JEE Main 2024 Chemistry Question Paper Jan 29 Shift 1 (B.E./B.Tech)

JEE Main Chemistry Questions

Ques 1. Which of the following pairs will be formed by the decomposition of KM_nO_4?

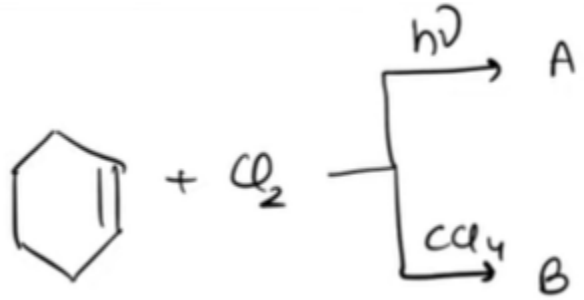
A. MnO_4- , MnO_2
B. K_2MnO_4 , MnO_2
C. $KMnO_4$, MnO_2
D. MnO_2, H_2O

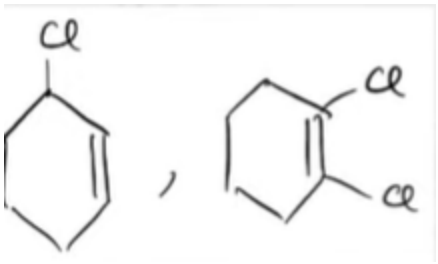
Ans. B

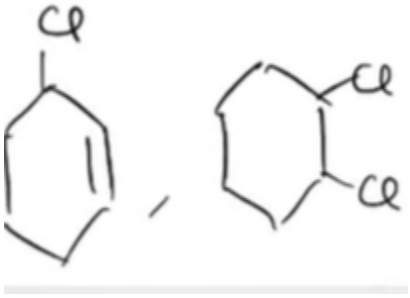
Ques 2. Calculate the Molarity of a Solution having density = 1.25 g/ml. %(w/w) of Solute is 36% and Molecular weight of Solute is 36 g/mol

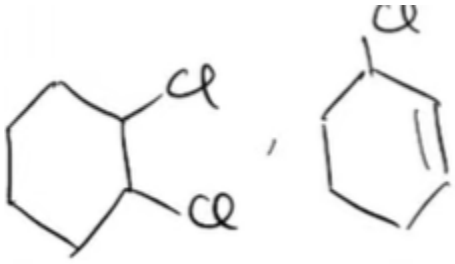
Ans. 12.5 M

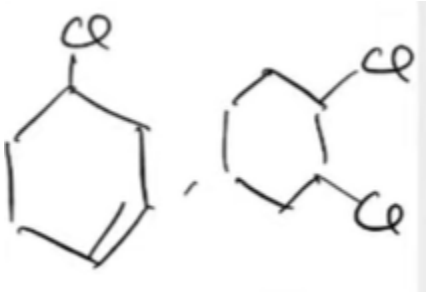
Ques 3. In the following reactions, find the product A and B



A. 

B. 

C. 

D. 

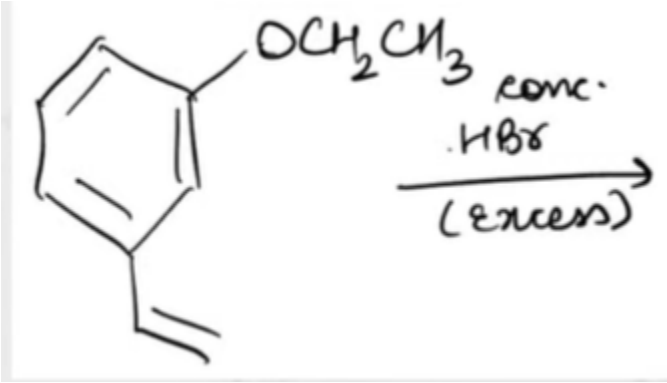
Ans. B

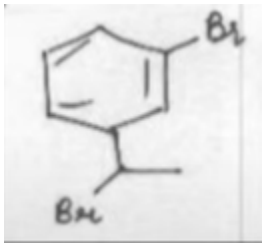
Ques 4. Appearance of Red color on treatment with Na fusion extract of an organic compound with $FeSo_4$ in presence of Conc. H_2SO_4 indicate element

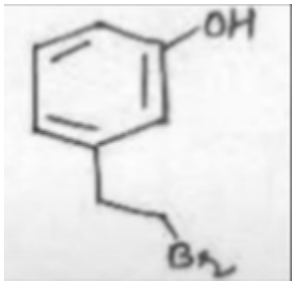
A. N
B. Br
C. S
D. N & S

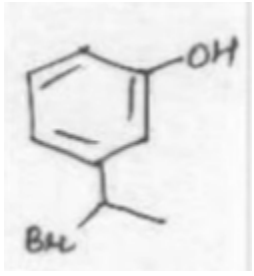
Ans. D

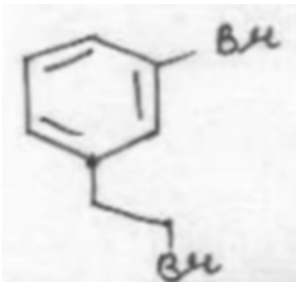
Ques 5. The major product formed in the following reaction is-



A. 

