CHEMISTRY

BOOKS - NTA MOCK TESTS

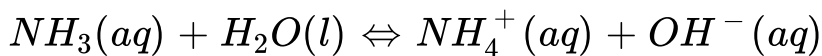## NTA JEE MOCK TEST 59

Chemistry

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1. What is the value of $\Delta G (kJ/mol)$ at 298 K at some non - equilibrium condition?

Given the concentrations of $[NH_3]$ is 0.05 M and $[NH_4^+] = [OH^-] = 0.002M$ in the presence of excess water. Also

$\Delta G^\circ_{\text{Reaction}} = +26.81 \text{ KJ mol}.$

$NH_3(aq) + H_2O(l) \Leftrightarrow NH_4^+(aq) + OH^-(aq)$

A. $+3.437$

B. -9.433

C. $+50.18$

D. -50.18

Answer: A

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2. Which of the following is a bactericidal antibiotic ?

A. Ofloxacin

B. Tetracycline

C. Chloramphenicol

D. Erythromycin

Answer: A

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3. The standard electrode potentials $\left(E^{\circ}_{M^+ / M}\right)$ of four metals A, B, C and D are $-1.2V, 0.6V, 0.85V$ and $-0.76V$, respectively. The sequence of deposition of metals on applying potential is

A. $B > D > C > A$

B. $A > C > B > D$

C. $C > B > D > A$

D. $D > A > B > C$

Answer: C

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4. Plot of log against log P is a straight line inclined at an angle of $45°$. When the pressure is 0.5 atm and Freundlich parameter ,K is 10, the amount of solute adsorbed per gram of adsorbent will be : (log 5=0.6990)

A. 1 g

B. 2 g

C. 3 g

D. 5 g

Answer: D

5. Mixture of two liquids A and B is placed in cylinder containing piston. Piston is pulled out isothermally so that volume of liquid decreases but that of vapour increases. When negligibly small amount of liquid was remaining the mole fraction of A in vapour is 0.4. Given $P_A^\circ = 0.4$ atm and $P_B^\circ = 1.2$ atm at the experimental temperature. Calculate the total pressure at which the liquid has almost evaporated. (Assume ideal behaviour)
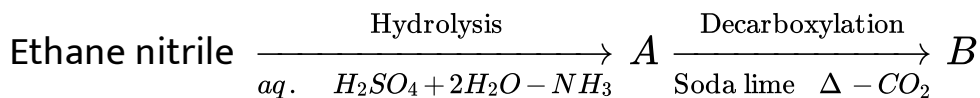
A. 0.22 atm

B. 0.431 atm

C. 0.667 atm

D. 1 atm

Answer: C

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6. Identify A and B in the reaction given below

Ethane nitrile $\xrightarrow[aq. \quad H_2SO_4+2H_2O-NH_3]{\text{Hydrolysis}} A \xrightarrow[\text{Soda lime} \quad \Delta \ -CO_2]{\text{Decarboxylation}} B$

A. Ethanoic acid, Methane

B. Ethanoic acid, Ethane

C. Acetone, Methane

D. Acetic acid, Methanol

Answer: A

7.

$$2RCl + Si \xrightarrow[570 \text{ K}]{\text{Cu power}} R_2SiCl_2 \xrightarrow{H_2O} R_2Si(OH_2) \xrightarrow{\text{Polymerisation}} X,$$
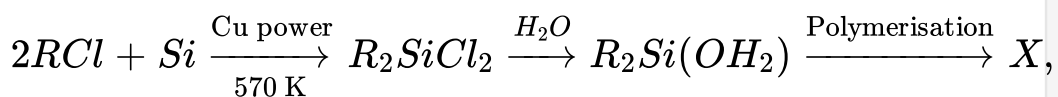
Then X will be

A. Linear long chain silicone

B. Cyclic silicone

C. Cross linked silicone

D. none of these

Answer: A

8. Drained sewage has biological oxygen demand (BOD):

A. More than water

B. Less than water

C. Equal than water

D. None of the above

Answer: A

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9. Copper Matte is extracted from copper pyrites ore by heating it in blast furnace. The method is based on the

principle that:

