

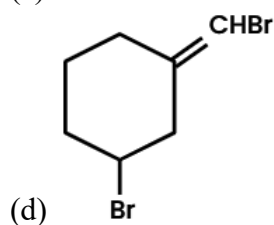
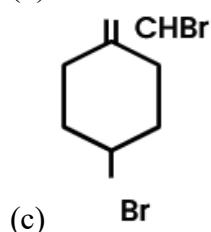
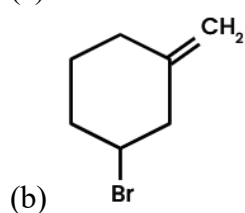
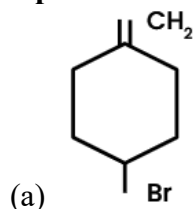
# JEE-Main-29-01-2024 (Memory Based)

## [EVENING SHIFT]

### Chemistry

**Question:** Which can show GI.

**Options:**



**Answer: (d)**

**Solution:**

**Question:** What is the oxidation number of iron in the compound formed in brown ring test of  $\text{NO}_3^-$

**Options:**

- (a) +1
- (b) +2
- (c) +3
- (d) -1

**Answer: (a)**

**Solution:**

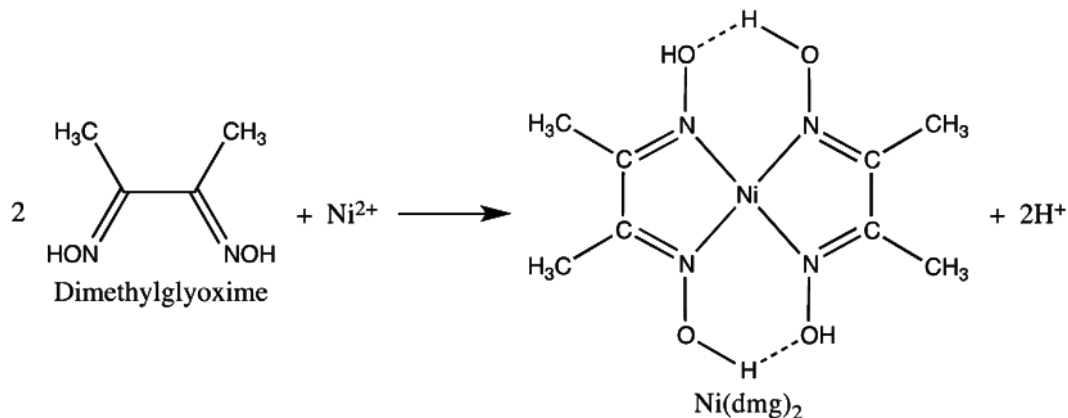
+1 oxidation state of Fe

The brown ring complex compound is formulated as  $[\text{Fe}(\text{H}_2\text{O})_5\text{NO}]\text{SO}_4$ .

**Question:** Which reagent is used for getting red colour with nickel ions  $\text{Ni}^{+2}$

**Options:**

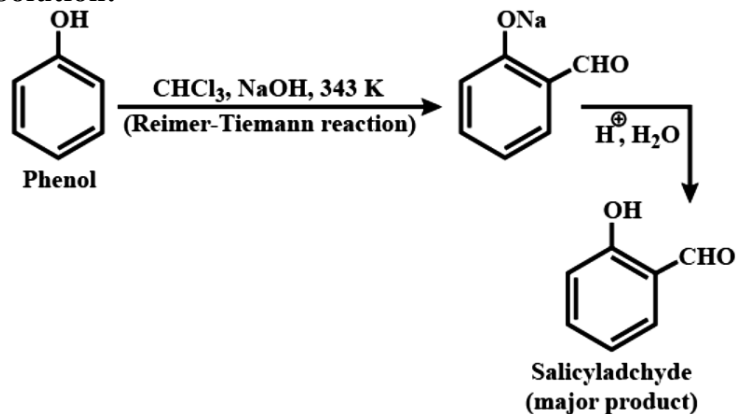
- (a) EDTA
- (b) Dimethylglyoxime
- (c)  $\alpha$  - nitroso -  $\beta$  - naphthol
- (d) None of the above

