

2016

M.Sc.

3rd Semester Examination

ZOOLOGY

PAPER—ZOO-303

Full Marks : 40

Time : 2 Hours

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Illustrate the answers wherever necessary.

Use separate Answer-scripts for Group-A & Group-B

Group-A

(Techniques and Bioinstrumentation)

1. Answer any *two* questions from the following : 2×2
- (a) Write the principle of flow cytometry. 2
 - (b) What is Relative frontal mobility ? 2
 - (c) State the principle of SDS-PAGE. 2
 - (d) What is the basic idea of Nuclear Magnetic Resonance (NMR) ? 2

(Turn Over)

2. Answer any *two* questions from the following : 4×2
- (a) State the basic protocol of 2D gel electrophoresis. 4
- (b) (i) Discuss CPD with proper explanation.
(ii) Name two fluorescent stains used in biological studies. $3+1$
- (c) (i) Write the principle of Ion exchange chromatography.
(ii) State the advantages and disadvantages of flow cytometry. $2+2$
- (d) What is x-ray ? Write the Bragg's law and explain how the crystalline plane can be determined by this law. $1+3$
3. Answer any *one* question from the following : 8×1
- (a) What is Hybridization probe ? Write the principle, protocol and application of Southern Blotting Hybridization (SBH). $1+2+4+1$
- (b) (i) State the principle and application of Affinity chromatography.
(ii) Write notes on density gradient centrifugation. $(3+3)+2$

Group-B**(Endocrinology and Neurobiology)**

4. Answer any *two* questions of the following : 2×2
- (a) What are the principles involved in the regulation of the immune system by the nervous system ? 2
- (b) State a common classification of neurotransmitters based on their chemical nature. 2
- (c) Write note on :
Synaptic transmission. 2
- (d) How you can assess the patient with Parkinson's disease ? 2
5. Answer any *two* questions of the following : 4×2
- (a) State the Hypothalamic regulation of prolactin secretion in human (PRL-Secretion). 4
- (b) Draw the diagram of the basic circuitry of the retina. 4
- (c) Explain how hair cell transforms vibrational energy into an electrical signal ? 4
- (d) Why corpora allata of insects are considered as endocrine glands ? 4

6. Answer any *one* question of the following : 8×1

(a) 'The secretion of gonadotropin-II (Gt H-II) is under the control of neurohormones and neurotransmitters in teleosts' — justify the statement. 8

(b) Write notes on any *four* of the following :

- (i) Innervation of the thymus (only ANS-nerve):
 - (ii) Crypt cell.
 - (iii) Hypothalamic hormones as important link between Nervous and Endocrine systems.
 - (iv) Pathophysiology of Alzheimer's disease.
 - (v) Olfactory sensory receptor neuron (OSRN).
 - (vi) Fluorescence-activated cell sorting (FACS).
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