2012

M.Sc.

1st Semester Examination

BIOCHEMISTRY

PAPER—BIC-101

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.

Group—A

1. Answer any *five* from the following questions : 5×2

(a) Write the difference between anomers and epimers.

(b) What are emulsions ?

(c) What are globular proteins ? Give two examples.

(d) What is Bohr's effect ?

(e) Explain why proteins are normally precipitated by TCA and not by HCl in biochemical analysis.

(f) Why does galactose form different osazone than glucosazone ?

(g) What do you know about "Isoprene rule" ?

(h) State the difference between electron affinity & electronegativity.

Group—B

Answer any *two* from the following questions : 5×2

2. Describe the structure and function of FAD. 5

3. How does Hydroxyproline stabilize a collagen helix ? What are cis and trans isomers of a peptide bond ? 2.5×2

4. (a) Distinguish between homopolysaccharides and heteropolysccharides.

(b) What is meant by reducing sugar ?

(c) What do you mean by glycosidic bond ? 3+1+1

5. What is Sanger's reagent for protein sequencing? Why is it used for? State the significance of D-amino acids? 5

Group—C

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

6. What significance does proteins hold in a cellular environment in relation to their structure function relationship? Name two hydrophobic and two hydrophilic amino acids. How can the amino acid sequence of a peptide be determined by Edman degradation? 3+2+5

7. Write down the chemical structures of purine and pyrimidine. How are they chemically stabilized into a double helix DNA molecule? 5+5

8. (a) What is apomyoglobin? How does it works to provide a hindered environment for heme iron. 1+3

   (b) Why are the aminoacid residues in proteins always present in L-stereoisomeric form? 2

   (c) What amino acid residues must be present in relatively large numbers in histones? In what way do these residues contribute to the strong binding of histones to DNA? 2+2

9. (a) Differentiate among t RNA, m RNA and r RNA. What is Si RNA? 3+2

(b) What is informosome? 2

(c) What types of chemical bonding one present in DNA tripple helix? 3

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