



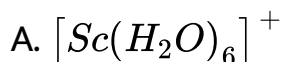
CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 90

Chemistry

1. Which of the following complex ions is expected to absorb visible light?





Answer: B



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2. Predict the percentage of isomers formed during monobromination of 2,3-dimethyl butane at room temperature. Relative reactivity of 1° , 2° , 3° H atoms to chlorination is (1.0 : 3.8 : 5.0) .

A. 15 % , 45 % , 20 % , 25 %

B. 14 % , 35 % , 23 % , 28 %

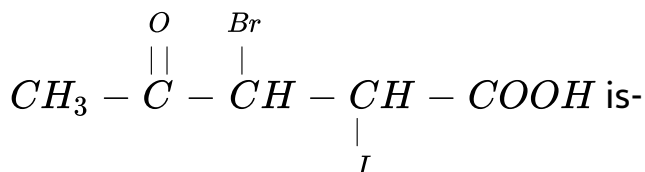
C. 12 % , 30 % , 22 % , 29 %

D. 17 % , 36 % , 20 % , 23 %

Answer: B

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3. The IUPAC name of the given structure



- A. 4 - keto -3- bromo -2- iodopentanoic acid
- B. 2 - iodo -3- bromo -4- keto - pentanoic acid
- C. 3 - bromo -2- iodo -4- ketopentanoic acid
- D. 4 - carboxy -3- bromo -4- iodopentanoic acid

Answer: C

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4. Which of the following statements is (are) incorrect?

(i) Percentage ionic character in $CsCl$ bond is $\sim 55\%$.

(Electronegativity values of Cs and Cl are 0.7 and 3.0 respectively)

(ii) From H_2O to H_3O^+ , the geometry around O atom changes drastically.

(iii) The most stable oxidation state for element with atomic number 113 is expected to be +2.

(iv) The 2nd ionization energy of Ca is greater than 1st ionization energy of it but lower than 2nd ionization energy of K.

A. Only i

B. i, ii, iii

C. ii, iii

D. iii, iv

Answer: C



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5. Out of the following ions Ti^{3+} , V^{3+} , Cu^{+} , Sc^{3+} , Mn^{3+} and Co^{2+} the colourless ions will be

A. Cu^{+} , Sc^{3+}

B. Ti^{3+} , V^{3+}

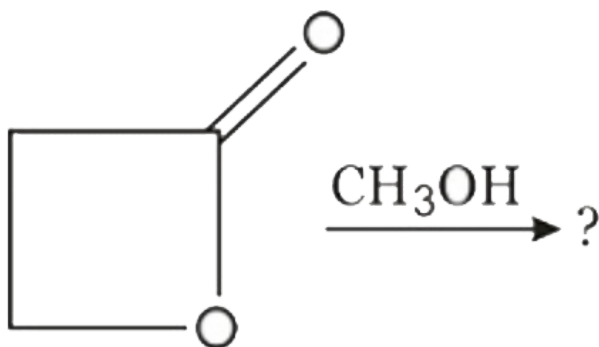
C. Cu^{+} , Co^{2+}

D. Sc^{3+} , Fe^{3+}

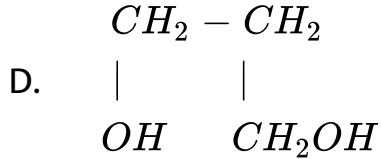
Answer: A

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6. The product (A) of the following reaction



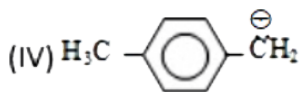
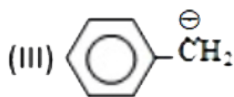
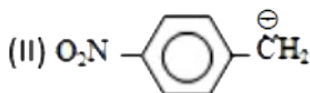
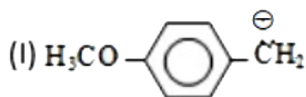
- A.
$$\begin{array}{c} \text{CH}_2 - \text{CH}_2 \\ | \qquad | \\ \text{CH}_3\text{O} \quad \text{COOH} \\ \text{CH}_2 - \text{CH}_2 \end{array}$$
- B.
$$\begin{array}{c} | \qquad | \\ \text{HO} \quad \text{COOCH}_3 \\ \text{CH}_2 - \text{CH}_2 \end{array}$$
- C.
$$\begin{array}{c} | \qquad | \\ \text{CH}_3\text{O} \quad \text{COOCH}_3 \end{array}$$



Answer: B

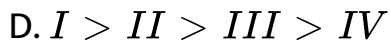
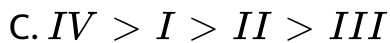
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7. Consider the following carbanions :



