CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 74

Chemistry

1. The shape around the central form in ClF_4^+ is

A. square planar

B. square pyramidal

C. octahedral

D. see - saw

Answer: D

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2. For the pair of reactions given below,

I. $N_2(g) + 3H_2(g) \Leftrightarrow 2NH_3(g)$

II. $\frac{1}{2}N_2(g) + \frac{3}{2}H_2(g) \Leftrightarrow NH_3(g)$

If at a particular temperature, K_{p1} and K_{p2} are the equilibrium constants for reaction I and II respectively. then

A. $k_{P_1} = 2K_{P_2}$

B. $K_{P_1} = K_{P_2}^2$

C. $2K_{P_1} = K_{P_1}$

D. $K_{P_1^2} = K_{P_2}$

Answer: B

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3. Butane can be prepared from ethyl chloride using the following synthesis

$$CH_3CH_2Cl \xrightarrow[(i)\,CuI]{(i)\,Li} (CH_3CH_2)_2LiCu \xrightarrow{CH_3CH_2Cl} CH_3CH_2CH_2CH_3$$

The reaction is

A. Wurtz reaction

B. Kolbe's electrolytic method

C. Sandmayer's reaction

D. Corey - House synthesis

Answer: D

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4. Consider the methyl substituted benzoic acids.

1. $PhCOOH$

2. $o-CH_3C_6H_4COOH$

3. $p-CH_3C_6H_4COOH$

4. $m - CH_3C_6H_4COOH$

The correct sequence of acidity is

A. $1 < 2 < 3 < 4$

B. $2 < 3 < 4 < 1$

C. $3 < 4 < 1 < 2$

D. $3 < 4 < 2 < 1$

Answer: C

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5. Colloidal sulphur is obtained when

A. sulphur is heated gradually to high temperature

B. sulphur is heated with dilute sulphuric acid

C. hydrogen sulphide is passed through an aqueous solution of nitric acid

D. sulphur is warned with carbon disulphide

Answer: C

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6. For the reaction, $2X_3 \Leftrightarrow 3X_2$, the rate of formation of X_2 is

A. $3\left(-\frac{d[X_3]}{dt}\right)$

B. $\frac{1}{2}\left(-\frac{d[X_3]}{dt}\right)$

C. $\frac{1}{3}\left(-\frac{d[X_3]}{dt}\right)$

D. $\frac{3}{2}\left(-\frac{d[X_3]}{dt}\right)$

Answer: D

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7. 25 mol of formic acid (HCO_2H) is dissolved in enough water to make one litre of solution. The pH of that solution is 2.19. The K_a of formic acid is

A. 6.5×10^{-3}

B. 4.3×10^{-4}

C. 1.7×10^{-6}

D. 5.3×10^{-2}

Answer: C

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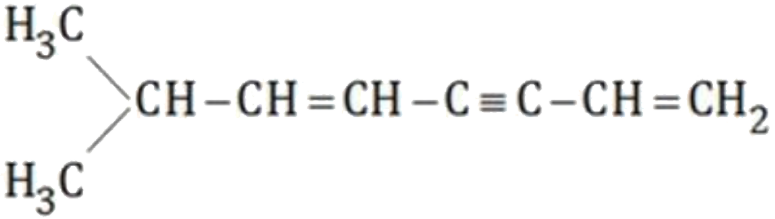
8. Consider the given statement about the molecule



1. Three carbon atoms are sp^3 - hybridised

2. Three carbon atoms are $sp^2 -$ hybridised

3. Two carbon atoms are sp - hybridised

A. 1, 2 and 3 are correct

B. 1 and 2 are correct

C. 2 and 3 are correct

D. 1 and 3 are correct

Answer: D

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9. Among the following, the group of molecules that undergoes rapid hydrolysis is

