212. A 1% (w/v) solution of a sugar polymer is digested by an enzyme (20pg. MW - 200,000). The rate of monomer sugar (MW - 400) liberated was determined to have a maximal initial velocity of 10 mg formed/min. The turnover number (min-1) will be:

(a) 5×10^4

(b) 2.5×10^{-2}

(c) 4.0×10^6

(d) 2.5×10^5 min-1

213. In an alpha helical polypeptide, the backbone hydrogen bonds are between:

(a) NH of n and CO of n + 4 amino acids

(b) CO of n and NH of n * 3 amino acids

(c) CO of n and NH of n + 4 amino acids

(d) NH of n and CO of n + 3 amino acids

214. Cystic fibrosis transmembrane conductance regulator (CFTR) is known to control the transport of which ion?

(a) Ca^{2+}

(b) Mg^{2+}

(c) HCO_3

(d) Cl^-

215. Which one of the following enzymes is NOT a part of the pyruvate dehydrogenase enzyme complex in the glycolysis pathway?

(a) Pyruvate dehydrogenase

(b) Dihydrolipoyl transferase

(c) Dihydrolipoyl dehydrogenase

(d) Dihydrolipoyl oxidase

215. Which one of the following enzymes is NOT a part of pyruvate dehydrogenase enzyme complex in the glycolysis pathway?

(a) Pyruvate dehydrogenase

(b) Dihydrolipoyl transferase

(c) Dihydrolipoyl| dehydrogenase

(d) Dihydrolipoyl oxidase

216. Following are three single stranded DNA sequences that form secondary structures

A. ATTGAGOGATCAAT

B. ATTGAGCGATATCAAT

C. AGGGAGCGATCCCT

Based on their stability, which one is correct?

(a) A=B=C

(b) C>A>B

(c) B>C=A

(d) B>C>A

217. When bacteria growing at 20°C are warmed at 37°C, they are most likely to synthesize membrane lipids with more:

(a) Short chain saturated fatty acids

(b) Short chain unsaturated fatty acids

(c) Long chain saturated fatty acids

(d) Long chain unsaturated fatty acids

218. Collagens are the most abundant component of the extracellular matrix. In order to maintain normal physiological processes like wound

healing, bone development, etc. Which one of the following types of enzymes is MOST important?

(a) Peptidases

(b) Proteases

(c) Amylase

(d) Lipases

219. A protein has one tryptophan and one tyrosine in its sequence. Assume molar extinction coefficients at 280 noss of tryptophan and tyrosine as 3000 and 1500 M^{-1} cm^{-1} respectively. What would be the molar concentration of that protela if its absorption at 280 nm is 0.90?

(a) 2 mM

(b) 0.4 mM

(c) 0.2 mM

(d) 0.02 mM

220. The glycolysis and citric acid cycles are important pathways to generate energy in the cell. Given below are statements regarding the production of ATP

A. Electrons released during the oxidative steps of glycolysis and citric acid cycle produce 10 molecules of NADH and 2 molecules of $FADH_2$ per molecule of glucose

B. Electrons released during the oxidative steps of glycolysis and citric acid cycle produce

20 molecules of NADH and 4 molecules of $FADH_2$ per molecule of glucose

C The coenzymes produced are oxidized by electron transfer chain

D. The conversion of ADP and Pi to ATP takes place in the intermembrane space of mitochondria

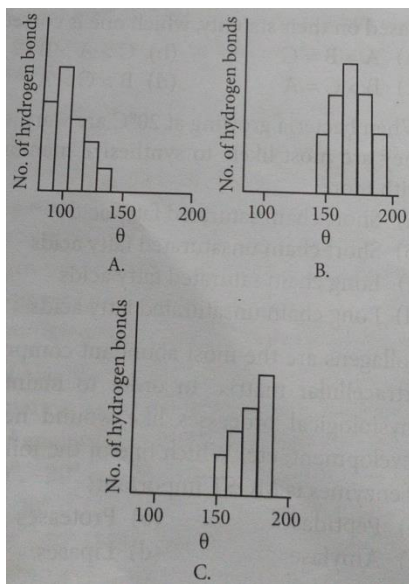Which one of the following combinations of above statements is correct?

(a) A and B

(b) B and C

(c) C and D

(d) A and C

221. Hydrogen bonds in proteins occur when the electronegative atoms compete for the same hydrogen atom Donor-H-Acceptor. The angle θ between donor and acceptor of a hydrogen bond was determined from large number of X-ray structures of proteins, as shown below:

Which one of the distributions of 10 was observed from the proteins?

(a) Only B

(b) Only A

(c) ONly c

(d) A and B

222. In a 30-residue peptide, the dihedral angles Φ/☐ have been determined by one or more methods When their values are examined in the Ramachandran plot, it is

(a) Not possible for Φ/☐ values to be distributed in the helical as well as beta sheet region

(b) Possible that the Φ/□ values are all in the helical region although circular dichroism spectral studies indicate beta sheet conformation

(c) Possible to conclude that the peptide is composed of entirely D-amino acids

(d) Not possible to conclude if the peptide is entirely helical or entirely in beta sheet conformation

223. In the accompanying figure, the reaction kinetics of three proteins (a, b, c) is presented.protein concentrations used to obtain this data are: a =1mg/ml; b = 4mg/ml; c = 2 mg/ml.
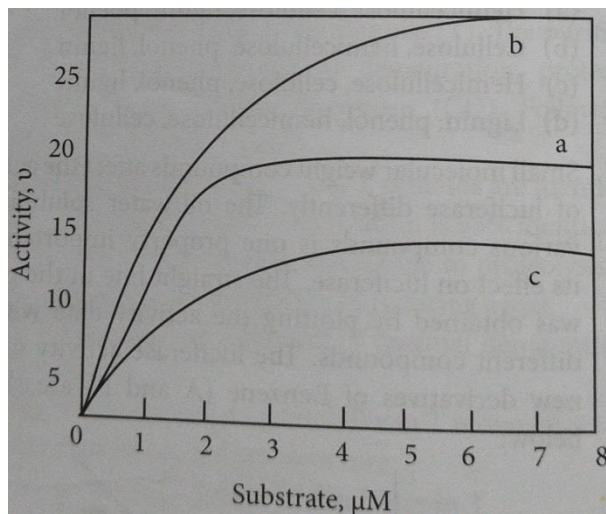
Substrate, µм

If catalytic efficiency is defined as which of the following options is correct?

(a) b>c>a

(b) a>b>c

(c) a>c>b

(d) c>a>b

224. Pyruvate dehydrogenase is subject to feedback inhibition by its products in glycolysis. Some of the chemical compounds which might be involved in the process, are listed below:

A NADH

B. FADH

C. Acetyl-CoA

D. Acetaldehyde

Which one of the following combinations of above chemical compounds is involved in feedback inhibition of pyruvate dehydrogenase?

(a) A and B

(b) B and C

(c) C and D

(d) A and C