2015

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) State the aim of fixation. $2\frac{1}{2}$

   (b) What is antolysis ?

   (c) How formaldehyde reacts with several parts of the cellular protein molecules ? 2

   (d) Distinguish between fixation of DNA and RNA. 2

(e) (i) State the differences between additive fixative and non-additive fixative. 2

(ii) Write notes on the Methylene bridge. 2

2. (a) What is vital stain ? Cite one example. 2

(b) Write notes on : Dye from animal origin. 2

(c) Briefly describe the extraction procedure of haematein. $2\frac{1}{2}$

(d) Write notes a mordant.

(e) Answer the following questions :

(i) Chromohores in dye industry.

(ii) 'Metachromasia is not a bidirectional reaction' — justify. 2+2

3. (a) Explain the difference between protein and steroid hormone receptors.

(b) Explain the mechanism of action of peptide hormone. 4

(c) Enlist the important functions of Vitamin B_2.

(d) Name the diseases caused by potassium deficit and excess of potassium in the body.

(e) State the importance of Homeostasis. 2

4. (a) State the difference between neurotransmitter and neuromodulator.

(b) Distinguish between the structure and junctioning of voltage-gated Na and K ion channels.

(c) Illustrate the steps in synaptic transmission.

(d) Explain the phases of Cardiac Cycle. Comment how Atria act as Primer pumps. $2+4+3+(2+1\frac{1}{2})$

Unit—II

(*Biophysics and Biochemistry*)

5. (a) What is second law of Thermodynamics ?

(b) "Increase of Entropy is a measure of unavailable energy" — explain.

(c) Standard free energy change $\Delta G^0 = - RT\ln Keq.$ Define all the terms. $4+3+5\frac{1}{2}$

6. (a) Write the steps of β oxidation of saturated fatty acid in the mitochondrial matrix.

(b) What is the structural difference between Domian and motif of a protein.

(c) Briefly describe the steps of biosynthesis of urea. $5+4+3\frac{1}{2}$

7. (a) What is redox potential ? Describe the structure of ubiquinone and cytochrome.

(b) Illustrate the mechanism of flow of electrons from Complex-III to Complex-IV over mitochondrial inner membrane.

(c) Briefly describe the mechanism of deamination.

$(1+2+2)+5+2\frac{1}{2}$

8. (a) What is Tyndall effect of collodial particles ?

(b) Why is the P^H of RBC fluid less than plasma ?

(c) Write briefly on Beta and alpha decay.

(d) State the role of Mg^{+2} in the kinetic activity of Hexokinase.

$3+2+5+2\frac{1}{2}$

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