A. SF_6, Al_2Cl_6, $SiMe_4$

B. BCl_3, SF_6, $SiCl_4$

C. BCl_3, $SiCl_4$, PCl_5

D. SF_6, Al_2Cl_6, $SiCl_4$

Answer: C

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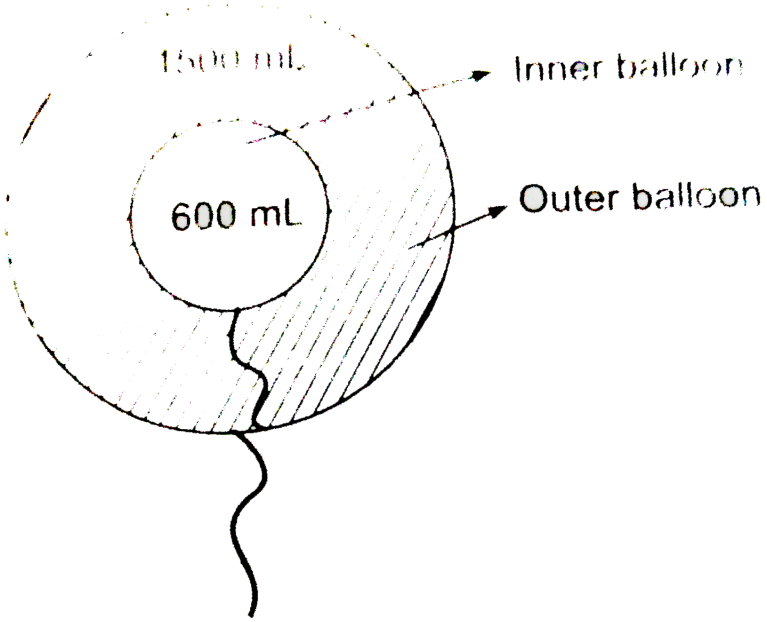
10. Two inflated ballons I and II (thin skin) having volume 600 mL and 1500 mL at 300 K are taken as shown in diagram. If maximum volume of inner and outer balloons are 800 mL and 1800 mL respectively then find the balloon which will burst first on gradual heating.



A. inner balloon

B. outer balloon

C. both simultaneously

D. unpredictable

Answer: B

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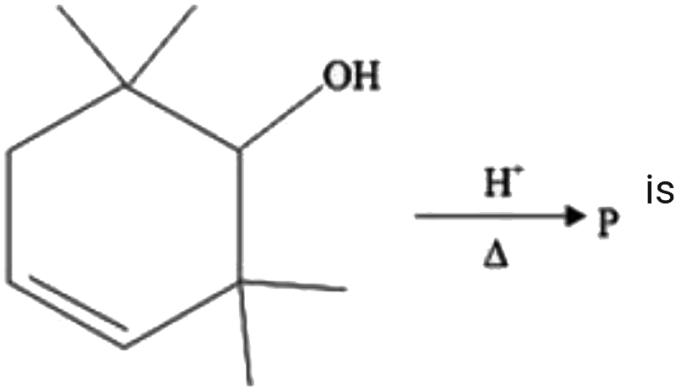
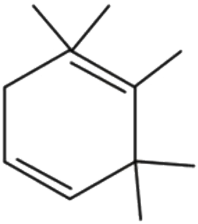
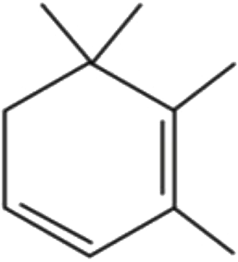
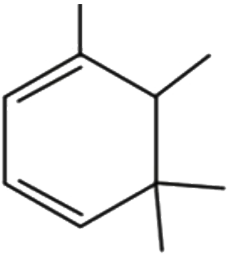
11. The compound given below on heating gives P (Major product)



is

A. 

B. 

C. 

D. No reaction

Answer: B

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12. What mass of $H_2C_2O_4.2H_2O(mol.mass = 126)$ should be dissoved in water to prepare 250mL of centinormal solution which act as a reducing agent?