A. Iron has more affinity for oxygen than copper at high temperature.

B. Sulphur has less affinity for oxygen at high temperature.

C. Sulphur has less affinity for oxygen at high temperature.

D. Copper has less affinity for oxygen than sulphur at high temperature.

Answer: B

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10. For a certain reaction the variation of rate constant with temperature is given by the equation

$$\ln k_t = \ln k_0 + \frac{(\ln 3)t}{10} \ (t \geq 0°C)$$

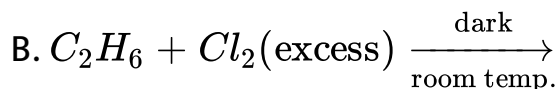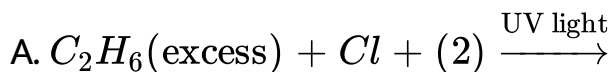The value of temperature coefficient of the reaction is

A. 0.1

B. 1

C. 10

D. 3

Answer: D

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11. The reaction conditions leading to the best yield of

C_2H_5Cl are

A. $C_2H_6(\text{excess}) + Cl + (2) \xrightarrow{\text{UV light}}$

B. $C_2H_6 + Cl_2(\text{excess}) \xrightarrow[\text{room temp.}]{\text{dark}}$

C. $C_6H_6 + Cl_2 \xrightarrow{\text{UV light}}$

D. $C_2H_6 + Cl_2(\text{excess}) \xrightarrow{\text{Uv light}}$

Answer: A

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12. $CH_3COCl + H_2 \xrightarrow[\text{Quinoline}]{Pd\,/\,BaSO_4}$
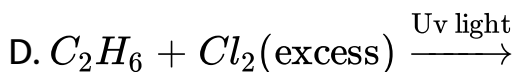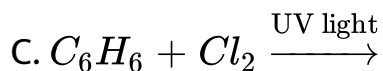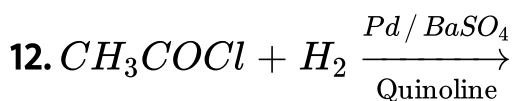
A. Acetaldehyde

B. Propionaldehyde

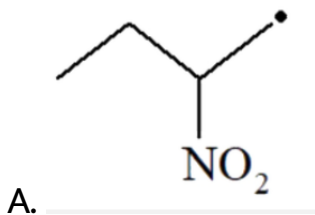C. Acetone

D. Acetic anhydride
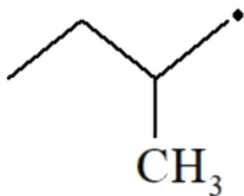
Answer: A

13. The most stable radical among the following is

A.

B.
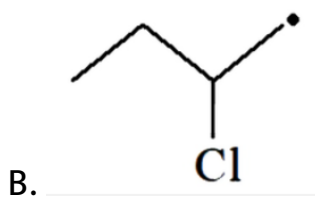
C.
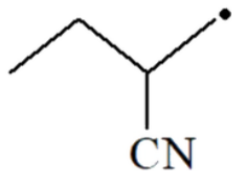
D.

Answer: D

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14. Zinc and hydrochloric acid react according to the reaction:

$$Zn_{(s)} + 2HCl_{(aq.)} \rightarrow ZnCl_{2(aq.)} + H_{2(g)}$$
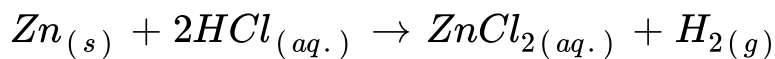
If 0.30 mole of Zn are added to hydrochloric acid

containing 0.52 mole HCl, how many moles of H_2 are produced?

A. 0.2

B. 0.62

C. 0.6

D. 0.26

Answer: D

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15. The solubility product values of barium sulphate and barium carbonate are 1.0×10^{-10} and 5.0×10^{-9}

respectively when the two salts are simultaneously equilibrated in pure water the ratio of $\dfrac{\left[SO_4^{2-}\right]}{\left[CO_3^{2-}\right]}$ is

A. 0.02

B. 0.10

C. 0.05

D. 0.12

Answer: A

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16. $_{84}Po^{210}$ decays with a particle to $_{82}Pb^{206}$ with a half life of 138.4 days. If 1.0 g of $_{84}Po^{210}$ is placed in a sealed tube,

how much helium will accumulate in 69.2 days. Express the answer in cm^3 at STP

A. $28.21 cm^3$

B. $31.25 cm^3$

C. $36.85 cm^3$

D. $38.47 cm^3$

Answer: B

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17. The geometry of ClO_3^- ion according to valence shell electron pair repulsion (VSEPR) theory will be :

