

(i) Printed Pages : 3

Roll No.

(ii) Questions : 9

Sub. Code :

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Exam. Code :

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B.A./B.Sc. (General) 1st Semester

1125

BIO-CHEMISTRY

Paper-B : Nitrogen Containing Biomolecules

Time Allowed : Three Hours]

[Maximum Marks : 45

Note :- Attempt **five** questions in all by selecting at least **one** question each from Sections I, II, III and IV. Q. No. **1** is compulsory. All questions carry equal marks.

(Compulsory Question)

1. (a) Draw the structure of α -amino acid that exist during physiological pH.
- (b) What are non-standard amino acids ? Give at least one example.
- (c) What is the difference between a ribonucleotide and a dideoxyribonucleotide ?
- (d) Define hypochromic shift.
- (e) Which forces stabilize β -pleated sheet in proteins ?
- (f) What are biologically important nucleotides provide at least one example ?
- (g) What is a porphyrin nucleus ? Give at least one example of a biomolecule possessing this nucleus.

- (h) What is isoelectric point ? How amino acids would behave at this point ?
- (i) What role does phenomena of salting out play in a biological solution of multiple proteins ? 1×9=9

SECTION-I

2. (a) With respect to amino acids how would you define stereoisomerism, justify your answer by providing at least one optically active and one optically inactive amino acid. 4½
- (b) Giving at least three important examples, provide the role of specialized amino acids. 4½
3. (a) Discuss the methodology involved in chemical synthesis of polypeptides. 5
- (b) Briefly discuss, how is α -helix structure of proteins different from β -pleated sheet structure. 4

SECTION-II

4. (a) Discuss, different levels of protein structures along with the forces stabilizing these structures. 7
- (b) Write a note on conjugated proteins giving at least two examples. 2
5. (a) Discuss in detail the strategies used in determining the primary structure of proteins. 7
- (b) Write a short note on fibrous proteins with a suitable example. 2

SECTION-III

6. (a) Elaborate on how B-form of DNA is different from A and Z forms. Justify which of these forms represent the natural occurring DNA structure. 6
- (b) How a standard amino acid is different from non-standard amino acids ? Justify your answer providing at least one example of each. 3
7. (a) Discuss in detail the methodology involved in sequencing of polynucleotides. 6
- (b) Write a short note on the ribozymes. 3

SECTION-IV

8. (a) Discuss in detail biochemical basis of classification of porphyrins with suitable examples. 7
- (b) Write a short note on metalloporphyrins. 2
9. (a) What are bile pigments, adding a note on their biochemical nature describe their biological significance. $4\frac{1}{2}$
- (b) Briefly discuss various methods for detection of porphyrins in biological samples. $4\frac{1}{2}$