M.Sc. 1st Semester Examination, 2010

ZOOLOGY

PAPER—ZOO-103

Full Marks : 40

Time : 2 hours

The figures in the right-hand margin indicate 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 separate books

GROUP—A

(*Bio-physics*)

1. Answer any *two* questions :   2 × 2

   (*a*) Why K^+-ions move faster to the membrane than the Na^+-ions ?

(b) Distinguish between : β^- and β^+ particles.

(c) Why the pH of RBC fluid is less than plasma ?

(d) Why cholesterol molecules enhance the permeability-barries properties of the lipid bilayer ?

2. Answer any *two* questions :   4 × 2

(a) State the basic principle of renal dialysis and show the charge relationship of a colloidal particle with a diagram.   2 + 2

(b) Prove it :

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

[$T_{1/2}$ = Half-Life Time of a radioactive element.

λ = Disintegration constant of a radioactive element]   4

(c) How do you prove the membrane proteins diffuse in the plane of the membrane ?   4

(d) Write short notes of the following : 2×2

    (i) Phospholipid mobility

    (ii) Glycophorin.

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

    (a) (i) Write briefly on the membrane lipid bilayer is asymmetrical.

       (ii) Write short notes on :

         (I) Black membrane

         (II) Use of radioactive elements in medical sciences. $4 + (2 + 2)$

    (b) (i) What is detergent ? How the mild detergent solubilizing membrane protein from plasma membrane ?

       (ii) How you reactivated the $Na^+ - K^+$-ATP-ase into the phospholipid vesicles ? $\left(1\frac{1}{2} + 2\frac{1}{2}\right) + 4$

GROUP — B

(*Computer Application to Biology*)

1. Answer any *two* questions : 2

   (a) Convert the following into respective number systems :

   $$(1100)_2 = (x)_8$$

   (b) Mention distinctive features of fourth (4th) generation computers.

   (c) Define application software with an example.

   (d) Make a chart of various data communication hardwares.

2. Answer any *two* questions : 4

   (a) Describe the categories of printers.

   (b) Distinguish between the mode of function of a satellite and microwave. Mention the tasks of system software. 2

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(c) What do you mean by a workstation ? State the features of assembly language. $2 + 2$

(d) Write down the difference between PC-dialup and LAN dialup. $2 + 2$

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

(a) (i) Write the full forms of

(I) http
(II) EBCDIC
(III) ISP
(IV) FORTRAN

(ii) Compare the role of compiler with interpreter. $4 + 4$

(b) (i) Elaborate the connection options of Internet available in India.

(ii) Enlist the functions of an operating system.

(iii) Draw a relation between bit, byte and word length. $3 + 3 + 2$