JEE Main 2024 Chemistry Question Paper Jan 30 Shift 2

1. Why KMnO shows colour?

(1) Due to d-d transition
(2) Due to metal to ligand charge transfer
(3) Due to ligand to metal charge transfer
(4) Due to F-center

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

(1) $\frac{n_c}{(n_A+n_B+n_C)}$
(2) $\frac{n_c}{(n_A+n_B+n_C)}$
(3) $\frac{n_c}{(n_A+n_B)}$
(4) $\frac{n_c}{(n_A+n_B+n_C)}$

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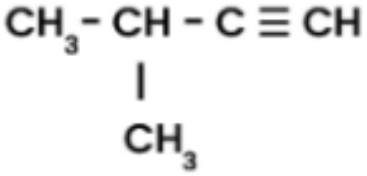
3. IUPAC name of compound:



(1) 2-Methylbutyne
(2) 3-Methylbut-1-yne
(3) 2-Methylbutene
(4) 3-Methylbutane

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4. Which reagent on reacting with phenol gives salicylaldehyde?

(1) CO_2, $NaOH$
(2) $CHCl_3$, $NaOH$
(3) CCl_4, $NaOH$
(4) H_2O, H^+

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5. Which of the following has a square pyramidal shape?

(1) ClF_3
(2) BrF_5
(3) XeF_4

(4) NH_3

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6. Statement I: NH has lower dipole moment than NF.
Statement II: In NF, the flow of electron is in the same direction.

(1) Both statement I and statement II are false
(2) Statement I is true but statement II is false
(3) Statement I is false but statement II is true
(4) Both statement I and statement II are true

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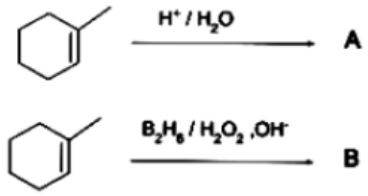
7. Identify A and B.



(1) OH
(2) OH
(3) OH
(4) OH

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8. What happens when phenol is treated with chloroform in the presence of NaOH at 343 K followed by hydrolysis?

(1) Salicylic Acid
(2) Salicylaldehyde
(3) Benzaldehyde
(4) Benzoic acid

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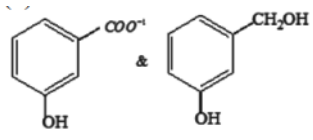
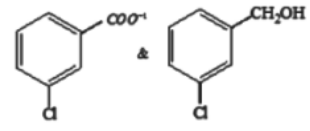
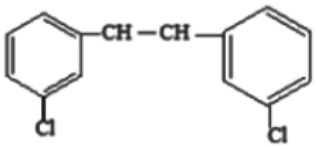
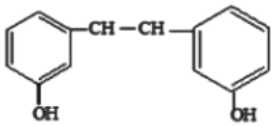
9. When m-chlorobenzaldehyde is treated with 50% KOH solution, the product(s) obtained is:

(1) 

(2) 

(3) 

(4) 

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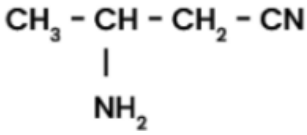
10. Correct IUPAC name the given compound is:



(1) 3-aminobutanenitrile
(2) 3-amino cyano butane
(3) 2-aminobutanenitrile
(4) 1-aminobutanenitrile

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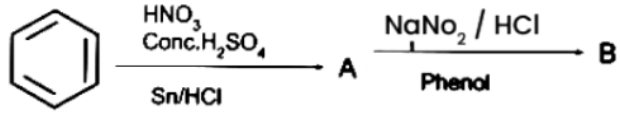
11. Find B:



(1) p-hydroxy azobenzene
(2) o-hydroxy azobenzene
(3) m-hydroxy azobenzene
(4) Azodye

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12. In the given reaction A and B respectively are:

$$CrO_3\,Cl_2 + NaOH \quad \rightarrow \quad A + NaCl + H_2O$$
$$H_2SO_4 + A + H_2O_2 \quad \rightarrow \quad B$$

(1) Na_2CrO_4 and CrO_5
(2) CrO_3 and Na_2CrO_3
(3) CrO_4 and $Na_2Cr_2O_7$
(4) $Na_2Cr_2O_7$ and Na_2CrO_4

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13. _____ is based on the difference in the solubility of different components of a mixture with a solvent.

(1) Filtration
(2) Sublimation
(3) Crystallization
(4) Chromatography

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14. What is the structure of $Mn_2(CO)_{10}$?

(1) Two square pyramidal units joined by bridging CO ligands
(2) Two square pyramidal units joined by Mn-Mn bond
(3) Two tetrahedral units joined by Mn-Mn bond
(4) Two square planer units joined by Mn-Mn bond

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15. Statement I: H_2Te is more acidic than H_2S
Statement II: H_2Te has more BDE than H_2S

(1) Statement I and II both are correct
(2) Statement I and II both are incorrect
(3) Statement I is incorrect and Statement II is correct
(4) Statement I is correct and Statement II is incorrect

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16. Total optically active compound will be shown by these compound:

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17. Number of spectral lines in the He^+ for transition from $n = 5$ to $n = 1$:
