

2023

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) Explain why the pH of pure water is 7.
 - (b) What is Gibbs free energy?
 - (c) Write the importance of isoelectric point in protein identification.
 - (d) Write one example of basic and aromatic amino acid.
 - (e) Distinguish symport and antiport.
 - (f) Name a vitamin from which a co-enzyme is produced. What is allosteric enzyme?
 - (g) Write the differences between co-factors and co-enzymes.
2. Answer *any two* of the following :
- (a) "Being a disaccharide maltose is a reducing sugar but sucrose is not." — Justify it. Define Oligosaccharide with example. 3+2
 - (b) Explain redox potential with the help of electrical gradient. 5
 - (c) Give a brief account of non-genetic RNA. 5
 - (d) Write the role of lipids in membrane fluidity. What is PUFA? Give an example. 3+1+1
3. Answer *any three* questions :
- (a) Describe the chemiosmotic model of ATP synthesis in chloroplast. How does an uncoupler affect the ATP production in chloroplast? Write the differences between mitochondrial and chloroplast ATP synthesis mechanism. 5+2+3
 - (b) Write about the reaction catalyzed by lyases and ligases enzymes with example. How many types of reversible inhibitions are there in enzyme catalyzed reactions? Write a short note on non-competitive inhibition. 5+2+3
 - (c) What bonds are associated with formation of different protein structures? Describe how primary, secondary, tertiary and quaternary structures of proteins are formed. 2+8

Please Turn Over

- (d) How cellulose is structurally different from starch? Write the structural differences between B DNA and Z DNA. Write brief account of nucleotide derivatives. 2+4+4
- (e) (i) Define epimer and enantiomer with example.
- (ii) Define free radicals with examples. Mention their significant roles in plant metabolism. 5+5
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