CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 69

Chemistry

1. Benzene cannot be iodinated with I_2 directly. However, in presence of oxidants such as HNO_3, iodination is possible. The electrophiles formed in the case is

A. $\left[I^+\right]$

B. $\left[I^-\right]$

C. $\left[\overset{+\delta}{I}.....\overset{+\delta}{O}H_2\right]$

D. $\left[\overset{-\delta}{I}.....\overset{-\delta}{O}H_2\right]$

Answer: A

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2. A 10.0 g sample of a mixture of $CaCl_2$ and $NaCl$ is treated to precipitate all the calcium as calcium carbonate. Thus $CaCO_3$ is heated to convert all the Ca to CaO and the final mass of CaO is 1.62 g. What is the percentage by mass of $CaCl_2$ in the original mixture?

A. $15.2\ \%$

B. $32.1\ \%$

C. $21.8\ \%$

D. $11.07\ \%$

Answer: B

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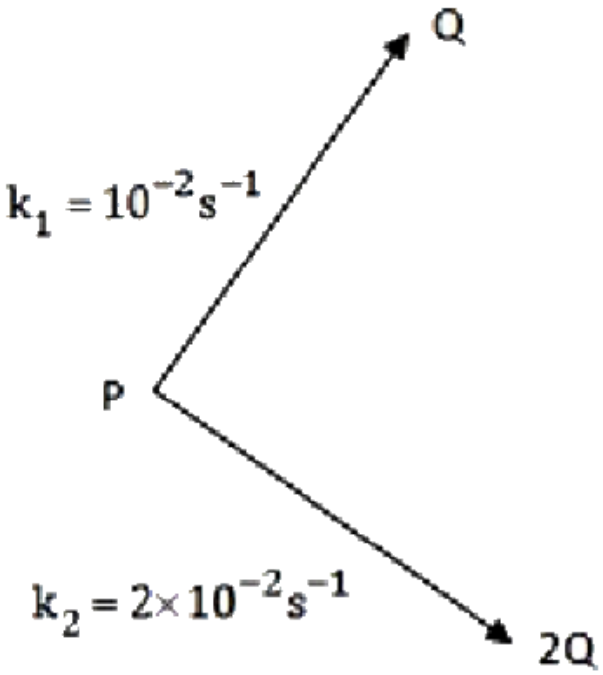

3.

Let the initial concentration of P is 1 M, the concentration of P after 33.33 sec is equal to?

A. $\frac{1}{e}$

B. $\frac{2}{e}$

C. $\frac{1}{e^2}$

D. e

Answer: A

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4. Among the following pair of complexes in which case the central atoms are having some hybridisation and have same values of E.A.N. also.

A. $\left[Ni(CO)_4\right]$ and $\left[Ni(CN)_4\right]^{2-}$

B. $\left[Fe(F)_6\right]^{3-}$ and $\left[Fe(H_2O)_6\right]^{3+}$

C. $\left[Fe(CN)_6\right]^{3-}$ and $\left[Fe(CN)_6\right]^{4-}$

D. $\left[Cu(CN)_4\right]^{2-}$ and $\left[Cu(CN)_4\right]^{3-}$

Answer: B

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5. Solid Ammonium carbamate dissociates as:

$NH_2COONH_4(s) \Leftrightarrow 2NH_3(g) + CO_2(g).$

In a closed vessel, solid ammonium carbonate is in equilibrium with its dissociation products. At equilibrium, ammonia is added such that the

partial pressure of NH_3 at new equilibrium now equals the original total pressure. Calculate the ratio of total pressure at new equilibrium to that of original total pressure. Also find the partial pressure of ammonia gas added.

A. $\frac{27}{31}$

B. $\frac{31}{27}$

C. $\frac{4}{9}$

D. $\frac{41}{9}$

Answer: B

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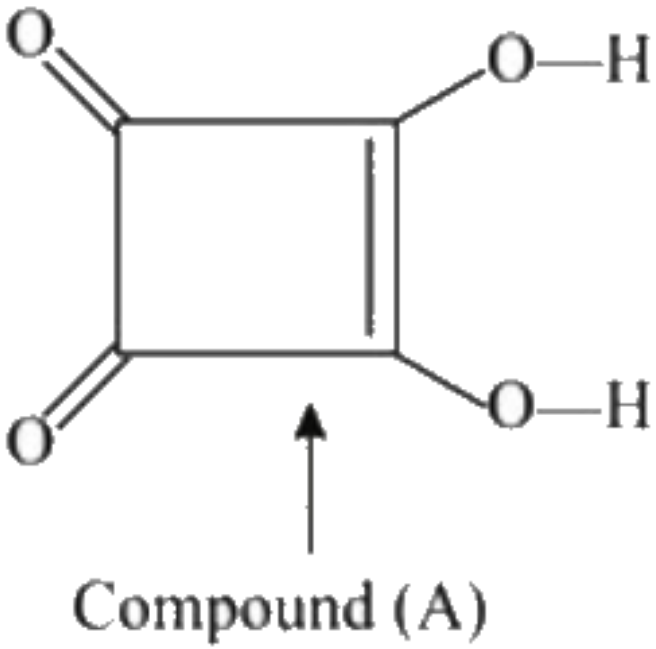
6. Consider the following compound (A). Select the correct statement.



