explain how the following cytoskeletal components benefit the cell:
- |                    |           |
|--------------------|-----------|
| (i) Microfilaments | [3 marks] |
| (ii) Microtubules  | [3 marks] |
- (e) State five (5) functions of proteins in the plasma membrane [5 marks]

**QUESTION TWO**

Describe the location and functions of the following organs in the male reproductive system:

- (a) Epididymis [5 marks]
- (b) Seminal vesicles [5 marks]
- (c) Prostate gland [5 marks]
- (d) Scrotum [5 marks]

**QUESTION THREE**

The implantation of the blastocyst is completed by the end of the second week of embryonic life:

- (a) Describe the summary of major events that occur during the second week of embryonic life [14 marks]
- (b) Briefly explain three (3) methods used to estimate the fetal age [6 marks]

**QUESTION FOUR**

The heart contracts from the intrauterine life until death.

- (a) Describe the external anatomy of the heart using the aid of a diagram [7 marks]
- (b) Name the three (3) histological/microscopic layers of the heart [3 marks]
- (c) Explain how the heart and the lungs are structurally related [4 marks]
- (d) Explain the functions of the semilunar valves [6 marks]

**QUESTION FIVE**

The nervous system is a communications and control network for the human body:

- (a) State four (4) main regions of the human brain [4 marks]
- (b) State the three (3) types of neurons [3 marks]
- (c) Describe the natural mechanisms that protect the spinal cord from various injuries [6 marks]
- (d) With the aid of a diagram, explain how the eye is structurally connected to the brain [7 marks]