2012

M.Sc.

1st Semester Examination

BIOCHEMISTRY

PAPER—BIC-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.

Answer *all* questions.

(*Physiological Chemistry*)

Group—A

Answer any *five* questions : 5×2

1. (a) What is histone octamer? Mention its function.

(b) What is micelle?

(c) What are the functions of troponin I, T & C.

(d) What is pK_a?

(e) What are the two necessary conditions for the colliding molecules to yield the products?

(f) Explain why alkanes are relatively non reactive.

(g) What is endosome?

(h) Discuss the role of promoters and inhibitors (with examples) in catalysis.

Group—B

Answer any *two* questions : 2×5

2. Briefly describe the structure of eukaryotic ribosome and the functions of peroxisome.

$2\frac{1}{2}\times2$

3. What is the function of Na^+–K^+ AT Pase? How its function is over ruled at the time of EPSE formation?

2+3

4. Write down the difference between vinyl and allyl alcohol. How will you distinguish between alcohol and acid? How will you prove the presence of peroxide in ether?

2+2+1

5. State and explain Arrhenius equation. The value of specific reaction rate for the decomposition of nitrogen pentoxide are 3.46×10^{-5} and 4.87×10^{-3} at 25°c and 65°c, Calculate the energy of activation.

2+3

Group—C

Answer any *two* from the following : 2×10

6. (a) Mention different bile acids and salts. How do they help in lipid digestion and absorption? What are the hormone signals that regulate bile secretion and function. 2+3+2

   (b) Mention the function of Vitamin B-12 regarding blood cell formation. 3

7. (a) Present a labelled diagram of juxta glomerular apparatus and mention its function. 4

   (b) Mention the main principle of Counter-Current Mechanism concerning urine formation. $2\frac{1}{2}$

   (c) Present a labelled diagram of neuromascular junction and briefly state the mechanism of impulse transmission. $3\frac{1}{2}$

8. (a) A hydrocarbon of formula C_6H_{12} decolourises bromine solution, dissolves in concentrated sulphuric acid, yields 2-methyl pentane on hydrogenation and on ozonolysis gives formaldehyde and 3-methyl butanal. Write the structure of the hydrocarbon.

   (b) Write the chemical equation when—

   (i) Benzyl phenyl ether reacts with HI.

   (ii) Ethyl alcohol reacts with concentrated sulphuric acid.

   (iii) But-1-ene reacts with hydrochloric acid. 4+3×2

9. (a) What is the difference between primary and secondary active transport mechanism ?

(b) Give a brief account of glucose transporter in RBC membrane and glucose transport mechanism in it.

(c) What is aquaporin ?

$(1\frac{1}{2}+1\frac{1}{2})+(2+3)+2$
