CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 82

Chemistry

1. When a transition of electron in He^+ takes place from n_2 to n_1 then wave number in terms of Rydberg constant R will be

$(\text{Given } n_1 + n_2 = 4, n_2 - n_1 = 2)$

A. $\frac{3R}{4}$

B. $\frac{8R}{9}$

C. $\frac{32R}{9}$

D. (24R)/(9)`

Answer: C

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2. The incorrect order of lattice energy is :

A. $AlF_3 > MgF_2$

B. $Li_3N > Li_2O$

C. $NaCl > LiF$

D. $TiC > ScN$

Answer: C

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3. How long (approximate) should water be electrolysed by passing through 100 amperes current so that the oxygen released can completely

burn 27.66 g of diborane?

(Atomic weight of B = 10.8 u)

A. 1.6 hours

B. 6.4 hours

C. 0.8 hours

D. 3.2 hours

Answer: D

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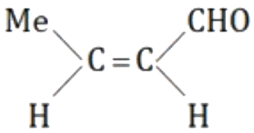
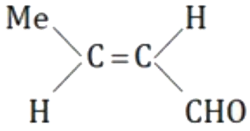
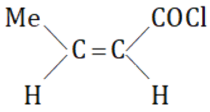
4. $MeC \equiv C - COCl \xrightarrow{H_2 + \text{Lindlar's Catalyst}} (A)$

The Product (A) is:

A. $Me - C \equiv C - CHO$

B. 

C. 

D. 

Answer: B

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5. The composition of a sample of wustite is $Fe_{0.93}O_{1.00}$ What percentage of iron is present in the form of $Fe(III)$?

A. 10.5

B. 25

C. 35

D. 45

Answer: A

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6. Pick out the incorrect statement

A. PH_4^+ ion is tetrahedral like the NH_4^+ ion and is obained when PH_3 is bonded to proton

B. PH_4I is one of the most stable salts containing the phosphonium ion. It is also more stable than ammonium salts

C. PH_4I is decomposed by water to form PH_3

D. PH_3 converts silver salts in solution to silver phosphide, which subsequently reacts to give free metal

Answer: B

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7. The optical rotation of the α-form of a pyranose is $+150.7^\circ$, that of the β-form is $+52.8^\circ$. In solution an equilibrium mixture of these anomers

has an optical rotation of $+80.2^{\circ}$. The precentage of the α-form in equilibrium mixture is :

A. $28\ \%$

B. $32\ \%$

C. $68\ \%$

D. $72\ \%$

Answer: A

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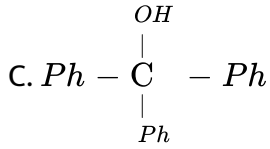
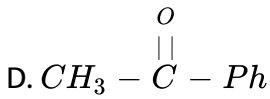
8. Give the produst when an excess of $PhMgBr/H^{+}$ reacts with dimethyl carbonate $(CH_3OCOOCH_3)$?

A. $CH_3 - \overset{OH}{\overset{|}{\text{CH}}} - Ph$

B. $CH_3 - \overset{OH}{\overset{|}{\underset{Ph}{\underset{|}{\text{C}}}}} - PH$

C. 

D. 

Answer: C

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9. What is the freezing point of a solution containing $8.1gBr$ in $100g$ water assuming the acid to be $90\ \%$ ionised(K_f for water =$1.8K\text{mole}^{-1}$)

A. $0.85^\circ C$

B. $+3.53^\circ C$

C. $0^\circ C$

D. $-3.5^\circ C$

Answer: D

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10. The reducing power of a metal depends on various factors. Suggest the factor which makes Li, the strongest reducing agent in aqueous solution.

A. Sublimation enthalpy

B. Ionisation enthalpy

C. Hydration enthalpy

D. Electron - gain enthalpy

Answer: C

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11. The solubility product of $BaCrO_4$ is $2.4 \times 10^{-10} M^2$. The maximum concentration of $Ba(N0_3)_2$ possible without precipitation in a 6×10^{-4} M K_2CrO_4 solution is :

A. $4 \times 10^{-7} M$

B. $1.2 \times 10^{10} M$

C. $6 \times 10^{-4} M$

D. $3 \times 10^{-4} M$

Answer: A

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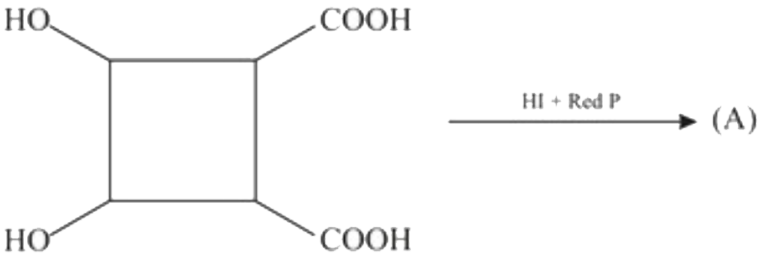
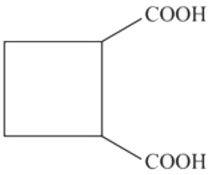


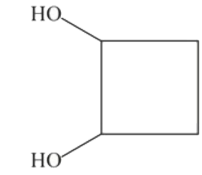
12.

The compund 'A' is

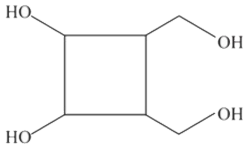


A.

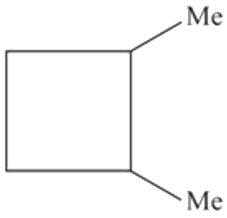
B.



C.



D.



