

**B.Sc. Semester - 3 (CBCS) Examination**  
**Oct/Nov - 2024 [As Per Syllabus Year June-2019]**  
**BioChemistry-BC301(Core)**

**Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

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- Que.1(A) Answer the following. (Any one out of Two) (07)
- (1) What is Carbohydrates? Define structures and biological importance of oligosaccharides.
  - (2) Explain in detail about Stereoisomerisms and optical isomerism of sugars.
- Que.1(B) Attempt any one. (Out of Two) (04)
- (1) Write in detail about cellulose
  - (2) Explain detail reaction of sugars due to aldehyde or ketone groups
- Que.1(C) Attempt any three (Out of Five) (03)
- (1) Give an example of six carbon monosaccharides.
  - (2) Define glycoprotein
  - (3) Bacterial cell wall made of which component?
  - (4) Define isomers
  - (5) Give an example of polysaccharide.
- Que.2(A) Answer the following. (Any one out of Two) (07)
- (1) Describe classification of lipids in detail
  - (2) Explain in detail about Glycerophospholipids
- Que.2(B) Answer the following. (Any one out of Two) (04)
- (1) What is Triacylglycerol? Explain its hydrolysis and saponification in detail
  - (2) Differentiate between Saturated and unsaturated fattyacids
- Que.2(C) Attempt any three (Out of Five) (03)
- (1) What is Essential Fattyacids
  - (2) Define lectin
  - (3) What is rancidity of fat
  - (4) Define cholesterol
  - (5) Give an example of Glycerophospholipids
- Que.3(A) Answer the following. (Any one out of Two) (07)
- (1) Determine classification of Protein in detail
  - (2) What is amino acids? Explain physical and chemical properties of amino acids
- Que.3(B) Answer the following (Any one out of Two) (04)
- (1) List out fibrous protein. Explain any one in detail.
  - (2) Discuss the differences between salting in and salting out of proteins, including their applications in protein chemistry.
- Que.3(C) Attempt any three (Out of Five) (03)
- (1) What is the common structural feature of all amino acids?
  - (2) Name the type of bond that forms between the carboxyl group of one amino acid and the amino group of another.
  - (3) Give an example of a non-standard amino acid that is commonly found in proteins.
  - (4) Which configuration (D or L) is most commonly found in naturally occurring amino acids?
  - (5) What is the primary stabilizing force for the tertiary structure of proteins?

- Que.4(A) Answer the following. (Any one out of Two) (07)
- (1) Discuss the features of the DNA double helix and their significance.
  - (2) Describe structure of different types of RNA and explain its role in detail.
- Que.4(B) Answer the following. (Any one out of Two) (04)
- (1) Explain the process of DNA denaturation and renaturation.
  - (2) Describe the structural differences between DNA and RNA
- Que.4(C) Answer the following. (Any one out of Two) (03)
- (1) Name the type of bond that holds together the complementary base pairs in the DNA double helix.
  - (2) What is the size range of DNA in prokaryotic cells compared to eukaryotic cells?
  - (3) Name the type of bond that holds together the complementary base pairs in the DNA double helix.
  - (4) What does the term "genome" refer to?
  - (5) Which type of RNA is responsible for carrying genetic information from the DNA to the ribosome
- Que.5(A) Answer the following. (Any one out of Two) (07)
- (1) Discuss the biological significance and deficiency symptoms of Vitamin A.
  - (2) Describe different techniques of porphyrin detection
- Que.5(B) Answer the following. (Any one out of Two) (04)
- (1) Describe the classification of porphyrins based on their substituents.
  - (2) Explain the physiological significance of bilirubin.
- Que.5(C) Attempt any three (Out of Five) (03)
- (1) What is vitamin?
  - (2) Give a name of diseases occur due to deficiency of vitamin A
  - (3) Which Vitamine is essential for skin
  - (4) What is bile pigment
  - (5) Give another name of Vitamin B12

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