

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

BMED 313: MOLECULAR PHYSIOLOGY

STREAMS: BMED

TIME: 2 HOURS

DAY/DATE: TUESDAY 05/12/2017

11.30 A.M. – 1.30 P.M.

INSTRUCTIONS:

- **ANSWER QUESTION ONE AND ANY TWO QUESTIONS**
- **DO NOT WRITE ON THE QUESTION PAPER**

QUESTION ONE (30 MARKS)

- (a) Using structural and chemical formulae describe the formation of bile pigments in the spleen and explain how they are excreted. [10 marks]
- (b) Discuss major sequence of events in synaptic transmission [7 marks]
- (c) Show how GABA is synthesized and inactivated in the neuron. [6 marks]
- (d) What is the biomedical significance of this neurotransmitter? [4 marks]
- (e) Outline functions of microfilaments in the cell. [3 marks]

QUESTION TWO (20 MARKS)

- (a) Discuss bacteria chemotaxis. [10 marks]
- (b) Explain the role of calcium ions in visual signal recovery. [10 marks]

QUESTION THREE (20 MARKS)

- (a) List five proteins involved in skeletal muscle contraction. [5 marks]
- (b) Describe energy metabolism during muscle contraction. [10 marks]
- (c) What causes muscle fatigue? [5 marks]

QUESTION FOUR (20 MARKS)

- (a) Sarin and VX nerve gases have been used as chemical warfare agents and Malathion as an agricultural insecticide.
- (i) Describe the molecular basis of their lethal action. [4 marks]
 - (ii) List six (6) neurotoxins that inhibit acetylcholine receptors. [6 marks]
- (b) Explain the rationale and application of phototherapy in newborns. [10 marks]
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