

**JEE-Main-06-04-2024 (Memory Based)**  
**[MORNING SHIFT]**

**Chemistry**

**Question:** Density of NaOH is 1.12g/mL having molality of 3m. Calculate the molarity.

**Options:**

- (a) 3 M
- (b) 2 M
- (c) 1 M
- (d) 0.5 M

**Answer: (a)**

**Question:** Which of the following not semiconductor ?

**Options:**

- (a) Gallium
- (b) Copper oxide
- (c) Graphite
- (d) Silicon

**Answer: (c)**

**Question:**  $\text{MnO}_4^- + \text{C}_2\text{O}_4^{2-} \xrightarrow{\text{H}^+} ?$

**Options:**

- (a)  $\text{CO}_2$ ,  $\text{MnO}_4^{2-}$
- (b)  $\text{CO}_2$ ,  $\text{MnO}_4^+$
- (c)  $\text{CO}_2$ ,  $\text{Mn}^{2+}$
- (d)  $\text{CO}_2$ ,  $\text{Mn}^{7+}$

**Answer: (c)**

**Question:** Among the given molecules, identify the one which undergoes nucleophilic addition reaction at fastest rate

**Options:**

- (a) HCHO
- (b)  $\text{CH}_3\text{CHO}$
- (c)  $\text{CH}_3\text{CH}_2\text{CHO}$
- (d)  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$

**Answer: (a)**

**Question:** Find out ratio of  $t_{99.9\%}$  and  $t_{90\%}$  for first order ?

**Options:**

- (a) 2

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

**Answer: (c)**

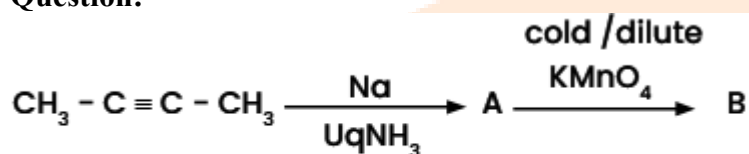
**Question:** Find the ratio of shortest wavelengths in Lyman and Balmer series for H-atom.

**Options:**

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

**Answer: (a)**

**Question:**



**Number of oxygen atom is product B ?**

**Options:**

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

**Answer: (d)**

**Question:** Which compound will absorb light at more frequency?

**Options:**

- (a)  $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$   
(b)  $[\text{CrCl}_6]^{3-}$   
(c)  $[\text{Cr}(\text{CN})_6]^{3-}$   
(d)  $[\text{CrCl}_3(\text{H}_2\text{O})_3]$

**Answer: (c)**

**Question:** Structure Based Questions

- |                     |                |
|---------------------|----------------|
| a. $\text{SF}_4$    | 1. Tetrahedral |
| b. $\text{BrF}_3$   | 2. Pyramidal   |
| c. $\text{BrO}_3^-$ | 3. Sea-saw     |
| d. $\text{NH}_4^+$  | 4. T-Shape     |

**Options:**

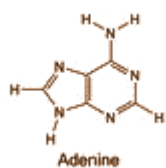
- (a) (a) → 4, (b) → 2, (c) → 1, (d) → 3  
(b) (a) → 3, (b) → 4, (c) → 2, (d) → 1  
(c) (a) → 1, (b) → 3, (c) → 2, (d) → 4  
(d) (a) → 4, (b) → 2, (c) → 1, (d) → 3

**Answer: (b)**

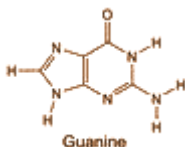
**Question:** Identify which of the base is not present in DNA-

**Options:**

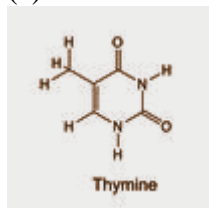
(a)



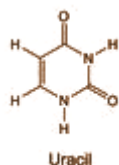
(b)



(c)



(d)



**Answer: (d)**

**Question:** Reimer - Tiemann reaction involves as intermediate :

**Options:**

- (a) Carbocation
- (b) Carbanion
- (c) Carbanion
- (d) Carbene

**Answer: (d)**

**Question:** Match the following :-

- |                         |                      |
|-------------------------|----------------------|
| a. Iodoform             | 1. Fire extinguisher |
| b. DDT                  | 2. Insecticide       |
| c. Carbon Tetrachloride | 3. Antiseptic        |
| d. Chlorofluorocarbon   | 4. Refrigerator      |

**Options:**

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

**Answer: (a)**

**Question:** Find functional group present in sulphuric acid

**Options:**

- (a)  $-\text{NO}_2$
- (b)  $-\text{SO}_2$
- (c)  $-\text{SO}_3\text{H}$
- (d)  $-\text{COOH}$

**Answer: (c)**

**Question:** Match the following

**Hybridisation**

**Structure**

(P)  $\text{sp}^3\text{d}^2$

(A) Octahedral

(Q)  $\text{sp}^3$

(B) Trigonal Bipyramidal

(R)  $\text{dsp}^2$

(C) Tetrahedral

(S)  $\text{sp}^3\text{d}$

(D) Square planar

**Options:**

- (a)  $\text{P} \rightarrow \text{A}$ ,  $\text{Q} \rightarrow \text{C}$ ,  $\text{R} \rightarrow \text{D}$ ,  $\text{S} \rightarrow \text{B}$
- (b)  $\text{P} \rightarrow \text{B}$ ,  $\text{Q} \rightarrow \text{A}$ ,  $\text{R} \rightarrow \text{C}$ ,  $\text{S} \rightarrow \text{D}$
- (c)  $\text{P} \rightarrow \text{B}$ ,  $\text{Q} \rightarrow \text{D}$ ,  $\text{R} \rightarrow \text{A}$ ,  $\text{S} \rightarrow \text{C}$
- (d)  $\text{P} \rightarrow \text{C}$ ,  $\text{Q} \rightarrow \text{A}$ ,  $\text{R} \rightarrow \text{D}$ ,  $\text{S} \rightarrow \text{B}$

