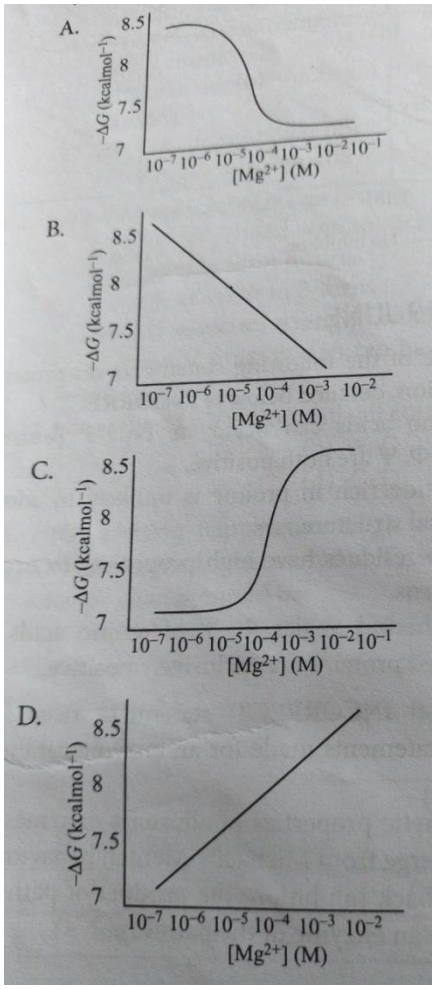
CSIR NET 2019. 15 DECEMBER

318. Which one of the following graphs best describes the dependence of free energy change (ΔG) of ATP hydrolysis on Mg2+ concentration?



(a) A

(b) B

(c) C

(d) D

319. Which one of the following statements is true regarding amino acids?

(a) Proline has a high propensity to form a-helix in globular proteins.

(b) Both isoleucine and threonine can exist as diastereomers.

(c) Side chain pKa of aspartic acid is more than the side chain pk, of glutamic acid.

(d) The v dihedral angle of proline is more restricted than the P dihedral angle.

320. A form and Z form of double-stranded DNA differ in the handedness of their belices, nucleotide sequences,and configuration of base to sugar. Based on these properties, which one of the following statements defines a correct combination for A and Z forms of DNA?

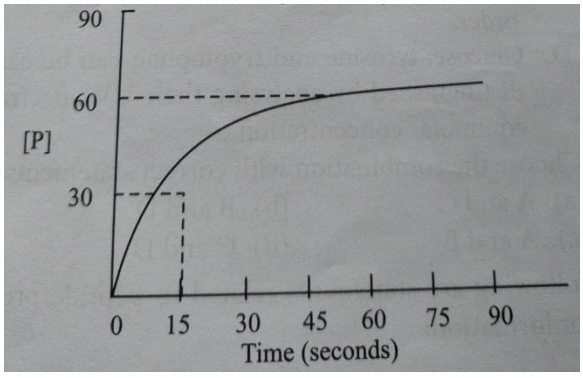
(a) Right-handed double helix and anti- configuration for the base to sugar arrangement in A-DNA; and left-handed double helix with alternating sequence of G and C (as a general pattern). and alternating syn- and anti-configurations for the base to sugar arrangement in the Z DNA.

(b) Right-handed doublelix syn-configuration for the base to sugar arrangement in A-DNA; and left-handed double helix with alternating A and G sequence (as a general pattern), and anti-configurations for base to sugar arrangement in the Z-DNA.

(c) Left-handed double helix and anti-configuration for base to sugar arrangement in the A form DNA and right-handed double helix and syn-configuration for base to sugar arrangement in the Z form DNA.

(d) Left-handed double helix and syn-configuration for base to sugar arrangement in the A form DNA and right-handed double helix and anti configuration for the base to sugar arrangement for the Z form DNA.

321. Given below is the [P] vs time plot of an enzymatic reaction carried out by the enzyme X.



Which one of the following statements is the CORRECT interpretation of the data?

(a) The Km and Vmax of the enzyme x are 15 and mas 60 units, respectively

(b) The Vmax is 60 but the Km cannot be determined max

(c) The Km is 15 but the Vmax cannot be determined

(d) Neither the Km nor the Vmax of the enzyme X can be determined from these data

322. Given below are some physicochemical properties (Column X) and their manifestations (Column Y).

Column X	Column Y
A. Pauling electro-negativity	(i) Charge separation
B. Isolated-orbital overlap	(ii) Solvation of atoms
C. Aromaticity	(iii) Restricted rotation
D. Dielectric constant	(iv) Planarity of molecules

Which one of the following is the most appropriate match?

(a) A-i, B-iv, C-ii and D-iii

(b) A-iii, B-ii, C-iv and D-i

(c) A-ii, B-iii, C-iv and D-i

(d) A.iv, B-ii, C-i and D-iii

323. The following observations are made on a 30-residue polypeptide:

A. Unordered structure is observed in water but a helical conformation is observed in medium of low dielectric constant.

B. The peptide is resistant to degradation by proteases.

C. Red blood cells are lysed by the peptide.

D. ß-mercaptoethanol has no effect on peptide structure.

Which of the following statements can be correctly attributed to the above observations?

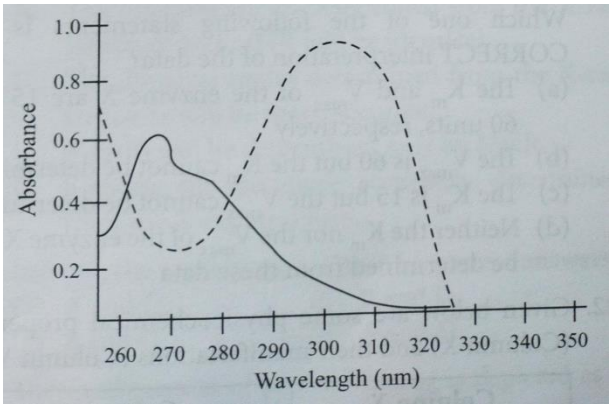
(a) The peptide is entirely composed of D-amino acids and is amphipathic.

(b) The peptide is entirely composed of L-amino acids and is not amphipathic.

(c) The peptide is rich in disulphide bonds between D-cysteines.

(d) The peptide is entirely composed of L-aromatic amino acids.

324. Absorption spectra of L-tyrosine in acidic (continuous line) and basic (dotted line) medium was estimated and plotted on a graph as depicted below:



Following interpretations were made:

A. Change in the pH from acidic to basic results in shift in the lowest energy absorption maximum and decrease in the molar absorptivity.

B. Shifting of the absorption band to longer wavelength signifies a shift to lower energy, also known as red shift

C. Shifting of the absorption band to shorter wavelength signifies a shift to higher energy, also known as blue shift.

D. Wavelength shift is always accompanied by change in intensity of the absorption band.

Select the combination with correct interpretations

(a) A and B

(b) A and C

(c) B and C

(d) B and D