FACULTY	**Health Sciences and Veterinary Medicine**		
DEPARTMENT	**School of Veterinary Medicine**		
SUBJECT	**Veterinary Structure and Function I (Paper 2)**		
SUBJECT CODE	**V3581ES**		
DATE	**JUNE 2025**		
DURATION	**3 hours**	**MARKS**	**150**

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Internal Moderator: Dr F. Chitate

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This question paper consists of 3 pages, including this front page.

Instructions

Read the questions carefully Answer
ALL questions
Write clearly and concisely

First Opportunity Examination

ESSAYS (40 MARKS)

1. Give a description of visceral smooth muscle under the following headings:
   a) Location (3)
   b) Electrical potentials (2)
   c) Mechanism of contraction (6)
   d) Humoral control of contraction (9)

2. a) Give the spatial origin of the sympathetic nervous system (2)
   b) Identify all the chemical transmitters released by the sympathetic nervous system (4)
   c) Name the receptors in the sympathetic nervous system (4)
   d) Indicate the major effects of the sympathetic nervous system on various body organs and systems (10)

SHORT ANSWERS (85 marks)

1. Give the enzyme markers for the following bone cells;
   a) Osteoblasts (1)
   b) Osteocytes (1)
   c) Osteoclasts (1)
2. State five key functions of bone resorption. (5)
3. Give five factors contributing to non-union in fracture healing. (5)
4. Explain the causes of the following disorders of calcium homeostasis;
   a) Nutritional secondary hyperparathyroidism (3)
   b) Rickets (3)
5. State the roles of calcium in skeletal muscle contraction and relaxation. (3)
6. Write briefly on the effects of organophosphate poisoning on muscle function. (6)
7. List the characteristics of nerve action potentials. (5)
8. Distinguish between temporal and spatial summation at a neuron-neuron synapse. (5)
9. Write concisely on amino acid neurotransmitters. (8)
10. Highlight the location and types of receptors for indolamine neurotransmitters. (4)
11. Write briefly on sensory input to the spinal cord, highlighting any clinical significance. (3)
12. Briefly answer the following questions on motor function;
    a) Give the area of origin of the pyramidal motor system in the central nervous system (1)
    b) Name the two tracts that constitute the pyramidal motor system (2)
    c) State the function of the pyramidal motor system (1)
    d) Explain why lesions in the left hemisphere of the brain affect limb movements in the right limb (1)
    e) State the function of the extrapyramidal motor system. (5)
13. Give two physiological activities primarily controlled by the pons (2)
14. Name the cranial nerves that are purely motor. (5)
15. Name four neurotransmitters released by Aδ and C pain afferent fibres. (4)
16. Explain how endogenous opioids regulate pain within the spinal cord. (4)
17. State the functions of cerebrospinal fluid. (3)
18. List four physiological reflexes mediated primarily by the medulla oblongata (4)

PRACTICAL (25 MARKS)

1. A dog is presented with suspected damage to the radial nerve and biceps brachii muscle following a road traffic accident.
    a) Draw a table showing all the parameters and signs used in evaluation of the Lower Motor Neuron lesion (12)

    b) Describe how you perform an electromyography to confirm damage to the biceps brachii muscle. (10)

    c) If there was indeed collateral muscle damage, name any three biomolecules that would be elevated in plasma. (3)

THE END