CHEMISTRY

Part I

Section–I

Straight Objective Type

This section contains 8 multiple choice questions numbered 1 to 8. Each question has 4 choices (A), (B), (C) and (D), out of which **ONLY ONE** is correct.

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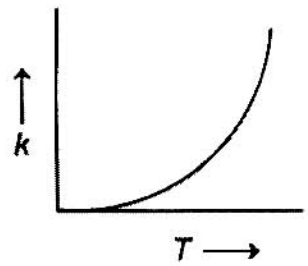
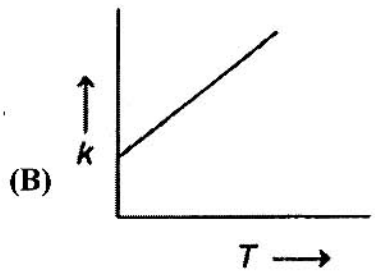
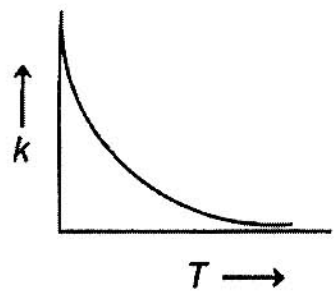
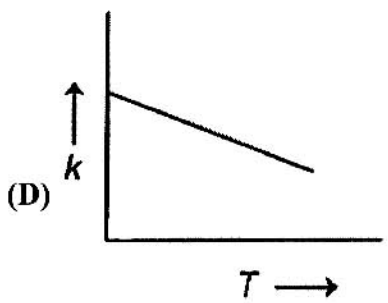
1. Plots showing the variation of the rate constant (k) with temperature (T) are given below. The plot that follows Arrhenius equation is

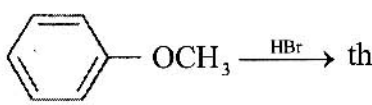
(A) 

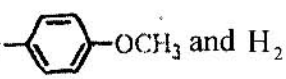
(B) 

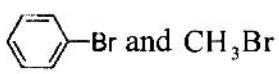
(C) 

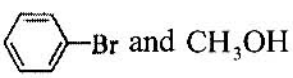
(D) 

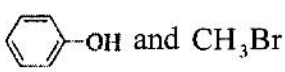
Ans: (A)

2. In the reaction  the products are

(A)  and H_2

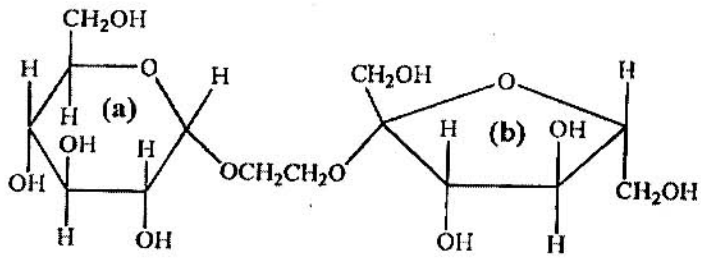
(B)  and CH_3Br

(C)  and CH_3OH

(D)  and CH_3Br

Ans: (D)

3. The correct statement about the following disaccharide is



(A) Ring **(a)** is pyranose with α – glycosidic link
(B) Ring **(a)** is furanose with α – glycosidic link
(C) Ring **(b)** is furanose with α – glycosidic link
(D) Ring **(b)** is pyranose with β – glycosidic link

Ans: (A)

4. The synthesis of 3-octyne is achieved by adding a bromoalkane into a mixture of sodium amide and an alkyne. The bromoalkane and alkyne respectively are

(A) $BrCH_2CH_2CH_2CH_2CH_3$ and $CH_3CH_2C \equiv CH$

(B) $BrCH_2CH_2CH_3$ and $CH_3CH_2CH_2C \equiv CH$

(C) $BrCH_2CH_2CH_2CH_2CH_3$ and $CH_3C \equiv CH$

(D) $BrCH_2CH_2CH_2CH_3$ and $CH_3CH_2C \equiv CH$

Ans: (D)

5. The ionization isomer of $\left[Cr(H_2O)_4Cl(NO_2)\right]Cl$ is

(A) $\left[Cr(H_2O)_4(O_2N)\right]Cl_2$

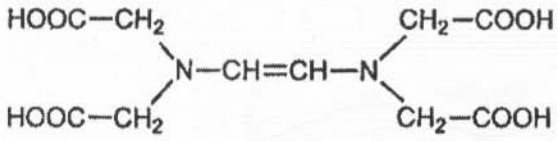
(B) $\left[Cr(H_2O)_4Cl_2\right](NO_2)$

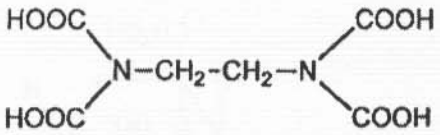
(C) $\left[Cr(H_2O)_4Cl(ONO)\right]Cl$

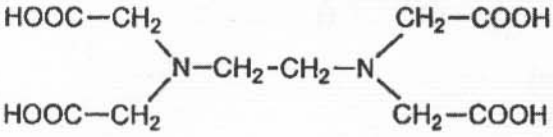
(D) $\left[Cr(H_2O)_4Cl_2(NO_2)\right]\cdot H_2O$

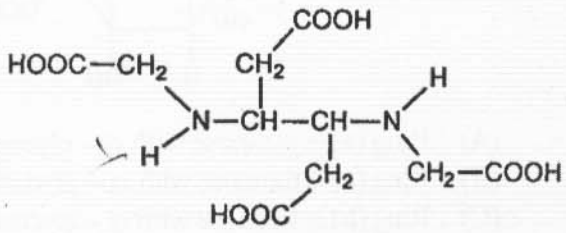
Ans: (B)

6. The correct structure of ethylenediaminetetraacetic acid (EDTA) is

(A) 

(B) 

(C) 

(D) 

Ans: (C)

7. The bond energy (in **kcal mol^{-1}**) of a C–C single bond is approximately

(A) 1 **(B)** 10 **(C)** 100 **(D)** 1000

Ans: (C)

8. The species which by definition has **ZERO** standard molar enthalpy of formation at 298 K is

(A) $Br_2(g)$ **(B)** $Cl_2(g)$ **(C)** $H_2O(g)$ **(D)** $CH_4(g)$

Ans: (B)

Section–II

Multiple Correct Answer Type

This section contains 5 multiple choice questions numbered 9 to 13. Each question has 4 choices (A), (B), (C) and (D), out of which **ONE OR MORE THAN ONE** is / are correct.

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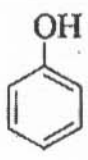
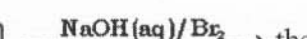
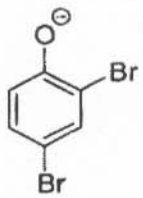
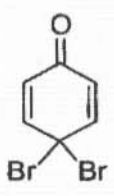
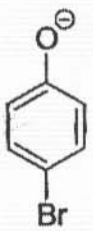
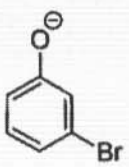
9. In the reaction   the intermediate(s) is(are)

(A) 

(B) 

(C) 

(D) 

Ans: (A, B, C)