

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

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

BIOC 401: SPECIAL METABOLISM

STREAMS: BSC (BIOCHEM) Y4S1

TIME: 2 HOURS

DAY/DATE: WEDNESDAY 06/12/2017

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

- (a) Discuss the structure and functions of skeletal muscle sarcomere. [10 marks]
- (b) Using structural and chemical formulae describe **heme** catabolism in the spleen. [10 marks]
- (c) How do receptors control the activity of the target cells? [5 marks]
- (d) List and describe five (5) types of chemicals that inhibit sodium ion channels.[5 marks]

QUESTION TWO

- (a) Discuss the biosynthesis, inactivation and physiological role of dopamine neurotransmitters. [10 marks]
- (b) List all the serotonin receptor subtypes of 5HT1 and 5HT2 groups and explain their role in serotonergic transmission. [10 marks]

QUESTION THREE

- (a) Discuss major properties of neuropeptides. [8 marks]
- (b) Describe the physiological significance of the following neurotransmitters;
- Glutamate
 - Epinephrine ($G_{\beta 3}$)
 - Substance p
 - Neurotensin

QUESTION FOUR

- (a) Discuss the major phases of cardiac 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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