Correct decreasing order of stability is -

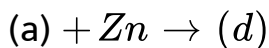
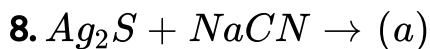




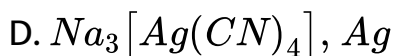
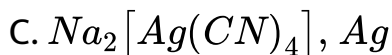
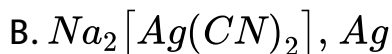
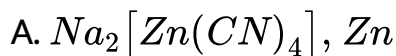
Answer: A



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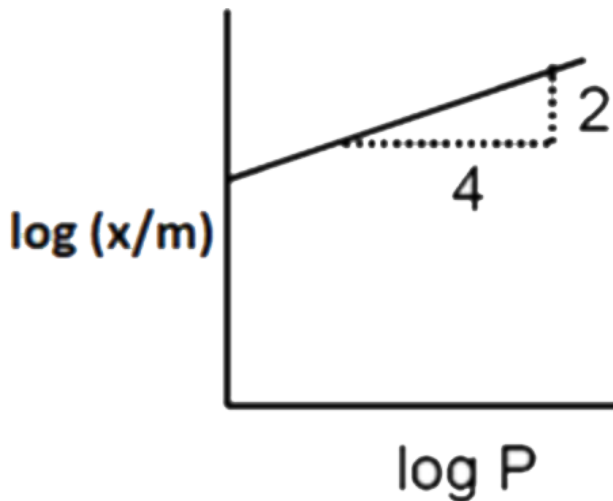
(b) is a metal. Hence (a) and (b) are



Answer: B

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9. Which of the following option is correct for given curve?



- A. $\frac{x}{m} \propto (P)$
- B. $\frac{x}{m} \propto (P)^2$
- C. $\frac{x}{m} \propto (P)^{1/2}$

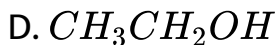
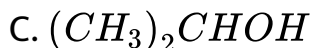
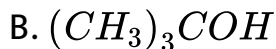
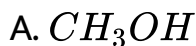
D. $\frac{x}{m} \propto (P)^0$

Answer: C



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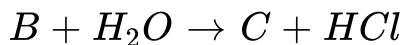
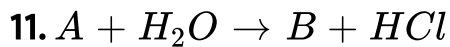
10. Acetone on addition to methyl magnesium bromide forms a complex, which on decomposition with acid gives X and $Mg(OH)Br$. Which one of the following is X?



Answer: B



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



Answer: B



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12. Which of two water sample A & B with BOD of 10ppm and 20 ppm respectively, then mark correct option

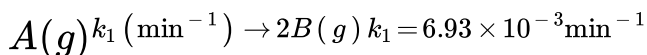
- A. A is more polluted
- B. B is more polluted
- C. A and B both are equally polluted
- D. A and B both are equally suitable for drinking.

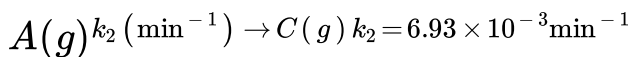
Answer: B



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13. A compound A dissociate by two parallel first order paths at certain temperature





If reaction started with pure 'A' with 1 mole of A in 1 litre closed container with initial pressure (in atm) developed in container after 50 minutes from start of experiment?

- A. 1.25
- B. 0.75
- C. 1.50
- D. 2.50

Answer: D

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14. On subjecting 10ml mixture of N_2 and CO to repeated electric spark to form CO_2 and NO, 7 ml of O_2 was required

for combustion. What was the mole percent of CO in the mixture ? (All volumes were measured under identical conditions)

A. 4

B. 6

C. 40

D. 60

Answer: D



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15. The increasing order of Ag^+ ion concentration in

I. Saturated solution of $AgCl$

II. Saturated solution of AgI

III. $1M Ag(NH_3)_2^+$ in $0.1M NH_3$

IV. $1M Ag(CN)_2^-$ in $0.1M KCN$

Given :

$$K_{sp} \text{ of } AgCl = 1.0 \times 10^{-10}$$

$$K_{sp} \text{ of } AgI = 1.0 \times 10^{-16}$$

$$K_d \text{ of } Ag(NH_3)_2^+ = 1.0 \times 10^{-8}$$

$$K_d \text{ of } Ag(CN)_2^- = 1.0 \times 10^{-21}$$

A. $I < II < III < IV$

B. $IV < III < II < I$

C. $IV < II < III < I$

D. $IV < II < I < III$

Answer: C



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16. A 100ml solution of 0.1N HCl was titrated with 0.2N $NaOH$ solution. The titration was completed by adding 0.25N KOH solution. The volume of KOH required for completing the titration is

