2016

M.Sc. Part–I Examination

ZOOLOGY

PAPER—II (Group—B)

Full Marks : 50

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.

Group—B

Answer any *four* questions taking *two* from each unit.

Unit—I

[Histology and Physiology]

1. (a) What is 'Fixation'? Classify fixative on the basis of their chemical characteristics. $2+2\frac{1}{2}$

   (b) How formaldehyde reacts with several parts of the free cellular amino acids?   3

(c) Write the chemical structure of picric acid. 1

(d) Notes on : 2×2
   (i) Primary fixation ;
   (ii) Autolysis ;

2. (a) Mention the difference between a dye and a stain. 2

(b) Explain the chemical basis of classification of dye. 2

(c) State the functions of chromophore and auxochrome with examples. 2

(d) State the extraction procedure of a dye of animal origin with its commercial importance. $2\frac{1}{2}$

(e) What is metachromasia ? Cite an example of a dye with its wave lengths after metachromasia ? 2+2

3. (a) What is meant by Positive and Negative Feedback loop in homeostasis ? $1\frac{1}{2}+1\frac{1}{2}$

(b) Write down the sequential steps in the propagation of a action potential. 4

(c) Explain Frank Starling mechanism with the help of a graph. $3\frac{1}{2}$

(d) State the difference between esoreceptor and spare receptor. 2

4. (a) Illustrate the interaction of steroid receptor complex with HRE. 3

(b) Distinguish between the Hydrophilic and Lipophilic hormones. 4

(c) State the RDA of Phosphorus. State the effects of phosphorus deficiency in humans. 2

(d) Name an important source and vital functions of Tocopherol. 2

(e) Mention the role of Calcium in Neurotransmitter release. $1\frac{1}{2}$

Unit—II

[Biophysics and Biochemistry]

5. (a) What is Donnan phenomenon ? How is it related to pH difference and potential difference across the membrane.

(b) Explain how the Urea cycle and Krebs cycle are interlinked.

(c) Describe the steps of PLP–dependent enzyme Catalyzed transamination. $(2+3\frac{1}{2})+3+4$

6. (a) Define 'colloid' and 'crystalloid' solution.

   (b) Write on 'Hollow-fiber Artificial kidney' and 'Electrodialysis'.

   (c) What is bicarbonate buffer? $4+6+2\frac{1}{2}$

7. (a) What are the various types of radioactive emission?

   (b) Write on the mechanism of action of G.M. counter.

   (c) Prove that $T_{1/2} = \dfrac{0 \cdot 693}{\lambda}$

   $T_{1/2}$ = Half-life period of a Radioactive component.

   λ = Disintegration constant of a Radioactives substance. $4\frac{1}{2}+4+4$

8. Answer the following (any *four*) : $3+3+3+3\frac{1}{2}$

   (a) Gibbs free energy;

   (b) Oxidative phosphorylation;

   (c) Isosmotic solution;

   (d) Ketogenic amino acid.

   (e) Facilitated diffusion.

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