

# JEE-Mains-06-04-2023 [Memory Based] [Evening Shift]

## Chemistry

**Question:** Which of the following is not included in electrolysis of brine solutions?

**Options:**

- (a) NaOH
- (b) H<sub>2</sub>
- (c) HCl
- (d) Cl<sub>2</sub>

**Answer: (c)**

**Solution:** When electricity is passed through brine solution it forms NaOH Cl<sub>2</sub> at anode H<sub>2</sub> at cathode.

**Question:** Nessler reagent doesn't have

**Options:**

- (a) K
- (b) N
- (c) Hg
- (d) I

**Answer: (b)**

**Solution:** K<sub>2</sub>[HgI<sub>4</sub>] ⇒ Nessler reagent

**Question: Statement-1:** Morphine and many of its homologues, when administered in medicinal doses, relieve pain and produce sleep

**Statement-2:** Morphine narcotics are sometimes referred to as opiates, since they are obtained from the opium poppy.

**Options:**

- (a) Statement-1 is true but Statement-2 is false.
- (b) Statement-1 is false but Statement-2 is true.
- (c) Both Statement-1 and Statement-2 are true.
- (d) Both Statement-1 and Statement-2 are false.

**Answer: (c)**

**Solution:** Narcotic analgesics: Morphine and many of its homologues, when administered in medicinal doses, relieve pain and produce sleep. In poisonous doses, these produce stupor, coma, convulsions and ultimately death. Morphine narcotics are sometimes referred to as opiates, since they are obtained from the opium poppy.

These analgesics are chiefly used for the relief of postoperative pain, cardiac pain and pains of terminal cancer, and in childbirth.

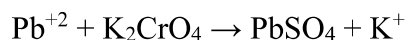
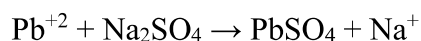
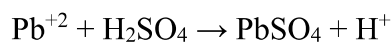
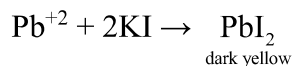
**Question:** Which one doesn't give Pb<sup>+2</sup> test?

**Options:**

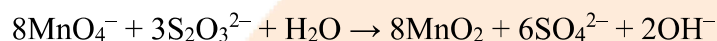
- (a) Iodite
- (b) Chromate
- (c) Sulfate
- (d) Nitrate

**Answer: (d)**

**Solution:**



**Question:** Medium used in This reactions



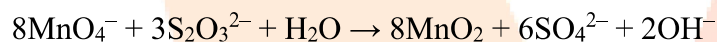
**Options:**

- (a) Neutral or faintly alkaline solutions
- (b) Acidic
- (c) Basic
- (d) None of these

**Answer: (a)**

**Solution:** In neutral or faintly alkaline solutions:

Thiosulphate is oxidised almost quantitatively to sulphate



**Question:** If  $a_0$  is the radius of H atom, de-Broglie wavelength of electron in 3<sup>rd</sup> orbit of  $\text{Li}^{2+}$  ion is  $x\pi a_0$ . Find out x.

**Options:**

- (a) 1
- (b) 2
- (c) 3
- (d) 4

**Answer: (b)**

**Solution:**

$$\lambda = \frac{h}{MV}$$

$$MVr = \frac{nh}{2\pi} \Rightarrow \frac{h}{MV}$$

$$\lambda = \frac{2\pi r}{n}$$

$$r = a_0 \times \frac{n^2}{Z}$$

$$\lambda = \frac{2\pi}{n} a_0 \times \frac{n^2}{Z}$$

$$= 2\pi a_0 \times \frac{n}{Z}$$

$$= 2\pi a_0 \frac{3}{3}$$

$$= 2\pi a_0$$

$$x = 2$$

**Question:** Which of the following has highest hydration energy?

**Options:**

- (a)  $\text{Be}^{+2}$
- (b)  $\text{Mg}^{+2}$
- (c)  $\text{Ca}^{+2}$
- (d)  $\text{Ba}^{+2}$

**Answer: (a)**

**Solution:**

$$\text{H.E} \propto Z_+ \times Z_-$$

$$\text{H.E} \propto \frac{1}{r_{(+)}} + \frac{1}{r_{(-)}}$$

Increase in ionic size down the group.



**Question:** IUPAC name of the compound  $\text{K}_3[\text{Co}(\text{C}_2\text{O}_4)_3]$  is

**Options:**

- (a) Potassium trioxalatocobaltate (III)
- (b) Potassium trioxalatocobaltate (II)
- (c) Potassium cobalttrioxalate (II)
- (d) Potassium oxalatocobaltate (III)

**Answer: (a)**

**Solution:** IUPAC name of the compound  $\text{K}_3[\text{Co}(\text{C}_2\text{O}_4)_3]$  is Potassium trioxalatocobaltate (III)

**Question:** Most basic Oxide

**Options:**

- (a)  $\text{Tl}_2\text{O}$
- (b)  $\text{Al}_2\text{O}_3$

(c)  $B_2O_3$

(d)  $Cr_2O_3$

**Answer: (a)**

**Solution:**

$Tl_2O \Rightarrow$  Basic

$Al_2O_3 \Rightarrow$  Amphoteric

$B_2O_3 \Rightarrow$  Acidic

$Cr_2O_3 \Rightarrow$  Amphoteric

**Question: Assertion:**  $[Ni(CO)_4]$  &  $[Fe(CO)_5]$  have zero oxidation state.

**Reason:** Low OS is observed due to presence of  $\pi$ -donor ligand in addition to sigma bonding.

**Options:**

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) Both A and R are true, but Reason is not the correct explanation of Assertion.

