# CHEMISTRY

## BOOKS - NTA MOCK TESTS

## NTA JEE MOCK TEST 45

**Chemistry**

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**1.** At $48^\circ C$, the vapour pressure of pure $CS_2$ is 850torr . A solution of 2.0 g of sulphur in 100g of $CS_2$ has a vapour pressure 844.9 torr. Determine the atomicity of sulphur molecule :
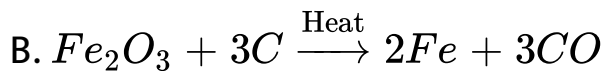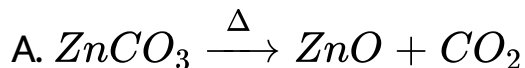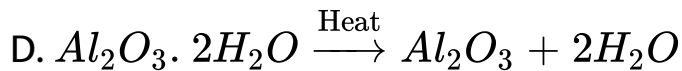
A. 1

B. 2

C. 4

D. 8

**Answer: D**

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**2.** Which of the following process involves smelting ?

A. $ZnCO_3 \xrightarrow{\Delta} ZnO + CO_2$

B. $Fe_2O_3 + 3C \xrightarrow{\text{Heat}} 2Fe + 3CO$

C. $2PbS + 3O_2 \xrightarrow{\text{Heat}} 2PbO + 2SO_2$

D. $Al_2O_3 . 2H_2O \xrightarrow{\text{Heat}} Al_2O_3 + 2H_2O$

**Answer: B**

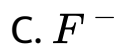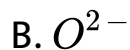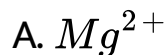▶ **Watch Video Solution**

**3.** which among the following species has the same number o f electrons in its outermost as well as penultimate shell ?

A. $Mg^{2+}$

B. $O^{2-}$

C. $F^{-}$

D. $Ca^{2+}$

**Answer: D**

**4.** When a substance A reacts with water it produces a combustible gas B and a solution of substance C in water. When another substance D reacts with this solution of C, it also produces the same gas B on warming but D can produce gas B on reaction with dilute sulphuric acid at room temperature. A imparts a deep golden yellow colour a smokeless flame to Bunsen burner. A,B,C, and D respectively are :

A. $Na$, $H_2$, $NaOH$ and $Zn$

B. $K, H_2, KOH$ and $Al$

C. $Ca, H_2, Ca(OH)_2$, and $Sn$

D. $CaC_2, C_2H_2, Ca(OH)_2$ and $Sn$

**Answer: A**

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5. The observed dipole moment of $HCl$ is $1.03D$. If the bond length of HCL is $1.3$Å, then the percent ionic character of $H - Cl$ bond is
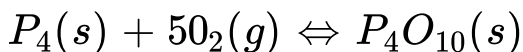
A. 43

B. 21

C. 17

D. 7

**Answer: C**

**6.** What is the equilibrium expression for the reaction

$$P_4(s) + 5O_2(g) \Leftrightarrow P_4O_{10}(s)$$

A. $K_c = \dfrac{[P_4O_{10}]}{[P_4][O_5]^5}$

B. $K_c = \dfrac{[P_4O_{10}]}{5[P_4][O_2]}$

C. $K_c = [O_2]^5$

D. $K_c = \dfrac{1}{[O_2]^5}$

**Answer: D**

**7.** $MF + XeF_4 \rightarrow M^+$ ($M^+ =$ alkali metal cation)

The state of hybridisation of the central atom in A and shape of the species are:

