BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – B.Optometry-2022/B.Optometry-2023/B.Optometry-2024
Course Name – General Biochemistry
Course Code - BOPTOC103
(Semester I)

Full Marks : 60 **Time : 2:30 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Identify the bonds present in Amylopectin.
a) beta 1-4 and alpha-1-6 b) alpha 1-4 and beta-1-6
c) alpha 1-4 and alpha 1-6 linkage d) beta-1-4 and beta-1-10

(ii) Select the sugar that is not a polysaccharide.
a) Starch b) Cellulose
c) Lactose d) Glycogen

(iii) Identify the most abundant organic molecule on Earth.
a) Starch b) Cellulose
c) Glycogen d) Lactose

(iv) Define a dipeptide.
a) A protein made up of two amino acids b) A molecule made up of two carbohydrates
c) A molecule made up of two nucleotides d) A lipid molecule

(v) Name the test that is commonly used to detect the presence of proteins in a solution.
a) Benedict's test b) Biuret test
c) Iodine test d) Litmus test

(vi) Choose the part of the digestive system where proteins are primarily broken down into amino acids.
a) Mouth b) Stomach
c) Small intestine d) Large intestine

(vii) Fatty acids are a type of lipid characterized by: _____. Select the correct answer.
a) A long hydrocarbon chain and a carboxyl group b) A sugar-phosphate backbone
c) A double helical structure d) Amino acid residues

(viii) Give an example of a saturated fatty acid
a) Oleic acid b) Linoleic acid

c) Stearic acid d) Palmitoleic acid

(ix) The "kink" or bend in the hydrocarbon chain of unsaturated fatty acids is due to: _____. Select the correct answer.

a) The presence of carboxyl groups b) The presence of double bonds
c) The absence of oxygen atoms d) The presence of sulfur atoms

(x) Identify the type of fat that is typically found in vegetable oils and avocados.

a) Saturated fats b) Trans fats
c) Monounsaturated fats d) Omega-3 fats

(xi) Select the primary role of the lipid bilayer in the plasma membrane.

a) To provide structural support to the cell b) To serve as a barrier that controls the passage of molecules in and out of the cell
c) To generate energy for the cell d) To store genetic information

(xii) A deficiency in Vitamin A can lead to: _____. Select the correct answer.

a) Scurvy b) Rickets
c) Night blindness d) Pellagra

(xiii) Vitamin E is known for its role as a(n): _____. Choose the correct answer.

a) Antioxidant b) Blood clotting factor
c) Coenzyme in energy metabolism d) Vitamin involved in vision

(xiv) Identify the vitamin that is important for maintaining strong bones and preventing osteoporosis?

a) Vitamin A b) Vitamin B2
c) Vitamin C d) Vitamin D

(xv) Selenium (Se) deficiency is associated with an increased risk of _____. Choose the correct answer.

a) Hypertension b) Cardiovascular disease
c) Osteoporosis d) Anemia

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Define carbohydrates and explain their general structure. (3)
3. Explain the steps involved in the energy harvesting phase of glycolysis. (3)
4. Define biomolecules and explain the common biomolecules required by humans. (3)
5. What is the primary role of calcium (Ca) in the body? (3)
6. Discuss briefly about the protein "glutathione" on the basis of its structure and function. (3)

OR

Analyze how the properties of amino acids determine the folding and stability of proteins in various physiological conditions. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Discuss the significance of the presence of hemoglobin in red blood cells. (5)
8. Explain the concept of peptide bonds. Differentiate between a dipeptide and a polypeptide. (5)
9. Discuss briefly about lipid profile tests mentioning each of the parameters. (5)
10. Analyze how Benedict's test can be used to differentiate between reducing and non-reducing sugars. (5)
11. Analyze the difference between Vitamins on the basis of their solubility, mentioning their source and functions. (5)
12. Analyze the impact of lipid composition on membrane permeability and fluidity. (5)

OR

Explain in brief the four levels of protein structure, and how do they contribute to the overall structure of a protein? (5)

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