

B.Sc. Semester - 3 (CBCS) Examination
Oct/Nov. -2019 (Old Course)
BIO-CHEMISTRY (CORE)

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

1. All questions. are compulsory.
 2. Figures to the right indicate marks.
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Q.1 A Write detailed answer for any one of the following questions.**[7 marks]**

1. Write classification of carbohydrates with examples and write functions of carbohydrates.
2. Define “Reducing Sugars” giving examples and describe different biochemical tests for testing the presence of reducing sugars in a sample.

Q.1 B Write the Answer in detail for any one of the following questions.**[4 marks]**

1. Write a short note on structure, composition, biological occurrence and functions of starch.
2. Describe epimers, anomers and enantiomers taking suitable examples of sugars.

Q.1 C Answer any three the following questions.**[3 marks]**

1. Why sucrose is a non reducing sugar but maltose and lactose are not?
2. Write biological occurrence of pentose sugars in nature.
3. Describe mutarotation with suitable examples.
4. Draw structures of pyranose and furanose rings of carbohydrates.
5. Write the functions of Peptidoglycan in bacteria?

Q.2 A Write detailed answer for any one of the following questions.**[7 marks]**

1. Write importance of phospholipids.
2. Define rancidity, list different tests performed to determine rancidity, describe factors responsible for causing rancidity in oils and different ways and means to prevent rancidity in cooking oils.

Q.2 B Write the Answer in detail for any one of the following questions.**[4 marks]**

1. Write a short note on saponification of lipids.
2. Describe classification of lipids with suitable examples.

Q.2 C Answer any three the following questions.**[3 marks]**

1. What is the difference between fats and oils?
2. List the functions of cholesterol.
3. What are sphingophospholipids?
4. Define essential fatty acids and write its examples.
5. Write significance of iodine number test for lipids.

Q.3 A Write detailed answer for any one of the following questions.**[7 marks]**

1. Describe alpha helix and beta pleated sheets in protein structure.
2. Draw and explain titration curve of amino acids.

Q.3 B Write the Answer in detail for any one of the following questions.**[4 marks]**

1. Write a short note on denaturation of proteins and describe different agents that can bring about protein denaturation.
2. Draw structures of the following amino acids: Glycine, L-Serine, L-Phenyl alanine and L-Aspartic acid.

Q.3 C Answer any three the following questions.

[3 marks]

1. Write two examples of basic amino acids
2. Which amino acid lacks free amino group and hence known as an imino acid?
3. Which amino acid lacks asymmetric carbon atom in its structure?
4. Define peptide bond. How many peptide bonds are present in a tetra peptide?
5. Write two examples of fibrous proteins present in human body.

Q.4 A Write detailed answer for any one of the following questions.

[7 marks]

1. Write a short note on different types of RNA present in eukaryotic cells. Their characteristics and functions.
2. Discuss Watson and Crick model of DNA structure.

Q.4 B Write the Answer in detail for any one of the following questions.

[4 marks]

1. Discuss experimental evidence that proved DNA as a genetic material.
2. Explain the following: DNA denaturation and DNA renaturation.

Q.4C Answer any three the following questions..

[3 marks]

1. Differentiate between purine and pyrimidine bases.
2. What is the genetic material present in HIV virus?
3. Name RNA that has a clover leaf structure?
4. Which constituents of DNA contribute to absorption of UV light at 260 nm ; nucleotide bases, deoxyribose sugar or phosphoric acid group?
5. In a double stranded DNA sample if content of G was found to be 35%, calculate the % content for A, T and C.

Q.5 A Write detailed answer for any one of the following questions.

[7 marks]

1. Write a detailed note on metallo-porphyrins with suitable examples.
2. Write properties, dietary sources, structure and biochemical functions of Vitamin A and discuss deficiency disease of Vitamin A.

Q.5 B Write the Answer in detail for any one of the following questions.

[4 marks]

1. Write a short note on Pellagra.
2. List rich dietary sources and biochemical functions of Vitamin D and discuss why it is also known as “sunshine vitamin”?

Q.5 C Answer any three the following questions.

[3 marks]

1. Define porphyrins.
2. Why excess intake of water soluble vitamins doesn't usually cause toxicity?
3. Deficiency of which vitamin causes Beriberi?
4. Name the bile pigment which accumulates in blood, skin and eyes during jaundice.
5. Write two important functions of Vitamin C.
