M.Sc.

2015

2nd Semester Examination

ZOOLOGY

PAPER—ZOO–202

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

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

Illustrate the answers wherever necessary.

Answer *all* questions of the following.

Group — A

(*Bio-Physics*)

1. Answer any *two* questions of the following : 2×2

(a) State the use of radioisotopes in biological sciences.

(b) Why the pH of RBC–fluid is lower than that of plasma ?

(c) Distinguish between: Lyosols and Aerosols.

(d) Write short notes on : 'Lipid Raft'.

2. Answer any *two* questions of the following : 4×2

(a) "Protein molecules within the plasma membrane are dynamic." — Prove with experimental evidence. 4

(b) Prove if :

$$T_{\frac{1}{2}} = \frac{0.693}{\lambda}$$

[$T_{1/2}$ = Half life period of a radioactive substance, λ = Disintegration Constant.] 4

(c) Elucide the use of multifunctional nanocarriers in medical science ?

(d) How does active transport differ from the fascilative diffusion ? Cite one example each. Write note on: Ionophores. $1\frac{1}{2}+1\frac{1}{2}+2$

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

(a) State the role of detergent during functional Biomembrane synthesis. Comment on Zeta Poetntial. 6+2

(b) Write short notes on any *four* of the following : 4×2

(i) Autoradiography.

(ii) Radiation absorbed dose (rad).

(iii) Molecular structure of cholesterol.

(iv) (4n+2) Radioactive series.

(v) Protein association with lipid molecules in the cell membrane.

(vi) Dialysis.

Group — B

(*Computer application and Bioinformatics*)

4. Answer any *two* questions of the following : 2×2

(a) Write down the full forms of: NCBI, GUI, PIR, BASIC

(b) List the important groups of available Biological databases.

(c) Write short note on Human Genome Project.

(d) Define Biological 'Sequence/structure deficit'.

5. Answer any *two* questions of the following : 4×2

(a) Find out the following Number systems for the representative numbers.

Decimal	*Hexadecimal*
13	?
?	B65

(b) Define software and classify them with examples.

(c) Distinguish between Pattern recognition and Prediction approaches in Bioinformatics.

(d) Describe how the 3D structure of a protein is observed using databases.

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

(a) (i) Differentiate between Low Level Language and High Level Language. What are the roles of Assembler, Compiler and Interpreter in connection with these languages. 2+3

(ii) Diagrammatically explain the application areas of different analysis methods in sequencing. 3

(b) (i) Illustrate the different levels of Protein structure. 4

(ii) What are the two forms of Primary sequence Database. Explain functions of any one database for each category. 4

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