**Answer: (a)**

**Question: Statement I:-** 2, 4, 6-trinitrotoluene is known as picric acid

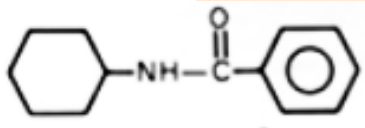
**Statement II:-** Phenol can be converted into picric acid by addition of concentrated  $\text{HNO}_3$  in phenol-2,4-disulphonic acid.

**Options:**

- (a) S1-Correct ; S2-Incorrect
- (b) S1-Incorrect ; S2-Correct
- (c) S1-Correct ; S2-Correct
- (d) S1-Incorrect ; S2-Incorrect

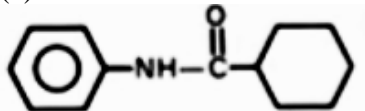
**Answer: (b)**

**Question:** Which one is correct metamer of

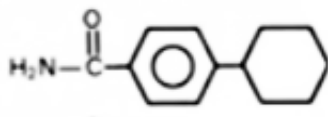


**Options:**

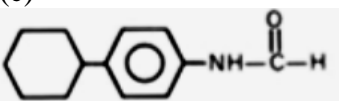
(a)



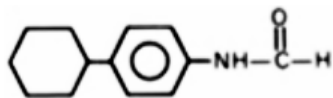
(b)



(c)



(d)



Answer: (a)

Question: Match the following :

- |                        |   |
|------------------------|---|
| (i) $\text{Pb}^{2+}$   | (a) $\text{NH}_4\text{OH} + \text{NH}_4\text{Cl}$       |
| (ii) $\text{Al}^{3+}$  | (b) $\text{H}_2\text{S} + \text{dil HCl}$               |
| (iii) $\text{Sr}^{2+}$ | (c) $\text{H}_2\text{S} + \text{NH}_4\text{OH}$         |
| (iv) $\text{Mn}^{2+}$  | (d) $(\text{NH}_4)_2\text{CO}_3 + \text{NH}_4\text{OH}$ |

Options:

- (a) (i)  $\rightarrow$  (a), (ii)  $\rightarrow$  (b), (iii)  $\rightarrow$  (d), (iv)  $\rightarrow$  (c)  
 (b) (i)  $\rightarrow$  (a), (ii)  $\rightarrow$  (c), (iii)  $\rightarrow$  (b), (iv)  $\rightarrow$  (d)  
 (c) (i)  $\rightarrow$  (b), (ii)  $\rightarrow$  (a), (iii)  $\rightarrow$  (d), (iv)  $\rightarrow$  (c)  
 (d) (i)  $\rightarrow$  (b), (ii)  $\rightarrow$  (d), (iii)  $\rightarrow$  (a), (iv)  $\rightarrow$  (c)

Answer: (c)

Question: Which of the following are element of lanthanide series. Eu, Cm, Cr, Yb, Lu, Cd, Tb, Er.

Options:

- (a) 4  
 (b) 3  
 (c) 5  
 (d) 2

Answer: (c)

Question: Which of the following have negative electron affinity?

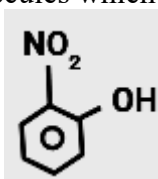
- a.  $\text{B} \longrightarrow \text{Be}^-$   
 b.  $\text{N} \longrightarrow \text{N}^-$   
 c.  $\text{O} \longrightarrow \text{O}^{2-}$   
 d.  $\text{Na} \longrightarrow \text{Na}^-$   
 e.  $\text{Al} \longrightarrow \text{Al}^-$

Options:

- (a) b, c, d  
 (b) b, c, d  
 (c) c, d, e  
 (d) b, c, f

Answer: (b)

Question: Number of molecules which can show H-bonding among



$\text{CH}_3\text{OH}$ ,  $\text{H}_2\text{O}$ ,  $\text{C}_2\text{H}_6$ ,  $\text{C}_6\text{H}_6$ ,  $\text{HF}$ ,  $\text{NH}_3$

Options:

- (a) 5  
 (b) 4

(c) 6

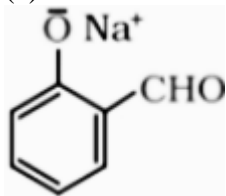
(d) 3

**Answer: (a)**

**Question:** Which of the following is not the intermediate observed in Reimer-Tiemann reaction

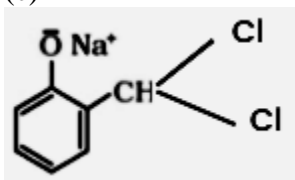
**Options:**

(a)



(b)  $:CCl_2$

(c)



(d)  $CHCl_3$

**Answer: (d)**

**Question:** Find the sum of magnetic moment of basic and amphoteric oxides of Cr.  $CrO$ ,  $Cr_2O_3$ ,  $CrO_3$

**Answer: 8.76 BM**