M.Sc. 1st Semester Examination, 2012

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

GROUP – A

(*Bio-Physics*)

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

(*a*) Why K^+ ion moves faster than Na^+ ion through the membrane pore ?

(*b*) How can the free energy change (AG) and standard free energy change (AG°) of the following chemical reaction ($A + B \rightleftharpoons C + D$) be calculated ?

(*c*) Write notes on : Hollow fibre Dialysis.

(*d*) Distinguish between the $(4n + 2)$ Vs $(4n + 3)$ Radioactive series.

2. Answer any *two* questions : 4 × 2

(*a*) State the effect of Donnan Phenomenon on osmotic pressure difference between two compartments. 4

(*b*) Write on the Poiseulle's method of determination of viscosity of a Liquid. In such apparatus water flows in a tube of 20 cm. length and 0·08 cm. radius under a pressure head of 20 cm. In 10 mins, 800 ml. of water flow from the tube. Calculate the viscosity of water ($\rho w = 1$ gm cm^{-3}, $g = 980$ cm sec^{-2}). 1 + 3

(*c*) State the difference between toxicity and osmolicity. When any two solution will become both isotonic and isosmotic ? 2 + 2

(*d*) Write notes on (any *two*) of the following : 2 × 2

(*i*) Gibbs free energy

(*ii*) Viscosity coefficient

(*iii*) Glycocalyn

(*iv*) Use of radioisotopes in sciences.

3. Answer any *one* question : 8×1

(*a*) (*i*) State the role of cholesterol in biological membrane.

(*ii*) Prove it :

$$T_{\frac{1}{2}} = \frac{0 \cdot 693}{\lambda}.$$

[$T_{\frac{1}{2}}$ = Half-life Time of a radioactive element.
λ = Disintegration Constant]

(*iii*) Why the buffers of our body fluid have a high salt/acid ratio. $2 + 4 + 2$

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

(*i*) Capping

(*ii*) β^+ particles

(*iii*) Chernokov radiation

(*iv*) Phospholipid molecule

(*v*) Geiger Müller counter

(*vi*) Radiation dosimetry

(*vii*) Glycophorin.

GROUP – B

(*Computer Application to Biology*)

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

(*a*) Convert : $(11010)_2 = (?)_{10}$

(*b*) Distinguish between compiler and interpreter

(*c*) Write the full forms of EBCDIC and COBOL.

(*d*) What is Internet Metasearch engine ?

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

(*a*) Describe different types of unbound links used as transmission media. 4

(*b*) Compare the salient features of third and fourth generation of computers ? 4

(*c*) What is VIRUS and ANTI VIRUS ? What is firm ware ? What is flowchart ? 2 + 2

(*d*) Sort-out the following into either of input device or output device or communicative devices : Router, OCR, Plotter, hub, Barlode Reader, Line Printer, Modem, Image Scanner. 4

6. Answer any *one* question : 8×1

(*a*) (*i*) Draw the block diagram of a Computer system. Explain different functional parts of computer system.

(*ii*) How many types of storage media are present in computer system ? Differenciate between ROM and RAM. $(2 + 2) + 4$

(*b*) (*i*) Define operating system. Mention different functions of an operating system.

(*ii*) Briefly classify programming languages mentioning important features. $4 + 4$