



DY-003-001214

Seat No. _____

B. Sc. (Sem. II) (CBCS) Examination

April / May – 2015

**Biochemistry : Paper - 201
(Biomolecules)**

Faculty Code : 003

Subject Code : 001214

Time : $2\frac{1}{2}$ Hours]

[Total Marks :70

Q.1 Select the correct answer for the questions from the given choices [20]

- 1) In glucose the orientation of the —H and —OH groups around the carbon atom 5 adjacent to the terminal primary alcohol carbon determines
 - a) α and β anomers
 - b) Dextro or levorotatory
 - c) D or L series
 - d) Epimers
- 2) In amylopectin the intervals of glucose units of each branch is
 - a) 24–30
 - b) 30-40
 - c) 10-20
 - d) 40-50
- 3) Oxidation of galactose with conc HNO₃ yields
 - a) Gluconic acid
 - b) Mucic acid
 - c) Glucuronic acid
 - d) Saccharic acid
- 4) Isomers differing as a result of variations in configuration of the —OH and —H on carbon atoms 2, 3 and 4 of glucose are known as
 - a) Epimers
 - b) Anomers
 - c) Optical isomers
 - d) Stereoisomer
- 5) Which among the following phospholipids is commonly found in higher amounts in egg yolks?
 - a) Phosphatidyl inositol
 - b) Lecithin
 - c) Phosphatidyl serine
 - d) Cephalin
- 6) Flax seeds (Linseed) are rich source of which of the following fatty acids?
 - a) Saturated fatty acids
 - b) Butyric acid
 - c) Omega 6 fatty acids
 - d) Omega 3 fatty acids
- 7) Energy in human body is stored mainly in which of the following forms?
 - a) Glycogen
 - b) Triacylglycerol
 - c) Proteins
 - d) Glucose
- 8) Vitamin D is synthesized by skin cells from which of the following precursors?
 - a) Arachidonic acid
 - b) Phospholipids
 - c) Cholesterol
 - d) Glycolipids
- 9) To determine the sequence of a protein, several methods may be used. The preferred method, which labels and releases the N-terminal residue, is called:
 - a) Sanger method
 - b) Ninhydrin reaction
 - c) Edman degradation
 - d) CNBr cleavage
- 10) Which of the following is NOT true about Proteins?
 - a) They are insoluble in water due to their size & heavy molecular mass.
 - b) They are the building block of many mammalian tissues, such as muscle or bone.
 - c) They are stored as a nutrient, since they yield more energy than lipids or carbohydrates.
 - d) They are useful in cells as both structural components & in chemical reactions.

- 11) Which of the following amino acid is achiral?
 a) Alanine
 b) Glycine
 c) Serine
 d) Cysteine
- 12) Zwitterions are?
 a) Composed of long chains of amino acids.
 b) Are scarce throughout the body.
 c) Exist because of the neutral pH of the body.
 d) Ions that exist only in a basic environment.
- 13) What type of bond are present in B form of DNA?
 a) Hydrogen
 b) Glycosidic
 c) Phosphodiester
 d) All of the above
- 14) The human genome contains approximately how many genes?
 a) 300
 b) 30,000
 c) 300,000
 d) 3,000,000,000
- 15) What statement about nucleosomes is false?
 a) A nucleosome is a "bead" on a string of unfolded chromatin
 b) A nucleosome produces a 3-fold packing ratio of DNA.
 c) Nucleosomes are found only in mitotic chromosomes.
 d) A nucleosome consists of DNA wrapped around 8 histone proteins, plus a short segment of linker DNA.
- 16) The fact that the two strands composing a DNA molecule are called antiparallel has to do with the orientation of the
 a) sugar molecules
 b) bases
 c) phosphate molecules
 d) hydrogen bonds
- 17) In heme synthesis in mammalian cells:
 a) Uroporphyrin III is the immediate precursor of coproporphyrin III
 b) δ -Aminolevulinic acid is formed by the condensation of succinyl CoA and valine
 c) Ferric iron is inserted into protoporphyrinogen IX prior to attachment to the globin molecule
 d) Porphobilinogen is formed by the condensation of two δ -aminolevulinic acids
- 18) In which condition level of direct bilirubin is found to be raised.
 a) gall stone
 b) tumor of head of pancreas
 c) obstruction in common bile duct
 d) all of above
- 19) 6. which of the following Vitamin is essential for development of red blood cells?
 a) Vitamin B₁
 b) Vitamin K
 c) Vitamin D
 d) Vitamin B₁₂
- 20) 4. Which of the following is not correctly matched?
 a) Vitamin A- xerophthalmia
 b) Vitamin K- Beriberi
 c) Vitamin C- Scurvy
 d) Vitamin D- Rickets

Q.2 (A) Answer any three of the following questions.....[6]

1. Write a difference between homopolysaccharides and heteropolysaccharides.
2. Define derived lipids giving suitable examples.
3. Define derived protein with example.
4. Calculate hydrogen bonds in DNA fragment of 1830 bp having 23 % as adenine residues.
5. Write the changes in level of bilirubin found in all 3 types of jaundice.
6. Give the function of Vitamin D.

(B) Answer any three of the following questions.....[9]

1. What do you mean by oxidation reaction? Explain how aldonic acid is formed.
2. Write importance of fat in human body.
3. Write a note on peptide bond.
4. Draw curve of T_m and give its importance.
5. Write about porphyria.
6. Write the deficiency manifestation of Vitamin C.

(C) Answer any two of the following questions.....[10]

1. Write a detail note on structural isomer.
2. Draw structures of different glycerophospholipids and show the sites of action of different phospholipases and their products.
3. Write a note on aromatic amino acids with structures.
4. Briefly discuss packaging of eukaryotic DNA .
5. How waste of haemoglobin is removed from the body?

Q.3 (A) Answer any three of the following questions.....[6]

1. Write the functions of the carbohydrates.
2. Describe chemical nature of waxes and its uses.
3. Define essential amino acids.
4. Define Gene and Genome.
5. Write nomenclature of porphyrin.
6. Write the function of Vitamin K.

(B) Answer any three of the following questions.....[9]

1. What do you mean by epimers? Explain the example of any epimers.
2. Describe essential fatty acids with their examples.
3. Write a note on beta pleated sheet.
4. Give important properties of Nitrogenous bases.
5. Write classification of jaundice.
6. Write the source and RDA of Vitamin B₁₂.

(C) Answer any two of the following questions.....[10]

1. Write a detail note on disaccharides.
2. Describe different biochemical tests used to test purity of fats and oils and detect adulteration.
3. Explain denaturation of protein.
4. Discuss Primary and Secondary structure of DNA.
5. Write the source, RDA, and function of Thiamine.