

**BACHELOR OF SCIENCE (BIOTECHNOLOGY) (CBCS-2021 COURSE)**  
**B.Sc. (Biotechnology) Sem - I : WINTER :- 2021**  
**SUBJECT: FUNDAMENTALS IN CHEMISTRY & BIOCHEMISTRY**

Day : Monday  
Date 31-01-2022

W-24851-2021

Time : 10:00 AM-01:00 PM  
Max. Marks: 60

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat diagrams **WHEREVER** necessary.
- 4) Answer to both sections should be written in the **SAME** answer book.

**SECTION-I**

- Q.1** Attempt **ANY FIVE** of the following: **(10)**
- a) What is homopolysaccharide? Explain it with one example.
  - b) Discuss structure and functions of mitochondria.
  - c) Briefly explain branches of Biotechnology.
  - d) Explain mutarotation by giving an example.
  - e) What is glycoprotein? Discuss its importance.
  - f) Draw the structure of chitin.
  - g) What is hydrogen bonding? Give an example.
- Q.2** Attempt **ANY TWO** of the following: **(10)**
- a) Explain structure and function of chloroplast.
  - b) What is hybridization? Explain hybridization of nitrogen and oxygen with example.
  - c) What is biotechnology? Explain the role of biochemistry in biotechnology study.
- Q.3** Write short notes on (**ANY TWO**): **(10)**
- a) What are reducing and non-reducing sugars? Give suitable examples.
  - b) Write a note on carbohydrate vaccines.
  - c) Draw the structure of any aldohexose in the pyranose ring form. How many stereoisomers of this aldohexose are possible?

**SECTION-II**

- Q.4** Attempt **ANY FIVE** of the following: **(10)**
- a) What are buffers? Which is important biological buffer?
  - b) What are structural lipids? Give examples.
  - c) What is heparin?
  - d) Explain the role of vitamins.
  - e) What is thin layer chromatography?
  - f) Write short note on Adsorption chromatography.
  - g) Discuss chromophoric shift.
- Q.5** Attempt **ANY TWO** of the following: **(10)**
- a) What are fatty acids? How are they grouped? Give examples.
  - b) What are phospholipids? What is their biological role?
  - c) Explain structure, function and significance of cholesterol.
- Q.6** Write short notes on (**ANY TWO**): **(10)**
- a) Discuss basic principle of partition chromatography. Write a note on its application
  - b) How will you describe a titration curve? Give an example.
  - c) Give an account of properties of electromagnetic radiation.

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