2020

BOTANY — HONOURS

Paper : CC-12

(Biochemistry)

Full Marks : 50

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer briefly the following ***(any five)*** : 2×5

(a) What is Handerson–Hasselbach equation?

(b) "All co-enzymes are co-factors but all co-factors are not co-enzymes"— Explain with example.

(c) Differentiate between symport and antiport.

(d) Give an example each of saturated and unsaturated fatty acids.

(e) What is the maximum number of amino acids in an α-helix? Name one non-essential amino acid.

(f) What is 'Z-DNA'? What is its main difference with normal 'B-DNA'?

(g) What is redox-potential? What is its significance in biological system?

2. Answer ***any two*** of the following :

(a) Distinguish between : 2½×2

(i) Enantiomer and Epimer

(ii) Phospholipid and Glycolipid.

(b) Give a brief account of competitive and non-competitive inhibition of enzyme activity. 5

(c) Write a short note on the significance of H - bond in biology. 5

(d) Give a short account on the mechanism of active and passive ion uptake in plants. 5

3. Answer ***any three*** of the following :

(a) Write down the chemical structure of a Purine and a Pyrimidine nitrogenous base. Distinguish between ribonucleotide and deoxyribonucleotide. How nucleotides are joined together to form polynucleotide? Schematically represent an oligonucleotide chain. 3+2+3+2

(b) Distinguish between oxidative and photophosphorylation. In the light of chemiosmotic model describe the mechanism of ATP synthesis in chloroplasts. 5+5

(c) What is meant by steady state of enzyme action? How can K_m value be determined with the help of an equation of straight line? 2+8

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(d) Explain with illustration how primary, secondary, tertiary and quaternary structure of proteins are formed. How two amino acids are joined to form a polypeptide? 8+2

(e) (i) Discuss stereoisomerism in Carbohydrates.

(ii) Explain numerical system of enzyme classification with examples. 5+5