B. 

C. 

D. 

Ans. C

Ques 6. Energy difference between actual structure and its most stable resonating structure having least energy is called

- **A. Electromeric effect**
- **B. Resonance Energy**
- **C. Inductive effect**
- **D. Hyperconjugation**

Ans. B

Ques 7. Interaction b/w π bond & Lone pair of e-s on adjacent atoms

- **A. Resonance**
- **B. Hyperconjugation**
- **C. Inducting Effect**
- **D. Electronic & effect**

Ans. A

Ques 8. Which of The following coordination compounds has bridging carbonyl ligand

- **A. $[Mn_2(CO)_{10}]$**
- **B. $[Co_2(CO)_8]$**
- **C. $[Cr(CO)_6]$**
- **D. $[Fe(CO)_5]$**

Ans. B

Ques 9. Alkaline KMnO4 Oxidised iodide to a particular product (A). Determine the oxidation state of iodine in the compound (A)

A. +2
B. -3
C. +5
D. -7

Ans. C

Ques 10. Which of the following statement is incorrect?

A. $\triangle G = 0$ for reversible reaction
B. $\triangle G < 0$ for spontaneous process
C. $\triangle G > 0$ for spontaneous process
D. $\triangle G < 0$ for non-spontaneous process

Ans. C

Ques 11. Given $K_{net} = (K_1.K_2)/K_3$
When Ea_1= 40 kJ/mol, Ea_2= 50 kJ/mol and Ea_3= 60 kJ/mol
Calculate the value of $(Ea)_{net}$ in kJ/mol.

Ans. 30 kJ/mol

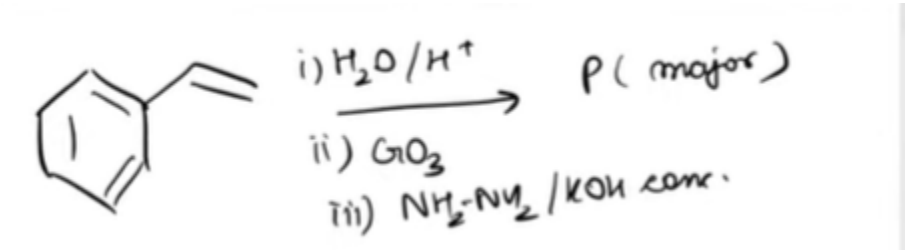
Ques 12. What is the effect that occurs between lone pair and pi bond?

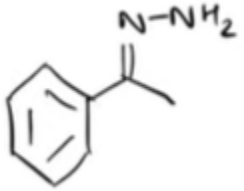
A. Inductive effect
B. Electromeric effect
C. Resonance effect

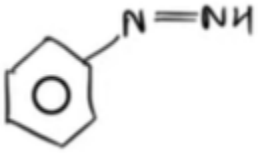
D. Hyperconjugation

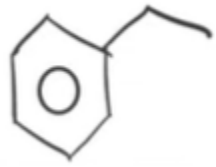
Ans. C

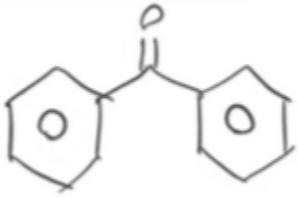
Ques 13. Find product P of the following reaction-



A. 

B. 

C. 

D. 

Ans. C

Ques 14. Statement 1: Electronegativity of group 14 elements decreases from Si to Pb

Statement 2: Group 14 has metals, metalloids and non-metals

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

Ans. D

Ques 15. Hydrolysis of protein gives which type of amino acids

- **A. α- Amino acids**
- **B. β- Amino acids**
- **C. γ- Amino acids**
- **D. δ- Amino acids**

Ans. A

Ques 16. How many of the following compounds have one lone pair in the central atom?
ClF3, XeO3, BrF5, XeF4, O3, NH3

Ans. B

Ques 17. A container contains 1 g H_2 gas and 1g O2 gas. What is the ratio of partial pressure of H_2 and O_2 (P_{H2}/ P_{O2})

- **A. 16:1**
- **B. 8:1**
- **C. 4:1**
- **D. 1:1**

Ans. A

Ques 18. How many of the following species have Bond order =1 and are Paramagnetic as well.
He_2^{2+}, O^{2-}_2, Ne_2^{2+}, F_2, B_2, H_2, O_2^{2+}

Ans. 1

Ques 19. Match the following:

Column 1	Column 2
(A) Flourspar	(p) $Al_2O_3.2H_2O$
(B) Cryolite	(q) CaF_2
(C) Bauxite	(r) $MgCO_3.CaCO_3$
(D) Dolomite	(s) $Na_3[AlF_6]$

A. (A) - s; (B)-q; (C) - r; (D) - p
B. (A)-q; (B)-s; (C) - p; (D) - r
C. (A) - p; (B) - q; (C) - s; (D) - r
D. (A)-q; (B) - s; (C) - r; (D) - p

Ans. B