8/12/18 (M)

This question paper contains 4 printed pages.

Your Roll No. .....

Sl. No. of Ques. Paper : **126** **I**

Unique Paper Code : **32231302**

Name of Paper : **Physiology: Controlling and Coordinating Systems**

Name of Course : **B.Sc. (Hons.) Zooology**

Semester : **III**

Duration : **3 hours**

Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all. Question No. 1 is compulsory. Make well labelled diagrams wherever necessary.

1. (a) Define the following:

(i) Permissive effect

(ii) Osteon

(iii) Synapse

(iv) Latent period. 1×4=4

(b) Differentiate between the following:

(i) Tight and gap junction

(ii) Rods and cones

(iii) Bone and cartilage

(iv) Isotonic and isometric contraction

(v) IPSP and EPSP

P. T. O.

(vi) Chemical synapse and electrical synapse. 2×6=12

(c) Fill in the blanks:

(i) ..... is an enzyme that phosphorylates other cellular proteins.

(ii) ..... binds to Ca^{2+} enabling even more Ca^{2+} to be sequestered as stored within the sarcoplasmic reticulum.

(iii) The period of time when secondary sexual characteristics begin to develop and the potential for sexual reproduction is reached is called ..... . The first occurrence of menstruation is called ....., and the permanent cessation of menstruation is called .....

(iv) ..... is the hormone secreted by zona glomerulosa of adrenal cortex.

(v) ..... is the process by which graded potentials are added together.

(vi) The ..... of endometrium lines the uterine cavity and sloughs off during menstruation.

(vii) ..... is the structural unit of a compact bone.

(viii) A ..... is a bundle of axon located in the central nervous system. 1/2×10=5

(d) Expand the following abbreviations:

(i) RMP

(ii) ICSH

(iii) PNS

(iv) FOG

(v) SON

(vi) AChE 1/2×6=3

(e) Give exact location and function of the following:

(i) Cremaster muscle

(ii) Amacrine cell

(iii) Sertoli cells

(iv) Chief cells

(v) Volksmann's canal

(vi) Muscle spindle. 1/2×6=3

2. (a) Discuss the mode of action of water and lipid soluble hormones with suitable diagram. 7

(b) Delineate the steps in the synthesis and secretion of thyroid hormones. 5

3. (a) Discuss briefly the events involved in excitation-contraction coupling cycle. 8

(b) How does sarcomere length influence the maximum tension that is possible during muscle contraction? 4

P. T. O.

4. (a) Explain the generation and propagation of action potential in continuous and saltatory conduction with suitable diagram. 8

   (b) Discuss the factors affecting the speed of propagation. 4

5. (a) Outline the major events of each phase of uterine cycle and correlate them with the events of the ovarian cycle. 9

   (b) Add a note on the role of blood testis barrier. 3

6. (a) How do hair cells in cochlea and vestibular apparatus transduce mechanical vibrations into electrical signals? 5

   (b) Describe the location, structure and function of different types of connective tissue. 7

7. Write short notes on any *three* :

   (a) Ultrastructure of skeletal muscle

   (b) Histology of adrenal gland

   (c) Rhodopsin-retinal visual cycle with suitable diagram

   (d) Hormonal control of testicular function. 4×3