

751105**January 2023****M.Sc. (Chemistry) Ist SEMESTER
Chemistry of Life Processes (CH-104YB)**

Time: 3 Hours]

[Max. Marks. : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) What are the light and dark reactions in photosynthesis?
(1.5)
- (b) Explain catabolism and anabolism with suitable examples.
(1.5)
- (c) Write the functions of phospholipids.
(1.5)
- (d) Why HDL is called as good cholesterol?
(1.5)
- (e) What are deoxysugars?
(1.5)
- (f) Give the structure and function of hyaluronic acid.
(1.5)

- (g) What do you understand by semiconservative replication of DNA? (1.5)
- (h) Explain the primary structure of proteins. (1.5)
- (i) Draw the hydrogen bonding in $G \equiv C$. (1.5)
- (j) Write the structure of chenodeoxycholic acid. (1.5)

PART -B

2. (a) What is the energy currency of cell and why is it energy rich? Differentiate between energy rich and energy poor compounds with example. (5)
- (b) Give the structure and biochemical functions of following :
- (i) NAD^+ .
- (ii) Thiamine pyrophosphate (TPP).
- (iii) Biotin.
- (iv) Lipoic acid. (10)
3. (a) Explain the structure of chitin, cellulose and glycogen alongwith the linkages. (5)
- (b) Discuss the functions of glucose and fructose. Describe the structure of sucrose, maltose and starch. (10)
4. (a) Write the structures of following :
- (i) Phosphatidyl choline.
- (ii) Catalytic triad of chymotrypsin (amino acids).
- (iii) Deoxycholic acid.

- (iv) Cholesterol.
- (v) Prostaglandin D_2 . (10)
- (b) Describe the β -oxidation of palmitic acid. (5)
5. (a) Why primer is required in DNA replication. How the leading and lagging strands are synthesized? (5)
- (b) What is the transcription bubble and promoter element in transcription? Explain the elongation step in transcription. (10)
6. (a) Write the structure of following :
- (i) Galactose.
- (ii) Fructose.
- (iii) PGE_1 .
- (iv) Sphingomyelin.
- (v) DTMP. (10)
- (b) Explain the high density lipoprotein, low density lipoprotein and very low density lipoprotein. (5)
7. (a) Give the biochemical role of following :
- (i) Coenzyme A.
- (ii) FAD. (5)
- (b) Discuss the steps involved in translation process in prokaryotes. (10)