

P. P. SAVANI UNIVERSITY

Third Semester of B.Sc. Examination

December-2021

SSCH2070-Biomolecules

09.12.2021, Thursday Time: 09:00 a.m. to 11:30 a.m. Maximum Marks: 60

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

Section-I (Total Marks - 30)

Q.1 Short Questions

[10]

1.1 Objectives

[05]

1.1a Which is the most important disaccharide in milk of mammals?

- A Glucose
- B Maltose
- C Lactose
- D Sucrose

1.1b Which of the following is the simplest carbohydrate?

- A Ribose
- B Glucose
- C Dihydroxyacetone
- D Glyceraldehyde

1.1c Which of the following is an example of an epimer?

- A Glucose & Ribose
- B Glucose & galactose
- C Galactose, lactose & glucose
- D Glucose, ribose & mannose

1.1d Which is the 'reserve carbohydrate' in animals?

- A Glucose
- B Starch
- C Cellulose
- D Glycogen

1.1e Which of the following is the 'most abundant organic substance' in nature?

- A Cellulose
- B Ribose
- C Fructose
- D Chitin

1.1f Which aldopentose is found in RNA?

- A Xylose
- B Ribose
- C Arabinose
- D Ribulose

1.1g Which of the following are aromatic amino acids?

- A Phenylalanine
 - B Tyrosine
 - C Tryptophan
 - D All of the above
- 1.1h Which of the following is the most common secondary structure in proteins?
- A Right-handed α helix
 - B Left-handed α helix
 - C β pleated sheet
 - D β turn
- 1.1i Which of the following is found in hair & nails?
- A Fibroin
 - B Collagen
 - C Keratin
 - D None of the above
- 1.1j Which structural protein is found largely as a triple helix?
- A Insulin
 - B Keratin
 - C Fibroin
 - D Collagen

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) [05]

- 1.2a OH groups that lie on the right in Fischer projection appear under the ring level in Haworth projection. True/False
- 1.2b The reaction that converts anomers into each other is called as _____.
- 1.2c Which linkage is found in between glucose monomers in the structure of cellulose?
- 1.2d At its isoelectric point Histidine is said to be _____, as it has both anionic & cationic properties.
- 1.2e The amino acid components of peptides & proteins are linked by glycosidic bonds. True/False

Q.2 Short Notes (Attempt any two) [06]

- A Write in short about classification of carbohydrates.
- B Write a note on: Sucrose.
- C Explain in short about zwitterion.

Q.3 Explain in detail (Attempt any two) [14]

- A Write note on determination of primary structure of peptides.
- B Give the classification of amino acids based on their structure.
- C Explain the structure of glucose including open chain structure & Haworth projection.

Section-II (Total Marks - 30)

Q.1 Short Questions

[10]

1.1 Objectives

[05]

1.1a Who coined the term 'Enzyme'?

- A Sumner
- B Leibig
- C Fischer
- D Kuhne

1.1b Which group of enzymes is included in class I?

- A Oxidoreductase
- B Transferase
- C Hydrolase
- D Ligase

1.1c The velocity of enzyme substrate reaction increases with

- A An increase in the concentration of enzyme
- B Decrease in the concentration of enzyme
- C Both A & B are correct
- D Both A & B are incorrect

1.1d What is the enzyme inhibition in which the inhibitor binds at the site other than the active site on the enzyme and impairs its function?

- A Competitive inhibition
- B Noncompetitive inhibition
- C Mixed inhibition
- D Site inhibition

1.1e From which vitamin is the coenzyme NAD derived?

- A Thiamine
- B Riboflavin
- C Niacin
- D Folic acid

1.1f What is the inorganic non protein, metal ion bound to the enzyme called as?

- A Coenzyme
- B Apoenzyme
- C Holoenzyme
- D Cofactor

1.1g What are lipids containing fatty acid, carbohydrates and nitrogenous base called as?

- A Waxes
- B Phospholipids
- C Glycolipids
- D lipoproteins

1.1h What is the deterioration of fats and oils resulting in an unpleasant taste called as?

- A Hydrolysis
- B Saponification

- C Rancidity
- D peroxidation

1.1i Which of the following phospholipid is considered as a major constituent of nervous tissue?

- A Glycerophospholipid
- B Cardiolipin
- C Plasmalogens
- D Sphingomyelins

1.1j Which of the following is the most abundant animal sterol?

- A Ergosterol
- B Cholesterol
- C Stigmasterol
- D Sitosterol

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks)

[05]

1.2a Hexokinase is an example of _____ class of enzyme.

1.2b The site on the enzyme at which the substrate binds is called the _____.

1.2c There is no effect of temperature on the velocity of an enzyme reaction.
True/False

1.2d Define: iodine number.

1.2e What are the fatty acids that cannot be synthesized by the body known as?

Q.2 Short Notes (Attempt any two)

[06]

- A Write a note on: classification of enzymes.
- B Give the salient features of the active site of an enzyme.
- C Discuss in short about Essential fatty acids.

Q.3 Explain in detail (Attempt any two)

[14]

- A Write a note on: Complex/compound lipids
- B Enlist functions of phospholipids.
- C Explain giving example reversible inhibition.