A. Planar triangular

B. Trigonal Pyramidal

C. Tetrahedral

D. Square planar

Answer: B

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18. Given the molecular formula of the hexacoordinated complexes (A) $[CoCl_3.6NH_3]$ (B) $[CoCl_3.5NH_3]$ (C) $CoCl_3.4NH_3$. If the number of coordinated NH_3 molecules in A, B and C respectively are 6, 5 and 4, the primary valency in (A), (B) and (C) are:

A. 3, 3, 3
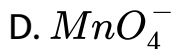
B. 0, 1, 2

C. 3, 2, 1

D. 6, 5, 4

Answer: A

19. Hydrogen peroxide acts both as an oxidising and as a reducing agent depending upon the nature of the reacting species. In which of the following cases H_2O_2 acts as a reducing agent in acid medium ?
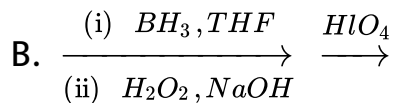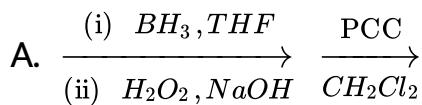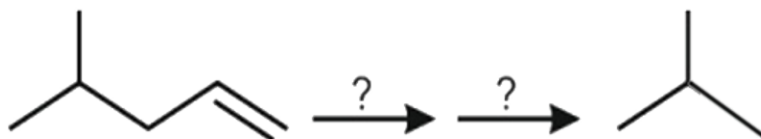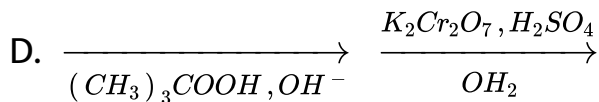
A. Kl

B. $Cr_2O_7^{2-}$

C. SO_3^{2-}

D. MnO_4^-

Answer: D

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20. Which one of the following work best to carry out the reaction?

A. $\xrightarrow[\text{(ii) } H_2O_2, NaOH]{\text{(i) } BH_3, THF} \xrightarrow[CH_2Cl_2]{PCC}$

B. $\xrightarrow[\text{(ii) } H_2O_2, NaOH]{\text{(i) } BH_3, THF} \xrightarrow{HlO_4}$

C. $\xrightarrow[\text{OsO}_4]{H_2O,\,H_2SO_4(\text{Cat})}$ $\xrightarrow{\text{PCC}}$

D. $\xrightarrow[(CH_3)_3COOH,\,OH^-]{}$ $\xrightarrow[OH_2]{K_2Cr_2O_7,\,H_2SO_4}$
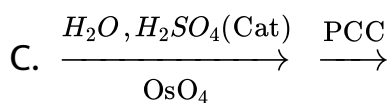
Answer: A

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21. Total number of chain isomers possible for C_7H_{16} are

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22. How many alcohols from the following set will yield geometric isomers on dehydration?

Propan -2- ol, 2 - methylpropan -1-ol, pentan -2- ol, ethanol,

propan -1- ol, 2- methylpropan -2- ol, butan -1- ol, butan -2- ol, hexan -3- ol

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23. Calculate the amount of calcium oxide required when it reacts with $852g$ of P_4O_{10}.
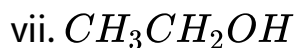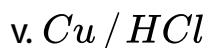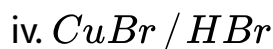
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24. In Mond's process for refining of nickel, the following reactions occur. The value of 'x' is --------.

$$Ni + xCO \xrightarrow{\text{330 K - 350 K}} No(CO)_x \xrightarrow{\text{450 K - 407 K}} Ni_{(s)} + xCO_{(g)}$$
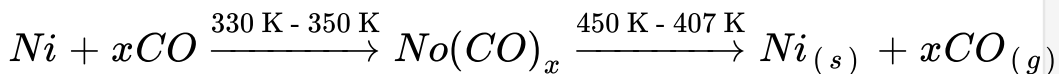
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25. How many of the following reagents react with arene diazonium slats to form aryl halides?

i. HBF_4/Δ

ii. KHS

iii. $CuCN/KCN$

iv. $CuBr/HBr$

v. Cu/HCl

vi. KI/Δ

vii. CH_3CH_2OH

viii. H_3PO_2/H_2O