CHEMISTRY

BOOKS - NTA MOCK TESTS

JEE MOCK TEST 10

Chemistry

1. The colour of $KMnO_4$ is due to

A. $\sigma - \sigma^*$ transition

B. $M \rightarrow L$ charge transfer transition

C. d - d transition

D. $L \rightarrow M$ charge transfer transition

Answer: D

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2. An open vessel at $27°C$ is heated until 3/8th of the air in it has been expelled. Assuming that the volume remains constant, calculate the temperature at which the vessel was heated
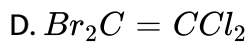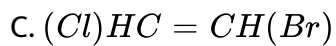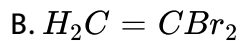
A. $307°C$

B. $107°C$

C. $480°C$

D. $207°C$

Answer: D

3. Which of the following compounds display geomertical isomerism ?

A. $H_2C = CHBr$

B. $H_2C = CBr_2$

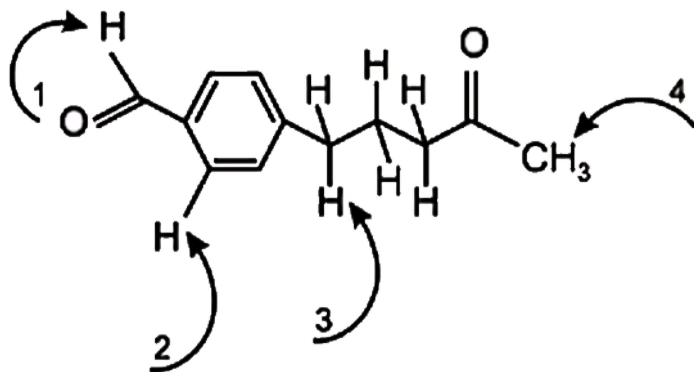C. $(Cl)HC = CH(Br)$

D. $Br_2C = CCl_2$

Answer: C

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4. Choose from the indicated protons, the one that is most acidic

A. 1

B. 2

C. 3

D. 4

Answer: D

5. A petroleum fraction having boiling range $70 - 200°C$ and cotaining 6 - 10 carbon atoms per molecule is called
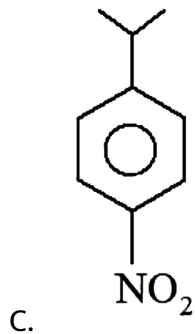
A. Natural gas

B. Gas oil

C. Gasoline

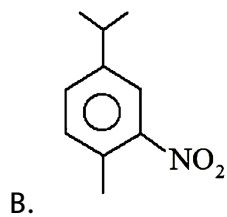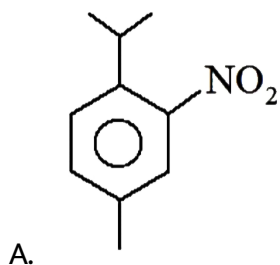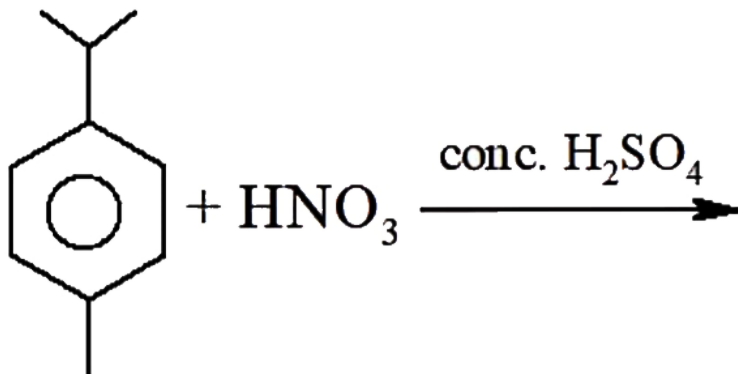D. Kerosene

Answer: C

6. The major product formed in the reaction is :

conc. H_2SO_4

$+ HNO_3 \longrightarrow$

A.

NO_2

B.

NO_2

C.

NO_2
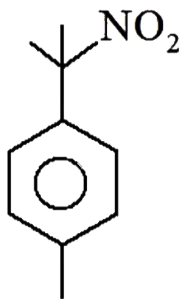
D.

Answer: B

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7. Which of the following reactions is/are feasible?

A. $CH_3CH_2Br + Na\overset{-}{O} - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_3 \rightarrow CH_3CH_2O - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - CH_3$

B.

$CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - Cl + Na^+O^-CH_2CH_3 - CH_3CH_2 - O - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} - Cl$
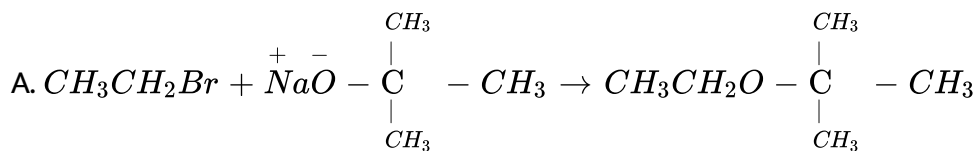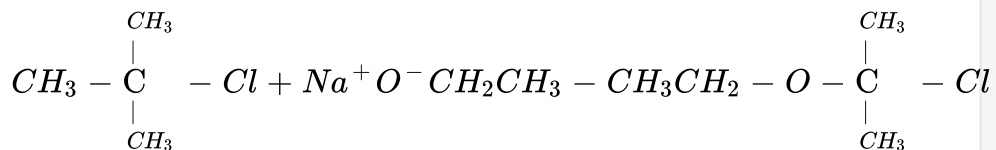
C. Both (a) and (b)

D. None of the above

Answer: A

8. For the reaction mechanism of the reaction

$(2NO(g) + 2H_2(g)) \rightarrow N_2(g) + 2H_2O(g)$

$\left(\text{Step I}: 2NO \overset{k_1}{\Longleftrightarrow} N_2O_2 K_{eq}(\text{fast}) \right) \left(\text{Step II}: N_2O_2 + H_2 \overset{k_2}{\longrightarrow} N_2O + H_2O \right.$
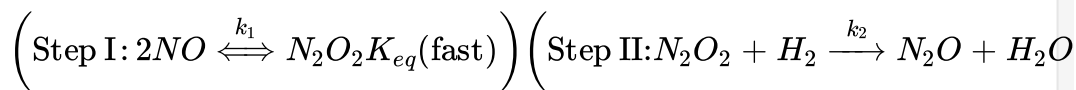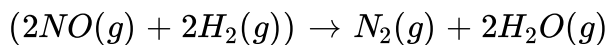
Expression of rate of reaction is

(Take $K_{eq} \times k_2 = k'$)

A. $k'[NO]^2[H_2]$

B. $k' N_2O_2[H_2]$

C. $k' N_2O[H_2]$

D. $k' N_2O_2$

Answer: A

9. The pK_a of acetic acid and pK_b of ammonium hydroxide are 4.76 and 4.75 respectively. Calculate the pH of ammonium acetate solution.

A. 9.51

B. 7.005

C. 7.00

D. 6.9

Answer: B

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10. Which among the following elements have the lowest value of IE_1?

A. Pb

B. Sn

C. Si

D. C

Answer: B

11. Metal which can be extracted from all three dolomite, magnesite and caranallite is

A. Na

B. K

C. Mg

D. Ca

Answer: C

12. Bleeding is stopped by the application of ferric-chloride this is because:

A. The blood starts flowing in opposite direction

B. The blood reacts and forms a solid, which seals the blood vessel

C. The blood is coagulated and thus the blood vessel is sealed

D. The ferric chloride seals the blood vessel

Answer: C

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13. Which one of the following cannot be prepared from B_2H_6 ?

A. $NaBH_4$

B. $B_2(CH_3)_4H_2$

C. $B_2(CH_3)_6$

D. H_3BO_3

Answer: C

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14. Gabriel synthesis is used for the preparation of

A. Primary amines

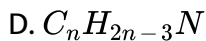B. Primary alcohols

C. Tertiary amines

D. Tertiary alcohols

Answer: A

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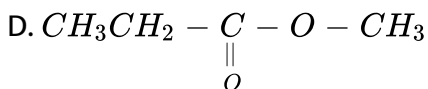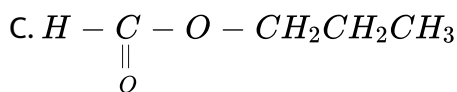**15.** Alkanamines have the general formula -
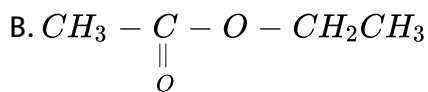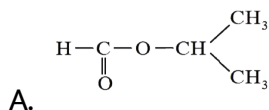
A. $C_nH_{2n-1}N$

B. $C_nH_{2n+3}N$

C. $C_nH_{2n+1}N$

D. $C_nH_{2n-3}N$

Answer: B

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16. An ester $A(C_4H_8O_2)$, on treatement with excess of methyl magnesium bormide followed by acidification, gives an alcohol B as the sole organic product. Alcohol B on oxidation with $NaOCl$ followed by acidification gives acetice acid. Deduce the structures of A and B. Show the reactions involved.