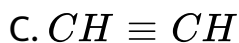
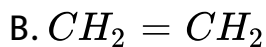
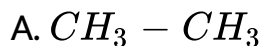
- A. 16 ml
- B. 32 ml
- C. 35 ml
- D. 70 ml

Answer: A



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17. Hydrocarbon (A) reacts with bromine by substitution to form an alkyl bromide which by Wurtz reaction is converted to gaseous hydrocarbon containing less than four carbon atoms (A) is



Answer: D



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18. Mole fraction of the toluene in the vapour phase which is in equilibrium with a solution of benzene ($p^\circ = 120 \text{ torr}$) and toluene ($p^\circ = 80 \text{ torr}$) having 2.0 mol of each is :

- A. 0.50
- B. 0.25
- C. 0.60
- D. 0.40

Answer: D



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19. When two compounds ACl_3 and DCl_3 of two elements A and D are mixed together a compound $ADCl_6$ is formed.

Structural analysis showed that $AdCl_6$ is an ionic compound. Given that DCl_3 is trigonal planar and Acl_3 is trigonal pyramidal, predict the shape of the anion DCl_4^- .

- A. See - saw
- B. Perfect tetrahedral
- C. Square planar
- D. None of these

Answer: B

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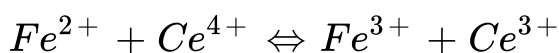
20. Regarding the structure of SO_2 and SeO_2 which of the following is true-

- A. The gaseous SO_2 and SeO_2 have same V - shaped molecule both in solid and gas phase
- B. At room temperature both SO_2 and SeO_2 are solids.
- C. In the solid phase the structure of SO_2 is V - shaped discrete molecule but SeO_2 is cyclic trimeric
- D. In solid phase the structure of SO_2 is V - shaped discrete molecule but SeO_2 has linear polymeric chain

Answer: D

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21. Calculate the equilibrium constant for the reaction :

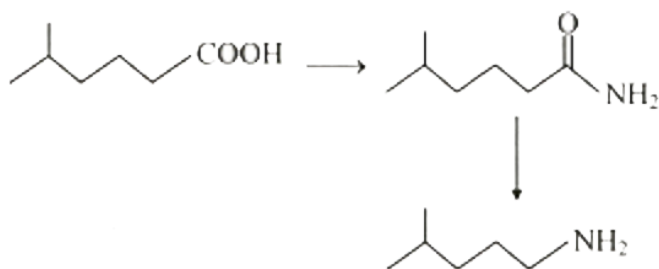


Given,

$$E_{\text{Ca}^{4+}/\text{Ce}^{3+}}^{\circ} = 1.44\text{V} \text{ and } E_{\text{Fe}^{3+}/\text{Fe}^{2+}}^{\circ} = 0.68\text{V}$$

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22. Consider the following conversion :

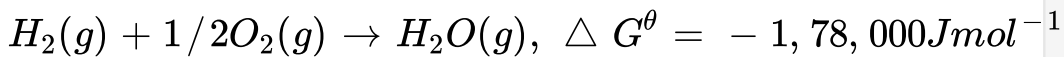


Amongst the following, how many methods can be used in any one of steps involved in the mentioned conversion?

- i. Hoffmann bromamide degradation
- ii. Gabriel phthalimide synthesis
- iii. Sandmeyer reaction
- iv. Clemmensen reduction
- v. Mendius reduction

23. The surface of copper gets tarnished by the formation of copper oxide. N_2 gas was passed to prevent the oxide formation during heating of copper at 1250 K. However, the N_2 gas contains 1 mole % of water vapour as impurity. The water vapour oxidises copper as per the reaction given below: $2Cu(s) + H_2O(g) \rightarrow Cu_2O(s) + H_2(g)$ is the minimum partial pressure of H_2 (in bar) needed to prevent the oxidation at 1250 K. The value of \ln is _____. (Given: total pressure = 1 bar, R (universal gas constant) = $8JK - 1mol^{-1}$, $\ln(10) = 2.3$. $Cu(s)$ and $Cu_2O(s)$ are mutually immiscible. At 1250 K: $2Cu(s) + 1/2O_2(g) \rightarrow Cu_2O(s)$

$$\Delta H^\theta = -78,000 Jmol^{-1}$$



, G is the Gibbs energy

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24. 3 - Methylbutane - 2 - ol + HI $\xrightarrow{\Delta}$ X Identify the position of carbon in the main chain to which nucleophile is added in the product 'X'?

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25. Calculate the osmotic pressure in pascals exerted by a solution prepared by dissolving 1.0g of polymer of molar mass 185,000 in 450mL of water at 37°C.

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