Compound (A)

A. It is more acidic than CH_3OH

B. It is more acidic than H_2SO_4

C. It does not react with CH_3MgBr

D. It is a tribasic acid

Answer: A

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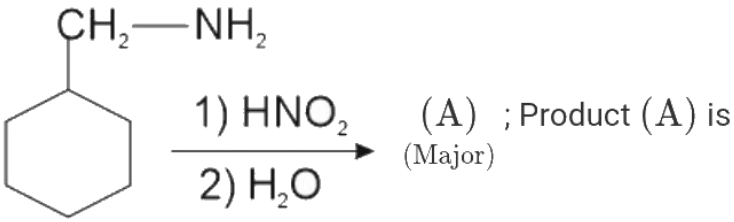
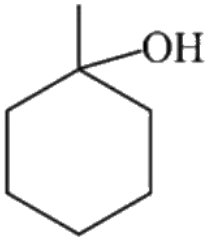
7. Find the final product of the reaction



; Product (A) is

A.



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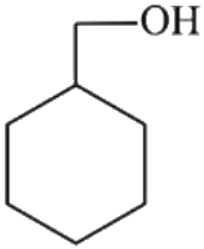
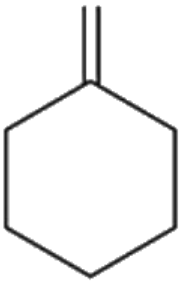
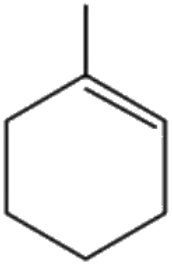


C.





D.

Answer: A

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8. $[XeO_6]^{4-}$ is octahedral whereas XeF_6 is a disordered one, because

A. fluorine is more electronegative than oxygen

B. Xe has a lone pair in XeF_6

C. XeF_6 is neutral whereas $[XeO_6]^{4-}$ anionic

D. $Xe - F$ bond has more ionic characters

Answer: B

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9. Which of the following is least basic?

A. NF_3

B. NCl_3

C. NBr_3

D. NI_3

Answer: A

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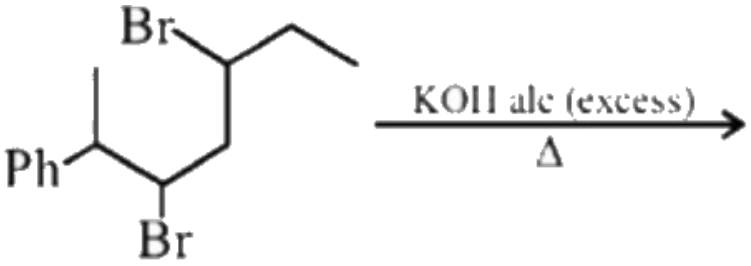
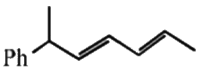
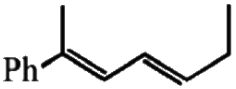
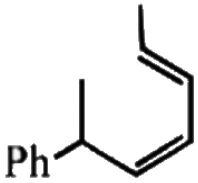
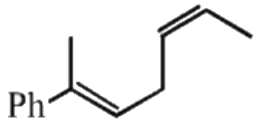
10. The major product of the following reaction is



A. 

B. 

C. 

D. 

Answer: B

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11. $A + H_2O \rightarrow B + HCl$

$B + H_2O \rightarrow C + HCl$

Compound (A), (B) and (C) will be respectively:

A. $PCl_5, POCl_3, H_3PO_3$

B. $PCl_5, POCl_3, H_3PO_4$

C. $SOCl_2, POCl_3, H_3PO_3$

D. $PCl_3, POCl_3, H_3PO_4$

Answer: B

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12. In assigning R-S configuration which among the following groups has highest priority?

A. $-SO_3H$

B. $-COOH$

C. $-CHO$

D. $-C_6H_5$

Answer: A

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13. The pH of blood stream is maintained by a proper balance of H_2CO_3 and $NaHCO_3$ concentration. What volume of 5M concentration. $NaHCO_3$ solution should be mixed with 10 ml sample of blood which is 2 M in H_2CO_3 in order to maintain a pH of $7.4\left(K_a \text{ for } H_2CO_3 \text{ in blood is } 4.0 \times 10^{-7}\right)$?

A. 40 ml

B. 35 ml

C. 25 ml

D. 38 ml

Answer: A

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14. A metal on combustiion in excess air forms X.X upon hydrolysis with water yields H_2O_2 and O_2 along with another product. The metal is :

A. Li

B. Na

C. Rb

D. Mg

Answer: C

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15. An electron practically at rest, is initially accelerated through a potential difference of 100 volts. It then has a de Broglie wavlength $= \lambda_1 Å$. It then get retorted through 19 volts and then has a wavelength $\lambda_2 Å$. A further retardation through 32 volts changes the wavelength to λ_3. What is the value of $\frac{\lambda_3 - \lambda_2}{\lambda_1}$?

