

2021

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
- What is epimer? Name the C-2 epimer of glucose.
 - Distinguish between co-valent and non co-valent bonds.
 - Why pH7 is considered as neutral pH?
 - Name one organic buffer and write down its components.
 - What is 'iso-electric point'? Why it is significant in protein-purification?
 - What is rancidity of lipids?
 - Distinguish between lyase and ligase enzymes.
2. Answer *any two* of the following :
- Define free radicals with examples. Mention their significant roles in plant metabolism. 5
 - State the two laws of thermodynamics. Explain exergenic and endergenic reactions in relation to Gibb's free energy. 2+3
 - All monosaccharides are reducing sugars but not all disaccharides. — Why? Mention the types of polysaccharides with examples. 3+2
 - Discuss redox potential with reference to electrochemical gradient. 5
3. Answer *any three* of the following :
- Give one example and chemical structure each of acidic amino acid, semi essential amino acid, polar amino acid and ketogenic amino acid. (1+1½)×4
 - Distinguish between nucleotide and nucleoside with structures. Give two examples of nucleotide derivatives. Give a brief account of non-genetic RNA. 4+2+4
 - Explain uniport, symport and antiport with examples. Distinguish between passive and active ion uptake mechanisms in plants. 6+4
 - Define co-factor, co-enzyme, prosthetic group and apo-enzyme. Graphically describe the effect of substrate concentrations on the velocity of an enzyme catalyzed reaction mentioning V_0 , V_{max} and K_m . 4+6
 - Why are membrane lipids called amphipathic? What is PUFA? Write down the structure of the fatty acids 18 : 2 ($\Delta^9, 12$) and 20 : 4 ($\Delta^5, 8, 11, 14$). 3+2+5
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