**Answer: (b)****Solution:**

**Question:** Phenol is reacted with chloroform in the presence of NaOH and the obtained product is hydrolyzed in presence of acid. The final product is

**Options:**

- (a) Benzene-1,2-diol
- (b) Benzene-1,3-diol
- (c) Salicylaldehyde
- (d) Hydroxybenzaldehyde

**Answer: (c)****Solution:**

**Question:** Which ion gives brownish colour with nessler's reagent

**Options:**

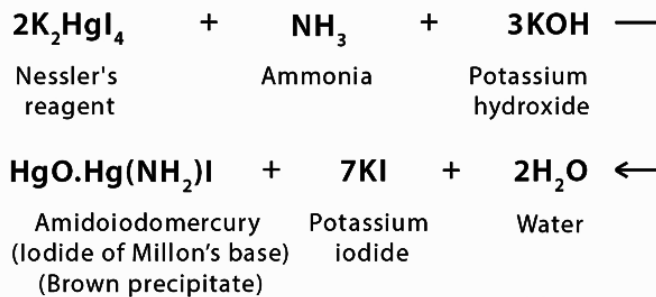
- (a) Sulphate salt
- (b) Nitrate ion
- (c) Bromide ion
- (d) Ammonium salt

**Answer: (d)**



Solution:

### Nessler's Reagent Reaction



**Question:** Arrange the following compounds according to the pKa value.

- Phenol
- Meta nitrophenol
- Para nitrophenol
- Ethanol

**Options:**

- $d > a > b > c$
- $a > b > c > d$
- $b > c > d > a$
- $c > d > b > a$

**Answer: (a)**

**Solution:**

**Question:** Best reducing agent among the given ions are :

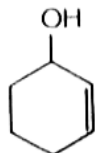
**Options:**

- $\text{Ce}^{4+}$
- $\text{Gd}^{2+}$
- $\text{Lu}^{3+}$
- $\text{Nd}^{3+}$

**Answer:**

**Solution:**

**Question:** IUPAC Name of the compound is

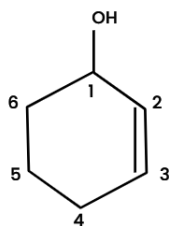


**Options:**

- Hex - 2 - en - 1 - ol
- Cyclohex - 2 - en - 1 - ol
- 3 - Hydroxycyclohexane
- Cyclohex - 1 - en - 3 - ol

**Answer: (b)**

**Solution:**



Cyclohex - 2 - en - 1 - ol

**Question:** Why does oxygen show anomalous behaviour in group 16 in the periodic table?

**Options:**

- (a) Large size, high electronegativity
- (b) Small size, small electronegativity
- (c) Small size, high electronegativity, absence of vacant d - orbit
- (d) Large size high electronegativity presence of vacant

**Answer: (c)**

**Question:** How many of the following compounds have zero dipole moment.

$\text{NH}_3$ ,  $\text{H}_2\text{O}$ ,  $\text{HF}$ ,  $\text{CO}_2$ ,  $\text{SO}_2$ ,  $\text{BF}_3$ ,  $\text{CH}_4$

**Solution:**

$\text{NH}_3 \Rightarrow$  Dipole Moment  $\neq 0$

$\text{BF}_3 \Rightarrow$  Dipole Moment = 0

$\text{SO}_2 \Rightarrow$  Dipole Moment  $\neq 0$

$\text{CO}_2 \Rightarrow$  Dipole Moment = 0

$\text{CH}_4 \Rightarrow$  Dipole Moment = 0

$\text{HF} \Rightarrow$  Dipole Moment  $\neq 0$

$\text{CO}_2$ ,  $\text{BF}_3$  and  $\text{CH}_4$  Dipole Moment is zero

**Question:** Statement 1( $S_1$ ): F has highest EGE in its grp

Statement 2( $S_2$ ): O has 2<sup>nd</sup> most EGE in its grp.