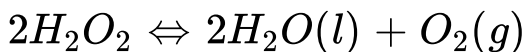A. $sp^3d$, $TBP$

B. $sp^3d^3$, distorted octahedral

C. $sp^3d^3$, pentangonal planar

D. No compound formed at all

**Answer: C**

**8.** Hydrogen peroxide $(H_2O_2)$ decomposes according to the equation

$$2H_2O_2 \Leftrightarrow 2H_2O(l) + O_2(g)$$

From the following data at $25°C$ calculate the value of

$K_p$ at 400 K for the above reaction,

$\Delta H° = -196.0 kJ \Delta s° = 125.65 J/K.$

$\left[\text{Given}: \ 10^{-.15} = 1.41\right]$

A. $0.14 \times 10^{32}$

B. $0.14 \times 10^{-32}$

C. $0.14 \times 10^3$

D. $1.3 \times 10^{15}$

**Answer: A**

**9.** If $E_{ClO_3^- / ClO_4^-} = -0.36V \& E^\circ_{ClO_3^- / ClO_2^-} = 0.33V$ at 300 K.

The equilibrium concentration of perchlorate ion $(ClO_4^-)$ which was initially 1.0 M in $ClO_3^-$ when the reaction starts to attain the equilibrium,

$$2ClO_3^- \Leftrightarrow ClO_2^- + ClO_4^-$$

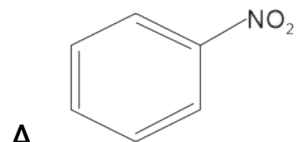Given : Anti $\log(0.509) = 3.329$
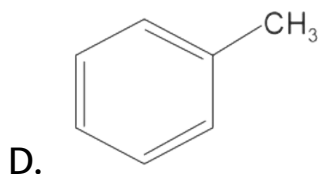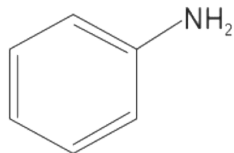
A. $0.0236M$

B. $0.0190M$

C. $0.123M$

D. $0.191M$

**Answer: D**

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**10.** Which of the following compounds will be most easily attacked by an electrophile?

A.  —NO$_2$

B.  —Cl

C.



D.
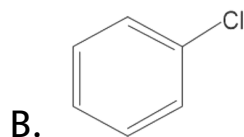


**Answer: C**

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**11.** A mixture of benzaldehyde and formaldehyde on heating with aqueous NaOH solution gives

A. Benzyle alcohol and sodium formate

B. Sodium benzoate and methyl alcohol

C. Sodium benzoate and sodium formate

D. Benzyl alcohol and methyl alcohol

**Answer: A**

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**12.** Glucose on reaction with $Br_2$ water gives

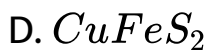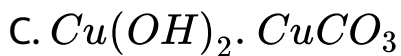A. Glucaric acid

B. Gluconic acid

C. Saccharic acid

D. Citric acid

**Answer: B**

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**13.** Which one of the following ores is known as Malachite:

A. $Cu_2S$

B. $Cu_2O$

C. $Cu(OH)_2 . CuCO_3$

D. $CuFeS_2$

**Answer: C**
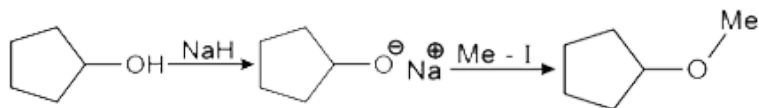
**14.** The reaction

Can be classified as :

    A. Williamson ether synthesis reaction

    B. Alcohol formation reaction

    C. Dehydration reaction

    D. Williamson alcohol synthesis reaction

**Answer: A**

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**15.** After understanding the assertion and reason, choose the correct option.

Assertion : In the bonding molecular orbital (MO) of $H_2$ , electron density is increased between the nuclei.

Reason : The bonding MO is $\Psi_A + \Psi_B$, which shows destructive interference of the combining electron waves.