A. 0.635 g

B. 0.1575 g

C. 0.1263 g

D. 0.835 g

Answer: B

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13. The complex that exists as a pair of enantiomers is

A. trans $-\left[Co(H_2NCH_2CH_2NH_2)_2Cl_2\right]^+$

B. $cis-\left[Co(NH_3)_4Cl_2\right]^+$

C. $[Pt(PPh_3)(Cl)(Br)(CN)]^-$

D. $\left[Co(H_2NCH_2CH_2NH_2)_3\right]^{3+}$

Answer: D

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14. Given that standard potential for the following half - cell reaction at 298 K,

$Cu^+(aq) + e^- \rightarrow Cu(s), E^\circ = 0.52V$

$Cu^{2+}(aq) + e^- \rightarrow Cu^+(aq), E^\circ = 0.16V$

Calculate the $\Delta G^\circ(kJ)$ for the eaction, $\left[2Cu^+(aq) \rightarrow Cu(s) + Cu^{2+}\right]$

A. -34.740

B. -65.720

C. -69.720

D. -131.440

Answer: A

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15. The reaction of acetaldehyde and HCN, followed by complete acid hydrolysis gives

A. $CH_2 = CH - COOH$

B. $CH_3 - CH(OH)CONH_2$

C. $CH_3CH(OH)COOH$

D. $CH_2 = CHCONH_2$

Answer: C

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16. The hydrocarbon of molecular mass 72 gives a single monochloride and two dichlorides on photochlorination is

A. pentane

B. 2 - methylbutane

C. 2, 2- dimethylpropane

D. none of the above

Answer: C

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17. For the process, 1 Ar (300 K, 1 bar) $\rightarrow$ 1 Ar (200 K, 10 bar), assuming ideal gas behaviour, the change in molar entropy is

A. $-27.58 J / K / mol$

B. $+27.58 J / K / mol$

C. $-24.28 J / K / mol$

D. $+24.28 J / K / mol$

Answer: A

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18. Consider the reaction,

$$(CH_3)_3C - \underset{\underset{CH_3}{|}}{\text{CH}} - OH + \text{Conc. HCl} \rightarrow X.$$

The product (X) is

A. $(CH_3)_3\text{CCH}(CH_3)Cl$

B. $(CH_3)_2\text{CCl}CH(CH_3)_2$

C. Mixture of both A and B

D. $(CH_3)_2CHCl(Cl)(CH_3)_2$

Answer: B

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19. Which of the following is not correct?

A. Rusting of iron can be stopped by increasing the concentration of CO_2 in water

B. Rusting of iron is electrochemical in nature

C. Rusting of iron takes place in moist air

D. Rusting of iron produces hydrated iron (III) oxide

Answer: A

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20. Pick out incorrect statement

A. In a electrolysis experiment, $\alpha -$ amino acids migrate at the isoelectric point towards electrodes

B. p - aminobenzenesulphonic acid as a dipolar ion, While p - aminobenzoic acid does not

C. Sulphanilic acid is soluble in base, but not in acid

D. $H_3\overset{+}{N}CH_2COOH$ is more acidic than RCH_2COOH

Answer: A

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21. The pressure of a mixture of equal weight of two gases of mol wt. 4 and 40, is 1.1 atm. The partial pressure of the lighter gas in this mixture is

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22. How many of these metals can be purified by vapour phase refining

$Ni, Ti, Zr, Ge, In, Fe, Cu, Au$

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23. Consider the following compounds :

$CH_4, CH_3 - CH_3, CH_3OH, CH_3 - CH_2 - CH_3, CH_3 - CH_2 - CH_2 -$

$H_3C - \overset{CH_3}{\underset{|}{\text{CH}}} - CH_3, H_3C - \overset{CH_3}{\underset{|}{\text{CH}}} - \overset{CH_3}{\underset{|}{\text{CH}}} - CH_3$

How many compounds can be prepared by Wurtz reaction in high heilds?

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24. The wave number of first line of Balmer series of hydrogen is $1520m^{-1}$. The wave number of first Balmer line of Li^{2+} ion in m^{-1} is x. Find the vlaue of $\frac{x}{100}$.

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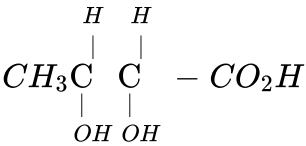
25. How may optical isomers are possible for



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