

CHUKA



UNIVERSITY

UNIVERSITY EXAMINATIONS

EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF EDUCATION  
(SCIENCE), AND BACHELOR OF SCIENCE

ZOOL 330: ANIMAL PHYSIOLOGY

STREAMS: BSC, BED (SCI) Y3S1

TIME: 2 HOURS

DAY/DATE: TUESDAY 05/12/2017

8.30 A.M. – 10.30 A.M.

INSTRUCTIONS: Answer ALL the questions in section A and TWO questions in section B

SECTION A (30 MARKS)

1. (a) Explain the role of the following proteins in mammal
  - (i) Androgen binding protein [1 mark]
  - (ii) Kisspeptin [1 mark]
- (b) Explain the functions of the hormone prolactin in mammals. [2 marks]  
Prolactin [2 marks]
- (c) Explain the role of LH in the mammalian female reproduction. [2 marks]
2. (a) Explain how total body water is measured in mammals. [2 marks]
- (b) Calculate the plasma volume of a man whose total blood volume and haematocrit is 5.6l and 40 respectively. [3 marks]
- (c) Explain why inulin is used in measurement of extracellular fluid volume. [1 mark]
3. (a) Distinguish between the following terms
  - (i) Temporal and spatial summation [1 mark]
  - (ii) Repolarization and hyperpolarization [1 mark]
- (b) Outline the characteristics of an electrical synapse. [2 marks]
- (c) State the role of calcium ions in synaptic impulse transmission. [1 mark]
- (d) Identify two types of tactile receptors found in the mammalian skin. [1 mark]

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4. (a) State the effects of sympathetic nervous system on the following organs:  
[2 marks]
- (i) Lungs
  - (ii) Heart
  - (iii) Salivary glands
  - (iv) Urinary bladder
- (b) Explain the role of contact chemoreceptors in insects. [1 mark]
- (c) Explain the term accommodation in relation to the mammalian eye.[2 marks]
- (d) Explain why human cannot perceive bluish-yellow or reddish-green colours.  
[1 mark]
5. (a) Identify the part of cerebral cortex that play a role in auditory perception.[1 mark]
- (b) State the role of the troponin in skeletal muscle contraction. [1 mark]
- (c) Explain the mechanism of reabsorption in the proximal tubule.[2 marks]
- (d) Explain how Erythroblastosis foetalis is prevented. [2 marks]

### SECTION B (40 MARKS)

6. Describe the following mechanisms:
- (a) Platelet-plug formation [8 marks]
  - (b) Extrinsic pathway of blood clotting [12 marks]
7. (a) Discuss the role of hormone produced in secondary endocrine organs.[12 marks]
- (b) Discuss the hormones that control growth and development in insects. [8 marks]
8. Describe the mechanism of acid base balance in humans. [20 marks]
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