2011

M.Sc.

1st Semester Examination

ZOOLOGY

PAPER—ZOO-103

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.

Write the answers to questions of each Group in seperate booklets.

Group—A

(Bio-physics)

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

(a) Mention the factors on which pH of a buffer depends. 2

(b) Why enhanced cell size decrease the rate of diffusion ? 2

(c) Write a note on : 'Phospholipid mobility' in a lipid bilayer. 2

(d) Where do the sugar molecules reside with biomembrane components ? 2

2. Answer any *two* questions : 4×2

(a) What is detergent ? How does a mild detergent solubilize membrane proteins ? 1+3

(b) State the relationship between presser gradient resistance and volume flow in a close vascular system. 4

(c) Write a note on electrokinetic property of colloids. 4

(d) Explain Donnan equilibrium. 4

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

(a) (i) What is Ionophore ? How it can be used as tool to increase the permeability of membranes to specific ions ? Write a note on : Electrodialysis.

(ii) Prove it : $N = N_0.e^{-\lambda t}$.

(N = The no. of a radioactive atom present at any time t.

N_0 = The number of atoms present in the beginning at t = 0.

λ = Disintegration Constant.) 2+2+2+2

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

(i) Osmotic distension of R.B.C.

(ii) Isoelectric pH.

(iii) FRAP – technique.

(iv) Protective colloid.

(v) Role of diffusion on the transport of respiratory gases.

(vi) Proteins association with the lipid bilayer.

Group—B

(Computer Application to Biology)

1. Answer any *two* questions : 2×2

(a) Convert the decimal number '125' into its binary equivalent.

(b) List the characteristics of a Digital computer.

(c) Sort-out the following into either of input devices or output devices : MICR, Plotter, Keyboard, Monitor.

$\frac{1}{2}$×4

(d) Write down the full forms of 'ASCII' and 'BASIC'.

2. Answer any *two* questions : 4×2

(a) Compare the functionality of Supercomputers with Network Computers. 2+2

(b) Draw the block diagram showing the Anatomy of a Digital Computer. Mention the role of CPU. 3+1

(c) Describe the properties of a MODEM and a HUB. 2+2

(d) State any two commonly used internet tools. Distinguish between Search Engine and Subject Directory. 2+2

3. Answer any *one* question : 8×1

(a) (i) Compare the salient features of 3rd Generation computers with that of 5th Generation.

(ii) Describe the difference between High level and Low level language with examples. 4+4

(b) (i) Explain the features, advantages and disadvantages of Assembly language. 4

(ii) Demarcate Software from Hardware. Define system software and classify it . 1+1+2

———