

MUDRA LIFE SCIENCES

VOLUME-01

PART B & C

MODEL QUESTION BANK FOR THE TOPICS:

1. MOLECULES AND THEIR INTERACTION RELEVANT TO BIOLOGY

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1. MOLECULES AND THEIR INTERACTION RELEVANT TO BIOLOGY

UNIT - 1

1. α -D-glucose and β -D-glucose are
 - (a) Stereoisomers
 - (b) Epimers
 - (c) Anomers
 - (d) Keto-aldo pairs

2. The most important epimer of glucose is
 - (a) Galactose
 - (b) Fructose
 - (c) Arabinose
 - (d) Xylose

3. Maltose can be formed by hydrolysis of
 - (a) Starch
 - (b) Dextrin
 - (c) Glycogen
 - (d) All of these

4. How many energy bonds are expended in formation of peptide bond-
 - (a) 2
 - (b) 4
 - (c) 3
 - (d) 6

5. A known uncoupler of electron transport chain and oxidative phosphorylation is-
 - (a) Dinitrophenol
 - (b) Ancyimidol
 - (c) Triaconotol
 - (d) Hexacamcol

6. Which one of the following has a quaternary structure-
 - (a) α -chemotrypsin
 - (b) Hemoglobin
 - (c) Insulin
 - (d) Myoglobin

7. In a solution having a pH of 7.4, the hydrogen ion concentration is
 - (a) 7.4 nmol/L
 - (b) 40 nmol/L
 - (c) 56 nmol/L
 - (d) 80 nmol/L

8. Energy obtained by oxidation of 1gm of protein-
 - (a) 9 Kcal
 - (b) 4.5 Kcal
 - (c) 18 Kcal
 - (d) 12 Kcal

9. The Z-DNA helix-
 - (a) has fewer base pair turn than B-DNA
 - (b) is favored by alternate GC base pair
 - (c) tends to found at 3' ends of gene
 - (d) is the most common confirmation of DNA

10. The anionic charge of phosphodiester bond of DNA in prokaryotes is balanced by-
- a) Polyamines
 - b) H-NS
 - c) H-L
 - d) Histones
11. B- form of DNA is characterized by-
- (a) rare form of DNA bases
 - (b) left handed helix
 - (c) helical turn having two bases per turn
 - (d) major and minor grooves that allow molecule interacting with DNA
12. Micheles Menton hypothesis-
- a) enables to calculate iso-electric point of enzymes
 - b) postulates all enzymes are proteins
 - c) states that rate of enzymatic reaction may be independent of substrate concentration
 - d) postulates formation of enzyme substrate concentration
13. Which of the following best characterizes the reaction represented the following?
- $$A + B + \text{energy} \rightarrow AB$$
- a) Hydrolysis
 - b) Catabolism
 - c) Oxidation-reaction
 - d) Endergonic reaction
14. Two sugars which differ from one another only in configuration around a single carbon atom are termed
- (A) Epimers
 - (B) Anomers
 - (C) Optical isomers
 - (D) Stereoisomers
15. 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) Stereoisomers
16. The K_m of an enzyme is
- a) $\frac{1}{2}$ of the V_{max}
 - b) A dissociation constant
 - c) Substrate concentration that gives max velocity
 - d) Substrate concentration that gives half maximum velocity

17. α -D-glucose + 112° \rightarrow + 52.50 \leftarrow + 190 β -D-glucose for glucose above represents
- (A) Optical isomerism
 - (B) Mutarotation
 - (C) Epimerisation
 - (D) D and L isomerism
18. Number of stereoisomers of glucose is/are
- (A) 4
 - (B) 8
 - (C) 16
 - (D) None of these
19. α -D-Glucuronic acid is present in
- (A) Hyaluronic acid
 - (B) Chondroitin sulphate
 - (C) Heparin
 - (D) All of these
20. Glucose-6-phosphatase is not present in
- (A) Liver and kidneys
 - (B) Kidneys and muscles
 - (C) Kidneys and adipose tissue
 - (D) Muscles and adipose tissue
21. Pyruvate carboxylase is regulated by
- (A) Induction
 - (B) Repression
 - (C) Allosteric regulation
 - (D) All of these
22. Fructose-2, 6-biphosphate is formed by the action of
- (A) Phosphofructokinase-1
 - (B) Phosphofructokinase-2
 - (C) Fructose biphosphate isomerase
 - (D) Fructose-1, 6-biphosphatase

23. Uridine diphosphate glucose (UDPG) is
- (A) Required for metabolism of galactose
 - (B) Required for synthesis of glucuronic acid
 - (C) A substrate for glycogen synthetase
 - (D) All of the above
24. The branching enzyme acts on the glycogen when the glycogen chain has been lengthened to between glucose units:
- (A) 1 and 6
 - (B) 2 and 7
 - (C) 3 and 9
 - (D) 6 and 11
25. Hexokinase has a high affinity for glucose than
- (A) Fructokinase
 - (B) Galactokinase
 - (C) Glucokinase
 - (D) All of the above
26. Pyruvate dehydrogenase complex and α -ketoglutarate dehydrogenase complex require the following for their oxidative decarboxylation:
- (A) COASH and Lipoic acid
 - (B) NAD^+ and FAD
 - (C) COASH and TPP
 - (D) COASH, TPP, NAD^+ , FAD, Lipoate
27. Two examples of substrate level phosphorylation in EM pathway of glucose metabolism are in the reactions of
- (A) 1, 3 bisphosphoglycerate and phosphoenol pyruvate
 - (B) Glucose-6 phosphate and Fructo-6-phosphate
 - (C) 3 phosphoglyceraldehyde and phosphoenolpyruvate
 - (D) 1, 3 diphosphoglycerate and 2-phosphoglycerate

28. Fatty acids cannot be converted into carbohydrates in the body as the following reaction is not possible.
- (A) Conversion of glucose-6-phosphate into glucose
 - (B) Fructose 1, 6-bisphosphate to fructose-6- phosphate
 - (C) Transformation of acetyl CoA to pyruvate
 - (D) Formation of acetyl CoA from fatty acids
29. The FOUR rate limiting enzymes of gluconeogenesis are:
- (A) Glucokinase, Pyruvate carboxylase, phosphoenol pyruvate carboxykinase and glucose-6-phosphatase
 - (B) Pyruvate carboxylase, phosphoenol pyruvate carboxykinase, fructose 1,6 diphosphatase and glucose-6-phosphatase
 - (C) Pyruvate kinase, pyruvate carboxylase, phosphoenol pyruvate carboxykinase and glucose-6-phosphatase
 - (D) Phospho fructokinase, pyruvate carboxylase, phosphoenol pyruvate carboxykinase and fructose 1, 6 diphosphatase
30. For glycogenesis, Glucose should be converted to
- (A) Glucuronic acid
 - (B) Pyruvic acid
 - (C) UDP glucose
 - (D) Sorbitol
31. Fluoride inhibits _____ and arrests glycolysis.
- (A) Glyceraldehyde-3-phosphate dehydrogenase
 - (B) Aconitase
 - (C) Enolase
 - (D) Succinate dehydrogenase
32. The ratio that approximates the number of net molecule of ATP formed per mole of Glucose oxidized in presence of O₂ to the net number formed in absence of O₂ is
- (A) 4 : 1
 - (B) 10 : 2
 - (C) 12 : 1
 - (D) 18 : 1

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