(c) Assertion is true, but Reason is false.

(d) Assertion is false, but Reason is true.

**Answer: (c)**

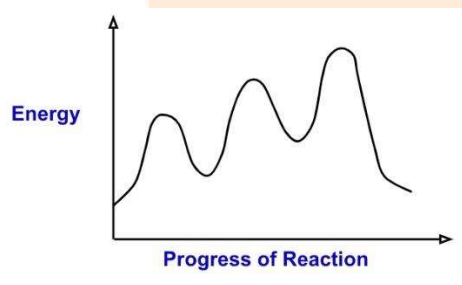
**Solution:** Assertion is true, and reason is false

**Question: Statement-1:** Number of transition state is 3

**Statement-2:** Number of intermediate is 2

**Statement-3:** Reaction is endothermic

Number of correct statements are:



**Options:**

(a) 1

(b) 2

(c) 3

(d) 0

**Answer: (c)**

**Solution:** All the given statements are correct.

**Question:** Matching of Amino acids with letter code

Column I (Amino acid)	Column-II (Letter code)
(A) Alanine	(P) N
(B) Asparagine	(Q) A
(C) Aspartic acid	(R) R
(D) Arginine	(S) D

**Options:**

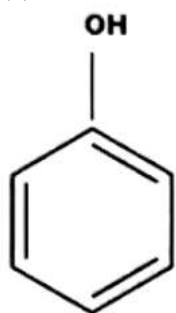
- (a) A – P; B – R; C – Q; D – S
- (b) A – Q; B – P; C – R; D – S
- (c) A – S; B – P; C – Q; D – R
- (d) A – Q; B – P; C – S; D – R

**Answer: (d)**

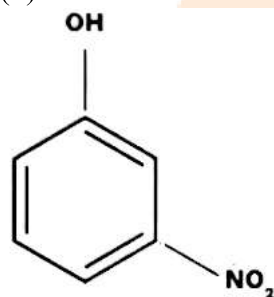
**Solution:** A – Q; B – P; C – S; D – R

**Question:** Most Acidic compound among the following is

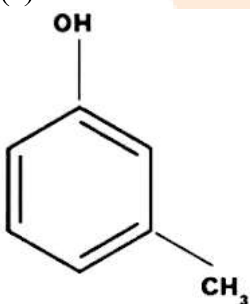
(a)



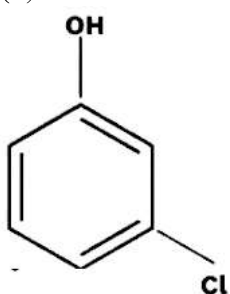
(b)



(c)

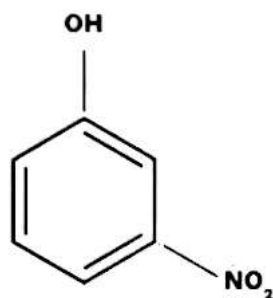


(d)



**Answer: (b)**

**Solution:**



Because of more -I

**Question:** How many of these are pesticides?

(i) D.D.T. (ii) Aldrin (iii) Sodium arsenite (iv) Sodium chlorate

**Options:**

- (a) 1
- (b) 2
- (c) 3
- (d) 4

**Answer: (b)**

**Solution:** DDT and Aldrin are the pesticides

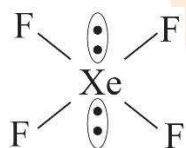
**Question:** Number of Square Planar Species is/are :

$\text{XeF}_4$ ,  $\text{SiF}_4$ ,  $\text{SF}_4$ ,  $\text{B}(\text{OH})_4^\ominus$ ,  $[\text{Co}(\text{NH}_3)_6]^{+2}$ ,  $[\text{CoCl}_4]^{2-}$

**Answer: 1**

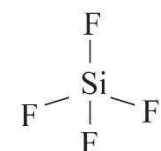
**Solution:**

$\text{XeF}_4 \Rightarrow$  Hybridization is  $\text{sp}^3\text{d}^2$



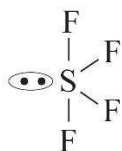
Sq. Planar

$\text{SiF}_4 \Rightarrow$  Hybridization is  $\text{sp}^3$



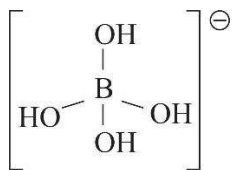
Tetrahedral

$\text{SF}_4 \Rightarrow$  Hybridization is  $\text{sp}^3\text{d}$



Sea saw shape

$\text{B(OH)}_4^- \Rightarrow$  Hybridization is  $\text{sp}^3$



Tetrahedral

$[\text{Co(NH}_3)_6]^{+2} \Rightarrow$  Hybridization is  $\text{sp}^3\text{d}^2$

Octahedral

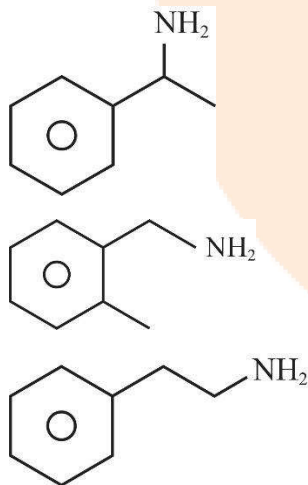
$[\text{CoCl}_4]^{2-} \Rightarrow$  Hybridization is  $\text{sp}^3$

Tetrahedral

**Question:** Number of aromatic amines having formula  $\text{C}_8\text{H}_{11}\text{N}$  which can be synthesized by gabriel phthalimide synthesis

**Answer: 3**

**Solution:**



3 possibilities