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: THURSDAY 04/02/2021 **2.30 P.M – 4.30 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 and functions 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. **(9 Marks)**

(b) Explain why low levels of serotonin in the brain is dangerous. **(6 Marks)**

(c) Describe mode of action of GABA (γ-aminobutyric acid) as an inhibitory neurotransmitter in the central nervous system. **(5 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 hepatic jaundice. **(8 Marks)**

(b) Explain the rationale and application of phototherapy in newborns. **(12 Marks)**