A. $\frac{20}{41}$

B. $\frac{10}{63}$

C. $\frac{20}{63}$

D. $\frac{10}{41}$

Answer: C

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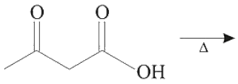
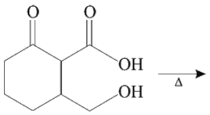
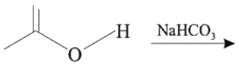
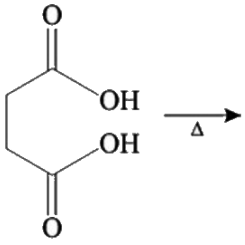
16. In which of the following reaction CO_2 (carbon dioxide) is not released?

A. 

B. 

C. 

D. 

Answer: D

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17. The helical structure of protein is stabilized by

A. Dipeptide bonds

B. Hydrogen bonds

C. Ether bonds

D. Peptide bonds

Answer: B

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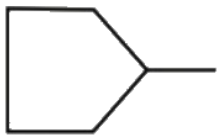
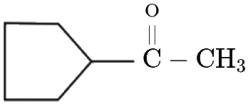
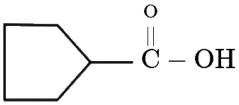
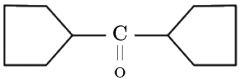
18. 

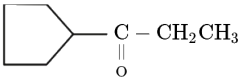
$$\xrightarrow{P_2O_5} A \xrightarrow{(i)CH_3MgBr\,(ii)H_3O^+} B \text{ Product is}$$

$$\xrightarrow{(i)I_2+Ca(OH)_2\,(ii)H_2O} C;$$

A. 

B. 

C. 

D. 

Answer: B

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19. The reaction that is NOT involved in the ozone layer depletion mechanism in the stratosphere is

A. $ClO_{(g)} + (O)_g \rightarrow Cl_{(g)} + O_{2(g)}$

B. $HOCl_{(g)} \rightarrow OH_{(g)} + Cl_{(g)}$

C. $CH_4 + 2O_3 \rightarrow 3CH_2 = O + 2H_2O$

D. $CF_2Cl_{2(g)} \xrightarrow{h\nu} Cl_{(g)} + CF_2Cl_{(g)}$

Answer: C

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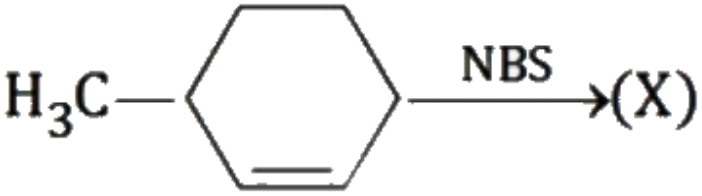
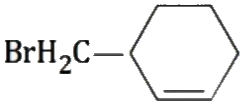
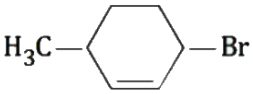
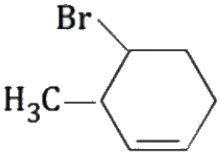
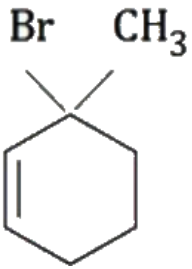
20. The major product (X) of the monobromination reaction is



A. 

B. 

C. 

D. 

Answer: D

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21. For the reaction $A \Leftrightarrow B + C$ at equilibrium, the concentration of A is $1 \times 10^{-3} MB$ is 0.15 M and C is 0.05 M. The ΔG° for the hydrolysis of A

at 300 K is $-X \quad \mathrm{kJ/mole}$. The value of X is ?

Report your answer by rounding it upto nearest integer.

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22. How many of these acids have $S-S$ bonds?

$H_2S_2O_3, H_2S_2O_6, H_2S_2O_7, H_2S_2O_8, H_2SO_5, H_2S_{n+2}O_6$.

(polythionic acid).

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23. The number of geometrical isomers of the compound is

$C_6H_5-CH=CH-CH=CH-COOH$

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24. Perovskite is a mineral composed of Ca, Ti and oxygen, cations of titanium lie at the centre, oxides ions at the face centres and calcium ions

lie at corners. In this compound the oxidation number of Titanium is $+x$.

Find the value of x?

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25. How many of these carbocations are more stable than $(CH_3)_3C^+$

$pH-\overset{+}{C}H_2, (Ph)_2\overset{+}{C}H, (Ph)_3\overset{+}{C}, (CH_3)_2\overset{+}{C}H, CH_3O-\overset{+}{C}H_2, \Delta\_\overset{+}{C}H_2, \square\_$

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