A.
$$H-\underset{\underset{O}{\|}}{C}-O-CH\overset{CH_3}{\underset{CH_3}{<}}$$

B. $CH_3 - \underset{\underset{O}{\|}}{C} - O - CH_2CH_3$

C. $H - \underset{\underset{O}{\|}}{C} - O - CH_2CH_2CH_3$

D. $CH_3CH_2 - \underset{\underset{O}{\|}}{C} - O - CH_3$

Answer: A

17. A body centre cubic lattice is made up of two different types of atoms A and B. Atom A occupies the body centre and B occupying the corner positions. One of the corners is left unoccupied per unit cell. Empirical formula of such a solid is

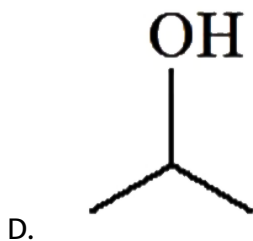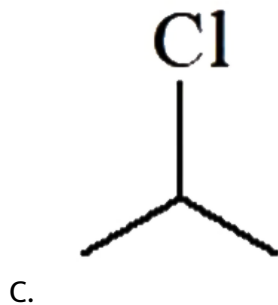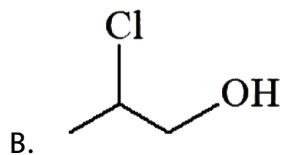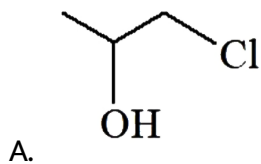   A. AB

    B. A_2B_2

    C. A_5B_7
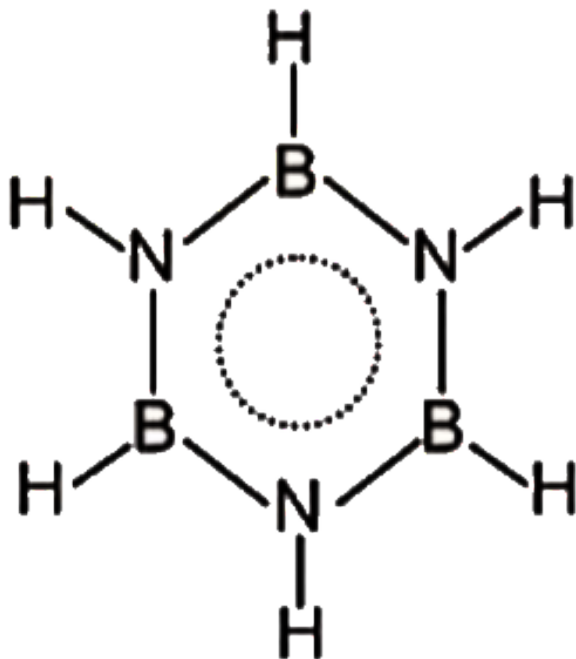
    D. A_8B_7

Answer: D

18. Propene on reaction with hypochlorous acid gives ?

A.

B.

C.

D.

Answer: A

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19. The structure of $B_3N_3H_6$ is as follows :

How many derivative structures of $B_3N_3H_4X_2$ can be derived from the basic structure, by the replacement of two hydrogen atoms ?

A. 2

B. 3

C. 4

D. 5

Answer: C

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20. Standard entropies of X_2, Y_2 and XY_3 are 60, 30 are $50JK^{-1}mol^{-1}$ respectively. For the reaction $\frac{1}{2}X_2 + \frac{3}{2}Y_2 \Leftrightarrow XY_3, \Delta H = -30kJ$ to be at equilibrium, the temperature should be :
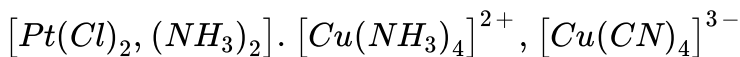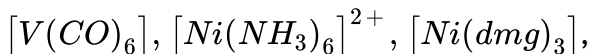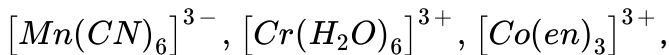
A. 1200 K

B. 1000 K

C. 750 K

D. 500 K

Answer: A

21. How many complexes among the following are paramagnetic

$[Mn(CN)_6]^{3-}$, $[Cr(H_2O)_6]^{3+}$, $[Co(en)_3]^{3+}$,

$[V(CO)_6]$, $[Ni(NH_3)_6]^{2+}$, $[Ni(dmg)_3]$,

$[Pt(Cl)_2, (NH_3)_2]$. $[Cu(NH_3)_4]^{2+}$, $[Cu(CN)_4]^{3-}$

22. P_4O_6 reacts with water according to equation $P_4O_6 \rightarrow 4H_3PO_3$.

Calculate the volume of $0.1MNaOH$ solution required to neutralise the

acid formed by dissolving 1.1g of P_4O_6 in H_2O.

23. A mixture of $CaCO_3$ and $MgCO_3$ weighing $1.84g$ on heating left a

residue weighing $0.96g$. Calculate the percentage of each in the mixture.

24. The change in the oxidation state of iodine when axcess chlorine water is added to an iodide salt is

25. A light of wavelength 3000Å falls on a metal surface. Ejected e^- is further accelerated by a potential difference of 2V, then final K.E of the e^- is found to be $8 \times 10^{-19} J$. If threshold energy for the metal surface is $'\phi' eV$. Then find the numerical value of 8ϕ