

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

RESIT/SPECIAL EXAMINATION

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

BMET 315: MOLECULAR PHYSIOLOGY

STREAMS: BSC BMET

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 03/11/2021

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) Discuss the structure of skeletal muscle sarcomere. (5 Marks)
- (b) Using structural and chemical formulae describe **heme** biosynthesis in the erythroid cells. (9 Marks)
- (c) Describe energy metabolism during cardiac muscle contraction. (8 Marks)
- (d) Discuss role of Calcium ions in the regulation of phototransduction cascade. (8 Marks)

QUESTION TWO (20 MARKS)

- (a) Discuss the biosynthesis and inactivation of serotonin neurotransmitters. (5 Marks)
- (b) Explain why high levels of serotonin in the brain is dangerous. (6Marks)
- (c) Describe mode of action of Glutamate as an inhibitory and excitatory neurotransmitter in the central nervous system. (9 Marks)

QUESTION THREE (20 Marks)

- (a) Discuss the mode of action and physiological role of G-protein coupled receptors. (10 Marks)
- (b) Discuss mechanism of signal transduction in bacteria chemotaxis. (10 Marks)

QUESTION FOUR (20 MARKS)

- (a) Discuss biochemical basis of newborn jaundice. **(8 Marks)**
- (b) Explain the rationale and application of phototherapy in newborns. **(12 Marks)**
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