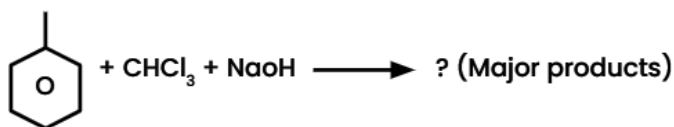
**Options:**

- (a) Both statement I and statement II are false
- (b) Statement I is true but statement II is false
- (c) Statement I is false but statement II is true
- (d) Both statement I and statement II are true

**Answer: (c)**

**Solution:**

1<sup>st</sup> statement wrong 2<sup>nd</sup> statement right



**Question:**

**Question:**  $S_1$ : Rutherford said mass is at the centre and charge is distributed.

$S_2$ :  $e^-$  are clustered

**Question:** Number of antibonding in 1s & 2p of diatomic  $\alpha$  diatomic molecule ?



**Question:** Find total number of  $\pi$  &  $\sigma$  bond in 2 formyl hex - 4 - enoic acid

**Options:**

(a) Sigma bonds = 18

Pi bonds = 3

(b) Sigma bonds = 16

Pi bonds = 2

(c) Sigma bonds = 16

Pi bonds = 3

(d) Sigma bonds = 18

Pi bonds = 2

**Answer: (a)**

**Solution:**

2 - Formyl hex - 4 - enoic acid (CH<sub>3</sub>-CH=CH-CH<sub>2</sub>-CH(CHO)-COOH)

$\sigma$  bonds - 18

$\pi$  bonds - 3

**Question:** Radio activity

Half life was given 36 hours.

Find amount left after 1 day log value was given.

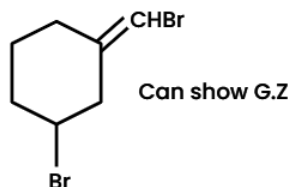
**Solution:**

$$K = \frac{0.693}{36} \text{ h}^{-1}$$

$$\frac{0.693}{36} \times 24 = 2.303 \log \frac{1}{A_k}$$

**Question:** IUPAC name K<sub>2</sub> [MnO<sub>4</sub>] according to coordination compound

**Solution:**



**Question:** Which of them is a strong RA

**Options:**

(a) Ce<sup>4+</sup>

(b) Ga<sup>3+</sup>

(c) Tb<sup>3+</sup>

(d) Ho<sup>2+</sup>

**Answer:**

**Solution:**

**Question:** Number of antibonding in 1s & 2p of diatomic  $\alpha$  diatomic molecule ?

**Question:** Find molality of 0.8M H<sub>2</sub>SO<sub>4</sub> (density=1.06g/cm<sup>3</sup>) we have to give answer in      10<sup>-3</sup>

**Solution:**

$$m = \frac{1000 M}{M \times H_b - 1000 d} = \frac{1000 \times 0.8}{0.8 \times 98.10^3 \times 1.06}$$

**Question:** Which of the following element has highest 1<sup>st</sup> ionization energy ?

**Options:**

- (a) N
- (b) C
- (c) Si
- (d) Al

**Answer: (a)**

**Question:** Match the following :

- |             |               |
|-------------|---------------|
| (A) Lyman   | (I) IR        |
| (B) Balmer  | (II) IR       |
| (C) Paschen | (III) Visible |
| (D) p-fund  | (IV) UV       |

**Solution:**

A-Uv

B-Visible

C-Ir

D-Ir

**Question:** If standard enthalpy of vaporization of CCl<sub>4</sub> is 30.5 kJ/mol, find heat absorbed for vaporization of 294 gm of CCl<sub>4</sub>. [Nearest integer ] [in kJ/mol]

**Solution:**

1 mole → 30.5 kJ/mol

154 gm → 30.5 kJ/mol                      ΔH<sub>vap</sub>

294 gm                      mol 1.g → ?    ΔH<sub>vap</sub> = 58.2

**Question:** 50 mL of 0.5 oxalic acid is completely neutralized by 25 mL of NaOH solution. Find out the amount of NaOH (in gm) present in 25 mL of given NaOH solution.

**Question:** Match the following

- |                   |                                  |
|-------------------|----------------------------------|
| (A) Starch        | (I) Peptide linkage              |
| (B) Cellulose     | (II) α-D-Glycosidic linkage      |
| (C) Proteins      | (III) β - D - Glycosidic linkage |
| (D) Nucleic acids | (IV) nucleotide                  |

**Solution:**

Starch - alpha d glucose

Cellulose - beta d glucose

Protein - peptide

Nucleic acid - nucleotide