

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(First Semester)

Branch – BIOCHEMISTRY

STRUCTURAL BIOCHEMISTRY

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 Number of moles of the component present in one kilogram of the solvent is ____.
(i) Molality (ii) Normality
(iii) Molarity (iv) Mole fraction
- 2 Name the polysaccharide which is used for the assessment of kidney function -----.
(i) Starch (ii) Inulin
(iii) Chondroitin sulphate (iv) Cellulose
- 3 The bonds in protein structure that are not broken on denaturation
(i) Hydrogen bonds (ii) Peptide bonds
(iii) Ionic bond (iv) Disulfide bonds
- 4 Identify which one of the following is an amphipathic lipid.
(i) Phospholipids (ii) Fatty acids
(iii) Bile salts (iv) All the above
- 5 Which one of the following coenzyme is a nucleotide?
(i) FAD (ii) NAD⁺
(iii) CoASH (iv) All of them

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Outline Nucleophilic reaction mechanism with example.
OR
b Concentrated hydrochloric acid contains 37% (by mass) HCL. The density of the solution is 1.18g/ml. Calculate the Molality and Molarity of the solutions.
- 7 a Sketch the structures of a) Dermatan sulphate b) Amylose c) Sucrose.
OR
b Bring out the Differences between Reducing non reducing sugars with example.
- 8 a Describe the structure of peptide bond and state the biological importance of peptides.
OR
b Describe Denaturation Reactions of proteins with example.

Cont...

- 9 a Explain about derived lipids?
OR
b Explain the functions of calcium and phosphorus in biology.
- 10 a Bring out the structure and components of Nucleotides.
OR
b Show the importance of Tm in nucleic acids.

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Discuss different types of bonding in Biomolecules.
OR
b Explain the Electrophilic reaction mechanism.
- 12 a Outline the monosaccharide reactions of a) Oxidation b) Alberdo keto transformation c) Osazone reactions.
OR
b Point out the differences between starch and glycogen.
- 13 a Classify amino acids by its sidechain.
OR
b Discuss about higher order structures of proteins.
- 14 a Classify lipids and state its biological importance.
OR
b Discuss functions and deficiency symptoms of Iron and Magnesium.
- 15 a Give an account on DNA structures with neat diagram.
OR
b Summarise the three different types of RNA.

Z-Z-Z

END