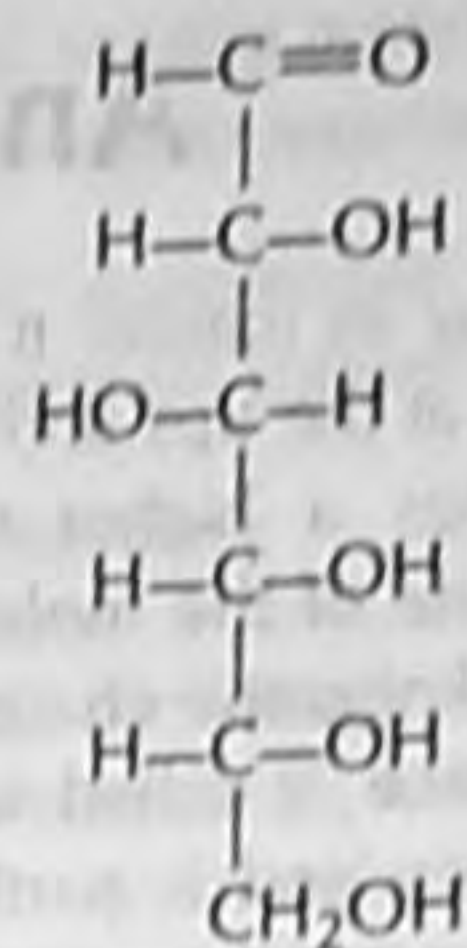


# 1 Mark Questions

- The properties of water include
  - the ability of form hydrophobic bonds with itself
  - a disordered structure in the liquid state
  - a low dielectric constant
  - being a dipole, with the negative end at the oxygen atom
- Deficiency of which one of these enzymes causes defect in the storage of glycogen?
  - Lactate dehydrogenase
  - Glyceraldehyde 3 phosphate dehydrogenase
  - Phosphorylase
  - Glycogen synthetase
- The turnover number of chymotrypsin is  $100 \text{ s}^{-1}$  and for DNA polymerase it is  $15 \text{ s}^{-1}$ . This means that
  - chymotrypsin binds to its substrates with higher affinity than does DNA polymerase
  - the velocity of the chymotrypsin reaction is always greater than that of DNA polymerase
  - the velocities of reactions catalysed by both enzymes at saturating substrate levels could be made equal if 6.7 times more DNA polymerase than chymotrypsin were used
  - the velocities of chymotrypsin reaction at a particular enzyme concentration and saturating substrate levels is lower than that of DNA polymerase reaction under the same conditions
- Which of the following statements is true? Enzyme catalysis of a chemical reaction
  - increases the forward and reverse reaction rates
  - decreases  $\Delta G'$  so that the reaction can proceed spontaneously
  - increases the energy of transition state
  - decreases the entropy of reaction
- Which of the following enzymes can be irreversibly inactivated with Di-isopropylfluoridate (DIPF)?
  - Carboxypeptidase-A
  - Trypsin
  - Lysozyme
  - Eco* RI endonuclease
- Histones have very high percentage of arginine and lysine residues (15-30%). For this calls of proteins which of the following reagents would be a suitable choice for generating peptides in the determination of the amino acid sequence of the protein.
  - Cyanogen bromide
  - Thermolysin
  - Trypsin
  - N-bromosuccinamide
- The half life of  $[^{32}\text{P}]$  phosphate is approximately 14 days. Forty two day after the purchase of a batch of  $[^{32}\text{P}]$ , the radioactivity present was 1.25 mCi. The radioactivity on the date of purchase would be
  - 5 mCi
  - 0.625 mCi
  - 2.5 mCi
  - 10 mCi
- A 100 mL of 0.1 M sodium acetate solution was mixed with 300 mL of 0.3 M sodium acetate. The molarity of the final solution would be
  - 330 mM
  - 250 mM
  - 200 mM
  - 40 mM
- A double stranded DNA has 30% thymine. The percentage of cytosine is
  - 30%
  - 20%
  - 70%
  - 15%
- The following type of interaction is mainly responsible for aggregation of proteins in dilute solutions.
  - hydrogen bonds
  - hydrophobic interactions
  - disulphide bonds
  - peptide bonds

11. The isomerization of this chromophore by light is the first event in visual excitation
- (a) retinol (b) All *trans* retinal  
(c) 11-*cis* retinal (d) retinoic acid
12. In the transaminases the cofactor is linked via Schiff's base formed between the cofactors and the
- (a)  $\alpha$ -NH<sub>2</sub> group of N-terminal amino acid  
(b)  $\beta$ -NH<sub>2</sub> group of asparagine  
(c)  $\epsilon$ -NH<sub>2</sub> group of lysine  
(d) None of the above
13. An enzyme protein forms 0.001% of the total soluble protein in a crude extract. The degree of purification required to obtain a homogeneous enzymes is
- (a) 1000 fold  
(b) 100 fold  
(c) 100,000 fold  
(d) 10 fold
14. A homogeneous protein of native molecular weight 100,000 gave a single band of molecular weight 50,000 on SDS-PAGE in presence of  $\beta$ -mercaptoethanol. N-terminal analysis gave two amino acids alanine and leucine in equal proportions. Hence, the
- (a) protein is a homodimer  
(b) protein is contaminated with another protein  
(c) protein has two polypeptides linked by disulphide bridges  
(d) None of the above
15. Cholecalciferol (vitamin-D), in order to become biologically active undergoes hydroxylation at two positions in the molecule. Hydroxylation at the 25<sup>th</sup> position is done in the liver, whereas hydroxylation at the 1<sup>st</sup> position occurs in
- (a) skin (b) pancreas  
(c) intestine (d) kidney
16. How many asymmetric carbon atoms are present in the compound whose structure is given below?



- (a) 1 (b) 2  
(c) 3 (d) 4
17. Diphtheria toxin inhibits protein synthesis by
- (a) causing formation of ADP-EF2 complex  
(b) release of peptidyl tRNA from the 'P' site  
(c) binding to factor EF-1  
(d) inhibiting peptide bond formation
18. Antigenic peptides are presented to T-cells by
- (a) TCR/CD3 (b) CD 28  
(c) CTL A4 (d) MHC
19. Which of the following statement about cyclic photophosphorylation is not correct?
- (a) It does not involve NADPH formation  
(b) It uses electrons supplied by photosystem II  
(c) It involves a substrate level phosphorylation  
(d) It does not generate oxygen
20. Which of the following statements about biological membranes is not true?
- (a) They contain carbohydrate that are covalently bound to proteins and lipids  
(b) They are large sheet-like structures with closed boundaries  
(c) They are symmetric because of the symmetric nature of lipid bilayers  
(d) They contain specific proteins that mediate their distinctive functions