

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN BIOCHEMISTRY

BIOC 401: SPECIAL METABOLISM

STREAMS:

TIME: 2 HOURS

DAY/DATE: THURSDAY 13/12/2018

11.30 A.M – 1.30 P.M

INSTRUCTIONS:

- Answer question one and any two questions
- Do not write on the question paper

- (a) Discuss the structure and functions of eukaryotic flagella axoneme. [5 marks]
 - (b) Give three examples of antimetabolic drugs used to inhibit microtubule movement. [3 marks]
- (c) Describe five classes of pain. [5 marks]
 - (d) Describe 5 types of chemicals that inhibit sodium ion channels. [5 marks]
 - (e) Resting membrane potential (RMP) is membrane potential of a cell that is not producing an electrical signal.
 - (i) Explain how RMP is generated and maintained in the neuron. [8 marks]
 - (ii) Describe patch-clamp technique for measuring resting membrane potential. [4 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]
- (a) Discuss biochemical basis of hepatic jaundice. [9 marks]
 - (b) Using a diagram, show how bilirubin is conjugated in the hepatocytes. [5 marks]
 - (c) Explain the rationale and application of phototherapy in newborns. [6 marks]

4. (a) Discuss the major phases of action potential. [10 marks]
(b) Describe energy metabolism during cardiac muscle contraction. [6 marks]
(c) Explain why cardiac muscles cannot generate tetanic contraction. [4 marks]
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