

B.Sc. Semester - 3 (CBCS) Examination
Oct/Nov - 2022 (OLD COURSE)
BIO-CHEMISTRY(CORE)

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

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

Q.1(a) Answer the following Any ONE (out of two) : (07)

- (1) Write a note on homo and hetero polysaccharides.
- (2) Stereoisomerism in sugars.

Q.1(b) Attempt any ONE (out of Two) : (04)

- (1) Discuss in brief : Structure and functions of chitin.
- (2) Write a note on : glycoproteins.

Q.1(c) Attempt any THREE (out of Five) : (03)

- (1) Name two epimers of D-glucose.
- (2) Name two major constituents of eubacterial cell wall.
- (3) True or false : All disaccharides are reducing sugars.
- (4) Oxidation of the carbonyl (aldehyde) carbon of glucose to the carboxyl level yields
- (5) The interconversion of α and β anomers of D-glucose in aqueous solution is due to a process called....

Q.2(a) Answer the following Any ONE (out of two) : (07)

- (1) Explain classification of lipids.
- (2) Properties and functions of phospholipids

Q.2(b) Attempt any ONE (out of Two) : (04)

- (1) Explain structure and functions of triacylglycerols.
- (2) Distinguish between saturated and unsaturated fatty acids.

Q.2(c) Attempt any THREE (out of Five) : (03)

- (1) True or false : The membranes of halophilic bacteria and ciliated protists contain high proportions of ether lipids.
- (2) True or false : Saponification requires alkaline condition.
- (3) Which of the following can be considered as neutral glycolipids?
(A) cerebrosides (B) gangliosides (C) both (D) none
- (4) What are steroids?
- (5) What happens when lipid-rich foods are exposed too long to the oxygen in air?

Q.3(a) Answer the following Any ONE (out of two) : (07)

- (1) Explain primary structure of protein.
- (2) Discuss amino acid sequencing.

Q.3(b) Attempt any ONE (out of Two) : (04)

- (1) Write a brief note on fibrous proteins
- (2) Write a note on hemoglobin.

- Q.3(c)** Attempt any THREE (out of Five) : (03)
- (1) Which is the smallest amino acid?
 - (2) Name two secondary structures of proteins.
 - (3) Name two sulfur containing amino acids.
 - (4) How many peptide bonds will be formed to join three amino acids?
 - (5) True or false : Titration curves predict the electric charge of amino acids.
- Q.4(a)** Answer the following Any ONE (out of two) : (07)
- (1) Explain Avery, MacLeod and McCarty's experiment.
 - (2) Explain Hershey and Chase's experiment confirming DNA as genetic material.
- Q.4(b)** Attempt any ONE (out of Two) : (04)
- (1) Discuss structure of t-RNA.
 - (2) Write a note on denaturation of DNA.
- Q.4(c)** Attempt any THREE (out of Five) : (03)
- (1) What is the role of m-RNA in a cell?
 - (2) Name the nucleic acid present in ribosome.
 - (3) State two distinguishing features between DNA and RNA.
 - (4) According to central dogma of molecular biology proposed initially, the flow of information in a cell is
 - (5) True or false : All the regions in a genome are always coding for some molecule.
- Q.5(a)** Answer the following Any ONE (out of two) : (07)
- (1) Write on : Fat soluble vitamins.
 - (2) Write on classification of porphyrins and naturally occurring metallo-porphyrins.
- Q.5(b)** Attempt any ONE (out of Two) : (04)
- (1) Discuss deficiency symptoms of vitamins C and D.
 - (2) Write on chemical nature and physiological significance of bile pigments.
- Q.5(c)** Attempt any THREE (out of Five) : (03)
- (1) True or false : Absorption spectrum can be useful in detection of porphyrins.
 - (2) True or false : Vitamins can never be water soluble.
 - (3) Porphyrins are characterized by.....
 - (A) tetra pyrrol rings
 - (B) complete aliphatic structure
 - (C) any of these
 - (D) none of these
 - (4) Which of the vitamins play role as hormone precursors?
 - (5) Tocopherols represent vitamin.....
