

JEE Main 2024 Chemistry Question Paper Jan 30 Shift 2 (B.E./B.Tech)

JEE Main Chemistry Questions

Ques 1. Why does KMnO_4 show colour?

- A. Due to d-d transition
- B. Due to metal to ligand charge transfer
- C. Due to ligand to metal charge transfer
- D. Due to F-center

Ans. C

Ques 2. C is added to solution of A and B, find mole fraction of C

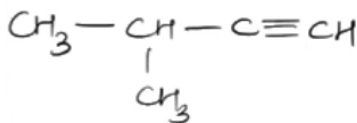
- A. $n_c / (n_A + n_B + n_c)$
- B. $n_c / (n_A \cdot n_B + n_c)$
- C. $n_c / (n_A \cdot n_c + n_B)$
- D. $n_c / (n_A + n_B)$

Ans. A

Ques 3. Which of the following solution will have lowest freezing point

- A. 180 g of glucose in 1 L solution
- B. 180 g of benzoic acid in 1 L solution
- C. 180 g of CH_3COOH in 1 L solution
- D. 180 g of sucrose in 1 L solution

Ans. C



Ques 4. IUPAC name of compound _____

- A. 2-Methylbutane
- B. 3-Methylbut-1-yne
- C. 2-Methylbutene
- D. 3-Methylbutane

Ans. B

Ques 5. Which reagent on reacting with phenol gives salicylaldehyde?

- A. CO_2 , NaOH
- B. CHCl_3 , NaOH
- C. CCl_4 , NaOH
- D. H_2O , H^+

Ans. B

Ques 6. Which of the following has a square pyramidal shape?

- A. PCl_5
- B. BrF_5
- C. PF_5
- D. $[\text{Ni}(\text{CN})_4]^{2-}$

Ans. B

Ques 7. Consider the following statements:

Statement I: Since electronegativity of F > H, so dipole moment of NF_3 > NH_3

Statement II: Lone pair dipole in NH_3 is not in the direction of resultant bond dipole while in case of NF_3 the lone pair dipole is in the direction of resultant bond dipole

- A. Statement I: True Statement II: False

- B. Statement I: True Statement II: True
 C. Statement I: False Statement II: False
 D. Statement I: False Statement II: True

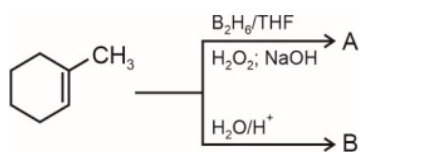
Ans. C

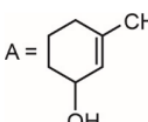
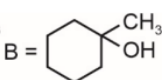
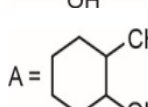
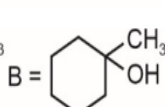
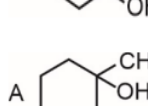
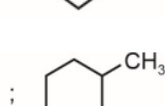
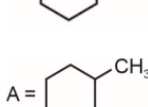
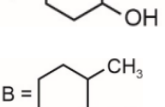
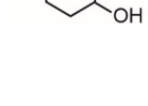
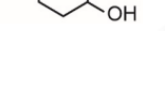
Ques 8. Arrange the following according to their decreasing oxidizing power BrO_4^- , IO_4^- , ClO_4^-

- A. $\text{ClO}_4^- > \text{IO}_4^- > \text{BrO}_4^-$
 B. $\text{BrO}_4^- > \text{IO}_4^- > \text{ClO}_4^-$
 C. $\text{IO}_4^- > \text{BrO}_4^- > \text{ClO}_4^-$
 D. $\text{BrO}_4^- > \text{ClO}_4^- > \text{IO}_4^-$

Ans. B

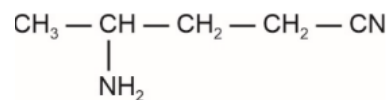
Ques 9. Complete the following reactions and find major products A and B



- A =  B = 
 A.  B = 
 B.  ; 
 C.  ; B = 
 D.  ; B = 

Ans. B

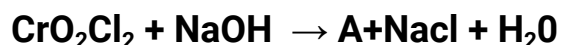
Ques 10. What is the correct IUPAC name of the given compound?



- A. 4-Aminopentanenitrile
- B. 2-Aminopentanenitrile
- C. 3-Aminobutanenitrile
- D. 2-Aminobutanenitrile

Ans. A

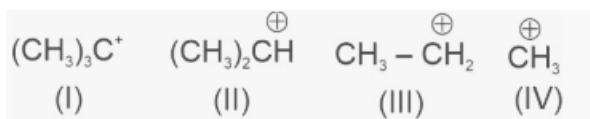
Ques 11. In the given reactions A and B respectively are:



- A. Na_2CrO_4 and CrO_5
- B. CrO_5 and Na_2CrO_4
- C. Na_2CrO_4 and CrO_3
- D. $\text{Na}_2\text{Cr}_2\text{O}_7$ and Na_2CrO_4

Ans. A

Ques 12. Find out correct order of stability for given carbocations



- A. II > I > III > IV
- B. I > II > III > IV
- C. IV > III > II > I
- D. I > II > IV > III

Ans. B

Ques 13. Statement I : Halogen attached to bulky group undergo $\text{S}_\text{N}2$ reaction.

Statement II : Secondary alkyl halide react with excess $\text{C}_2\text{H}_5\text{OH}$ undergo $\text{S}_\text{N}1$ reaction.

- A. Both statements are true**
- B. Statement I is true, II is false**
- C. Both statements are false**
- D. Statement I is false, Statement II is true**

Ans. D

Ques 14. Magnetic moment due to the motion of the electron in n^{th} orbit of Bohr atom is proportional to n^x . The value of x is

- A. 0**
- B. 1**
- C. 2**
- D. 3**

Ans. B

Ques 15. What is the structure of $\text{Mn}_2(\text{CO})_{10}$?

- A. Two square pyramidal units joined by bridging CO ligands**
- B. Two square pyramidal units joined by Mn-Mn bond**
- C. Two tetrahedral units joined by Mn-Mn bond**
- D. Two square planar units joined by Mn-Mn bond**

Ans. B

Ques 16. Which of the following is a purification method which is based on solubility of compound.

- A. Distillation**
- B. Sublimation**
- C. Crystallization**
- D. Column Chromatography**

Ans. C

Ques 17. Statement 1 : H_2Te is more acidic than H_2S Statement 2 : H_2Te has more B.D.E than H_2S

- A. Statement 1 and 2 both are correct**
- B. Statement 1 and 2 both are incorrect**
- C. Statement 1 is incorrect and statement 2 is correct**
- D. Statement 1 is correct and statement 2 is incorrect**

Ans. D

Ques 18. Number of elements which give flame test from following Sr, Cu, Co, Ca, Ni, Fe

Ans. 4

Ques 19. Statement-I: There is regular increase in chemical reactivity from group 1 to group 18.

Statement-II: Oxides of group-1 elements are basic and oxide of group 17 are acidic

- A. Both statement-I and statement-II are true**
- B. Statement-I is true and statement-II is false**
- C. Statement-I is false and statement-II is true**
- D. Statement-I and statement-II both are false**

Answer C

Ques 20. How many of the following shows disproportionation reactions?

H_2O_2 , Ag, Cu^+ , K^+ , F_2 , Cl_2 , ClO_3^-

Ans. 4