A. Assertion and Reason are correct, but Reason is not the correct explanation for the Assertion

B. Assertion and Reason are correct and Reason in the correct explanation for the Assertion.

C. Assertion is incorrect, Reason is correct.

D. Assertion is correct, Reason is incorrect.

**Answer: D**

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**16.** Consider the reaction

$A \rightarrow 2B + C, \Delta H = -15 kcal.$ The energy of activation of backward reaction is $20 kcal mol^{-1}$. In presence of catalyst, the energy of activation of forward reaction is $3 kcal mol^{-1}$.At 400 K the catalyst causes the rate of the forward reaction to increase by the number of times equal to -
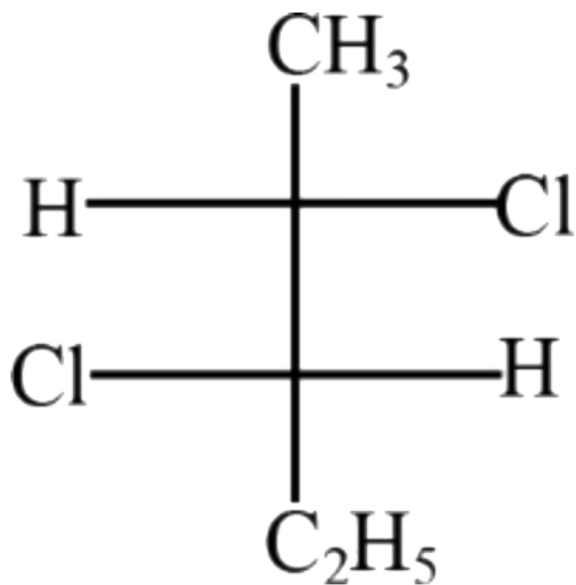
A. $e^{3.5}$

B. $e^{2.5}$

C. $e^{-2.5}$

D. $e^{2.303}$

**Answer: B**

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**17.** The absolute configuration of the following compound is :

CH₃ top, H– left, –Cl right, Cl– left, –H right, C₂H₅ bottom Fischer projection structure

A. 2S, 3R

B. 2S, 3S

C. 2R, 3S

D. 2R, 3R

**Answer: B**

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**18.** For two weak acids A and B, the ratio of their percent ionization is 4 : 9. The ratio of their Ka would be–
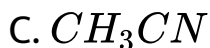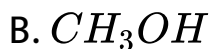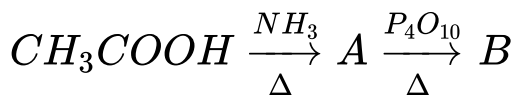
A. $4:9$

B. $2:3$

C. $16:81$

D. $3:2$

Answer: C

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**19.** Name the end product in the following series of reaction.

$$CH_3COOH \xrightarrow[\Delta]{NH_3} A \xrightarrow[\Delta]{P_4O_{10}} B$$

A. $CH_4$

B. $CH_3OH$

C. $CH_3CN$

D. $CH_3COONH_4$

**Answer: C**

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**20.** Total number of products form including stereoisomers during monochlorination of 2 - methyl butane?

A. 2

B. 6

C. 6

D. 8

**Answer: B**

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**21.** What will be the sum of principle and azimuthal quantum number of last electron of Argon?
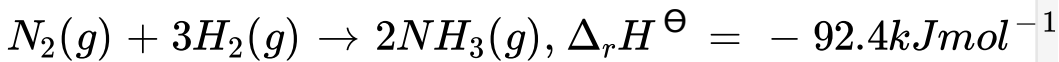
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**22.** What is the coordination number of $Cs^+$ in $CsCl$?

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**23.** An excess of $AgNO_3$ solution is added to 100 mL of a 0.2 M dichloridotetraaquachromium (III) chloride. The numberof millimoles of $AgCl$ precipitated would be ----.

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**24.** Given

$$N_2(g) + 3H_2(g) \rightarrow 2NH_3(g), \Delta_r H^{\ominus} = -92.4 kJmol^{-1}$$

What is the standard enthalpy of formation of $NH_3$ gas?

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**25.** At what temperature is the rms speed of $H_2$ molecules the same as that of oxygen molecules at $1327°C$ ?

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