Answer: D

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13. A metal M and its compound can give the following observable changes in a consequence of reactions

$$M \xrightarrow[HNO_3]{\text{dilute}} [\text{Colourless Solutions}] \xrightarrow[NaOH]{\text{aqueous}} [\text{White Precipitate}] \xrightarrow[\text{NaOH(aq)}]{\text{excess}} [$$

A. Mg

B. Pb

C. Zn

D. Sn

Answer: C

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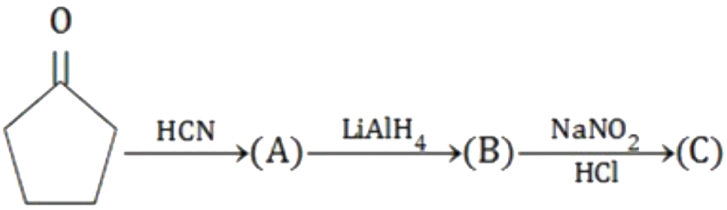
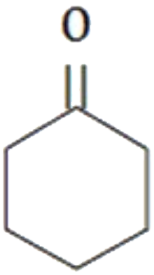
14.

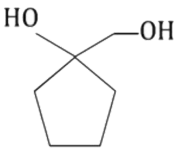


End product C in above reaction is

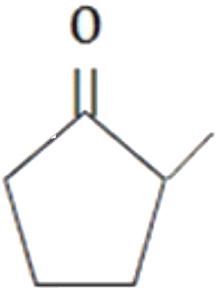
A.



B.



C.



D.

Answer: A

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15. Mechanism of a hypothetical reaction

$X_2 + Y_2 \rightarrow 2XY$ is given below:

(i) $X_2 \rightarrow X + X$ (fast)

(ii) $X + Y_2 \Leftrightarrow XY + Y$ (slow)

(iii) $X + Y \rightarrow XY$ (fast)

The overall order of the reaction will be :

A. 2

B. 0

C. 1.5

D. 1

Answer: C

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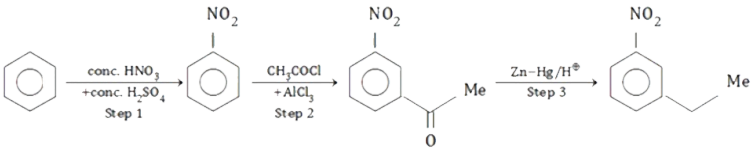
16. In the following reaction, which of the following steps is wrong ?



A. Step 1

B. Step 2

C. Step 3

D. None

Answer: B

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17. Specify the coordination geometry around and the hybridisation of N and B atoms in $1:1$ complex of BF_3 and NH_3.

A. N : tetrahedral, sp^3, B: tetrahedral, sp^3

B. N : pyramidal, sp^3, B: tetrahedral, sp^3

C. N : pyramidal, sp^3, B: planar, sp^2

D. N : pyramidal, sp^3, B : pyramidal, sp^3

Answer: A

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18. For a given reaction $\Delta H = 35.5\,\mathrm{k\,Jmol^{-1}}$ and $\Delta S = 83.6\,\mathrm{Jk^{-1}mol^{-1}}$. The reaction is spontaneous at

(Assume that ΔH and ΔS) do not vary with temperature)

A. $T > 425K$

B. All temperatures

C. $T > 398K$

D. $T < 525K$

Answer: A

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19. A six coordination complex of formula $CrCl_3 \cdot 6H_2O$ has green colour. A 0.1 M solution of the complex when treated with excess of $AgNO_3$ gave 28.7g of white precipitate. The formula of the complex would be:

A. $\left[Cr(H_2O)_6\right]Cl_3$

B. $\left[CrCl(H_2O)_5\right]Cl_2.\ H_2O$

C. $\left[CrCl_2(H_2O)_4\right]Cl.2H_2O$

D. $\left[Cr(H_2O)_3Cl_3\right]3H_2O$

Answer: B

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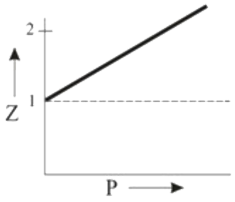
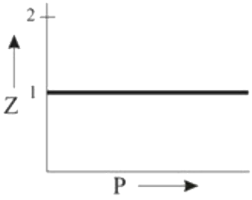
20. Which of the following represents a plot of compressibility factor (Z) versus P at room temperature for helium?

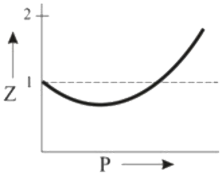
A.



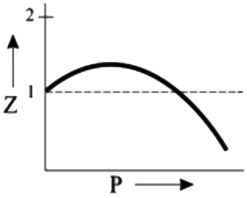
B.



C.



D.



Answer: A

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21. Equilibrium constant for reaction

$NH_4OH(aq) + H^+(aq) \Leftrightarrow NH_4^+(aq) + H_2O(l)$

1.8×19^9.

Hence equilibrium constant for ionization

$NH_3 + H_2O \Leftrightarrow NH_4^+(aq) + OH^-(aq)$ is $x \times 10^{-6}$. The value of 'x' is

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22. How many Cl - atoms are present in Bithional added in soaps for (antiseptic properties)

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23. If sucrolose in $n \times 100$ times of more sweet than Aspartame. What is the value of 'n' here?

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24. How many of these days acids are mobobasic in nature?

$H_2S, H_2O_2, H_3O_2, HCOOH, H_3BO_3, H_3PO_2, HXO_4, Ph - SO_3H$

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25. In Melamine the total number of N- atoms having sp^2 hybridisation are?

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