

SSR DEGREE AND PG COLLEGE (AUTONOMOUS)
B.Sc. BIOTECHNOLOGY QUESTION BANK
SEMESTER – III INTERNAL - I
PAPER – BIOCHEMISTRY & MOLECULAR BIOLOGY

Part A: Multiple Choice Questions

1. Which of the following is a monosaccharide?

- A) Maltose
- B) Lactose
- C) Glucose
- D) Cellulose

Answer: C) Glucose

2. The glycosidic bond in sucrose is formed between:

- A) Two glucose molecules
- B) Glucose and fructose
- C) Glucose and galactose
- D) Two fructose molecules

Answer: B) Glucose and fructose

3. The peptide bond is formed between:

- A) Two amino groups
- B) Two carboxyl groups
- C) Amino group and carboxyl group
- D) Hydroxyl groups

Answer: C) Amino group and carboxyl group

4. Which level of protein structure is stabilized mainly by hydrogen bonds?

- A) Primary
- B) Secondary
- C) Tertiary
- D) Quaternary

Answer: B) Secondary

5. Which of the following is a simple lipid?

- A) Phospholipid
- B) Glycolipid
- C) Triglyceride
- D) Lipoprotein

Answer: C) Triglyceride

6. DNA contains which sugar?

- A) Ribose
- B) Deoxyribose
- C) Fructose
- D) Glucose

Answer: B) Deoxyribose

7. Which nitrogenous base is present in RNA but absent in DNA?

- A) Adenine
- B) Guanine
- C) Cytosine
- D) Uracil

Answer: D) Uracil

8. The International Union for Biochemistry (IUB) classifies enzymes into:

- A) Four classes
- B) Five classes
- C) Six classes
- D) Eight classes

Answer: C) Six classes

9. Competitive inhibition can be overcome by:

- A) Lowering substrate concentration
- B) Increasing substrate concentration
- C) Increasing inhibitor concentration
- D) Increasing temperature

Answer: B) Increasing substrate concentration

10. Michaelis-Menten equation describes:

- A) Protein synthesis
- B) DNA replication
- C) Enzyme kinetics
- D) Lipid metabolism

Answer: C) Enzyme kinetics

11. The first law of thermodynamics states that:

- A) Entropy always increases
- B) Energy can neither be created nor destroyed
- C) Heat flows from cold to hot bodies
- D) Free energy is always positive

Answer: B) Energy can neither be created nor destroyed

12. ATP is commonly known as the:

- A) Energy currency of the cell
- B) Genetic material
- C) Structural protein
- D) Hormone

Answer: A) Energy currency of the cell

13. Pyruvate is converted into Acetyl-CoA by:

- A) Hexokinase
- B) Lactate dehydrogenase
- C) Pyruvate dehydrogenase complex
- D) Citrate synthase

Answer: C) Pyruvate dehydrogenase complex

14. The Tricarboxylic Acid (TCA) cycle occurs in the:

- A) Cytoplasm
- B) Nucleus
- C) Mitochondrial matrix
- D) Ribosome

Answer: C) Mitochondrial matrix

15. Which molecule enters the TCA cycle?

- A) Pyruvate
- B) Acetyl-CoA
- C) Glucose
- D) Lactate

Answer: B) Acetyl-CoA

16. The final electron acceptor in the electron transport chain is:

- A) Carbon dioxide
- B) Water
- C) Oxygen
- D) NADH

Answer: C) Oxygen

17. Oxidative phosphorylation mainly produces:

- A) Glucose
- B) ATP
- C) Glycogen
- D) Fatty acids

Answer: B) ATP

18. Gluconeogenesis is the synthesis of glucose from:

- A) Glucose only
- B) Non-carbohydrate precursors
- C) Fatty acids only
- D) Starch

Answer: B) Non-carbohydrate precursors

19. β -Oxidation is the metabolic pathway involved in the breakdown of:

- A) Proteins
- B) Fatty acids
- C) DNA
- D) Glycogen

Answer: B) Fatty acids

20. Fatty acid biosynthesis primarily occurs in the:

- A) Nucleus
- B) Cytoplasm
- C) Lysosome
- D) Golgi apparatus

Answer: B) Cytoplasm

Part B: Fill in the Blanks

1. _____ is the storage polysaccharide in animals.

Answer: Glycogen

2. The bond joining amino acids is called the _____ bond.

Answer: Peptide

3. The primary structure of proteins is determined by the _____ sequence.

Answer: Amino acid

4. The building blocks of nucleic acids are called _____.

Answer: Nucleotides

5. RNA contains the sugar _____.

Answer: Ribose

6. Cellulose is the major component of the _____ cell wall.

Answer: Plant

7. Enzymes act as biological _____.

Answer: Catalysts

8. Phospholipids are major components of the _____ membrane.

Answer: Cell (or Plasma)

9. Denaturation causes loss of the _____ structure of proteins.

Answer: Secondary, tertiary and quaternary

10. The enzyme-substrate complex is represented as _____.

Answer: ES

11. The universal energy currency of the cell is _____.

Answer: ATP

12. The TCA cycle is also known as the _____ cycle.

Answer: Krebs

13. The conversion of pyruvate to Acetyl-CoA is catalyzed by the _____ complex.

Answer: Pyruvate dehydrogenase

14. The electron transport chain is located on the _____ membrane of mitochondria.

Answer: Inner mitochondrial

15. The final electron acceptor in aerobic respiration is _____.

Answer: Oxygen

16. Oxidative phosphorylation produces large amounts of _____.

Answer: ATP

17. The synthesis of glucose from non-carbohydrate sources is called _____.

Answer: Gluconeogenesis

18. β -Oxidation takes place mainly in the _____.

Answer: Mitochondria

19. The first product formed in the TCA cycle is _____.

Answer: Citrate

20. Fatty acid biosynthesis requires the reducing power of _____.

Answer: NADPH

PART – C

1. DISCRIBE ABOUT POLYSACCHARIDE
2. WRITE ABOUT PROTEINS CLASSIFICATION
3. DISCUSS ABOUT GLYCOLYSIS
4. WRITE IN DETAIL ABOUT ETC