

**JEE-Main-03-04-2025 (Memory Based)**  
**[MORNING SHIFT]**  
**Chemistry**

**Question:** Which of the following ion shows spin only magnetic moment of 4.9 B.M.

**Options:**

- (a)  $\text{Mn}^{2+}$
- (b)  $\text{Cr}^{2+}$
- (c)  $\text{Fe}^{3+}$
- (d)  $\text{Co}^{2+}$

**Answer: (b)**

**Question:** Which of following has highest atomic number

**Options:**

- (a) Po
- (b) Pt
- (c) Pr
- (d) Pb

**Answer: (a)**

**Question:** Match the following List-I with List-II and choose the correct option

List-I (Compound)	List-II (Shape and Hybridisation)
(A) $\text{PF}_5$	(i) Tetrahedral and $\text{sp}^3$
(B) $\text{SF}_6$	(ii) Square planar and $\text{dsp}^2$
(C) $\text{Ni}(\text{CO})_4$	(iii) Octahedral and $\text{sp}^3\text{d}^2$
(D) $[\text{PtCl}_4]^{2-}$	(iv) Trigonal bipyramidal and $\text{sp}^3\text{d}$

**Options:**

- (a) A-IV, B-III, C-I, D-II
- (b) A-III, B-IV, C-I, D-II
- (c) A-III, B-IV, C-II, D-I
- (d) A-IV, B-III, C-II, D-I

**Answer: (a)**

**Question:** 2 moles each of ethylene glycol and glucose are mixed with 500g of water. Find the boiling point of solution.

**Given:**  $K_b = 0.52 \text{ K kg mol}^{-1}$

**Options:**

- (a) 377.16 K

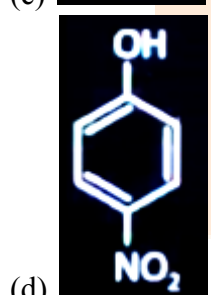
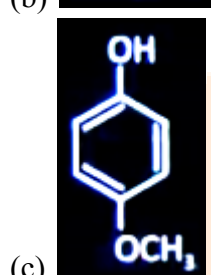
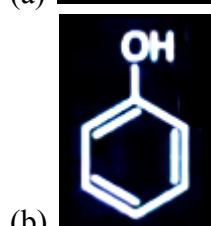
- (b) 368.84 K
- (c) 376.16 K
- (d) 369.84 K

Answer: (a)

Question: Order of limiting molar conductivities of these cations at 298 K is

$H^+$ ,  $Ca^{+2}$ ,  $Na^+$ ,  $K^+$ ,  $Mg^{+2}$

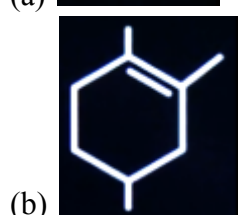
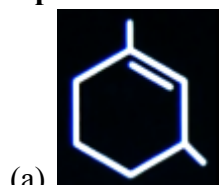
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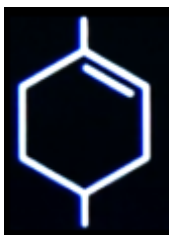


Answer: (a)

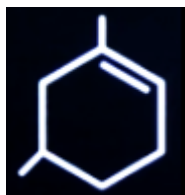
Question: Which of the following will give 3-methyl-6-oxoheptanal as the product of reductive ozonolysis?

Options:





(c)



(d)

Answer: (c)

**Question:** The given reaction is at equilibrium starting with only  $\text{PCl}_5$



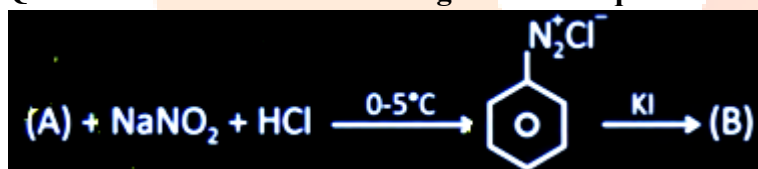
When addition of Xe gas takes place at constant pressure, then which following is correct?

**Options:**

- (a) Conc. of  $\text{PCl}_3$  will become more than  $\text{Cl}_2$
- (b)  $\text{PCl}_3$  and  $\text{Cl}_2$  will have same concentration at new equilibrium
- (c) Conc. of  $\text{Cl}_2$  will become more than  $\text{PCl}_3$
- (d)  $\text{PCl}_3$  will be 30% and  $\text{Cl}_2$  will be 70% at the new equilibrium

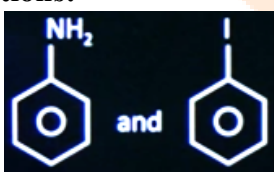
Answer: (b)

**Question:** Observe the following reaction sequence.

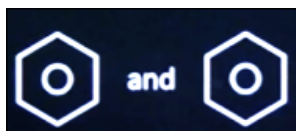


Which of the following options has correct structure (A) and (B) respectively

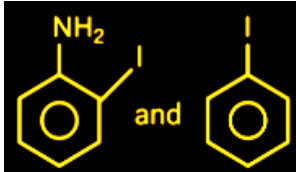
**Options:**



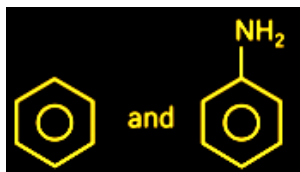
(a)



(b)



(c)



(d)

Answer: (a)

**Question: Consider the following statements****Statement-I: N-N has less bond strength than P-P****Statement-II: All group-15 elements in +3 oxidation state undergo disproportionate in the light of above statements, choose the correct option.****Options:**

- (a) Statement-I and statement-II both are correct
- (b) Statement-I and Statement-II both are incorrect
- (c) Statement-I is correct statement-II is incorrect
- (d) Statement-I is incorrect statement-II is correct

Answer: (c)

**Question: Which of the following property shows irregular trend in group 16?****Options:**

- (a) Electronegativity
- (b) Atomic radius
- (c) Electron affinity
- (d) Ionisation enthalpy

Answer: (c)

**Question: Which of the following statement(s) is/are incorrect****I. NO<sub>2</sub> dimerises easily****II. NF<sub>5</sub> does not exist but PF<sub>5</sub> exists****III. The oxides N<sub>2</sub>O<sub>5</sub> and P<sub>2</sub>O<sub>5</sub> are purely acidic but As<sub>2</sub>O<sub>5</sub> and Sn<sub>2</sub>O<sub>5</sub> are basic****IV. Nitrogen cannot form dπ-pπ bond as the heavier elements can****Options:**

- (a) Only I, II and IV
- (b) Only III
- (c) Only III and IV
- (d) Only I and II

Answer: (b)

**Question: Consider the following complex ions****(a) [Co(NH<sub>3</sub>)<sub>6</sub>]<sup>3+</sup>                      (b) [Co(NH<sub>3</sub>)<sub>5</sub>Cl]<sup>2+</sup>****(c) [Co(NH<sub>3</sub>)<sub>5</sub>(H<sub>2</sub>O)]<sup>3+</sup>              (d) [Co(CN)<sub>6</sub>]<sup>3-</sup>****Choose the correct order of wavelength absorbed by complex ions****Options:**

- (a) a < b < c < d
- (b) b > c > a > d
- (c) b > a > c > d
- (d) d > c > b > a

Answer: (b)

**Question:** Arrange the following metal ions in the decreasing order of their molar conductivity in aqueous solution.

$\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Na}^+$ ,  $\text{K}^+$

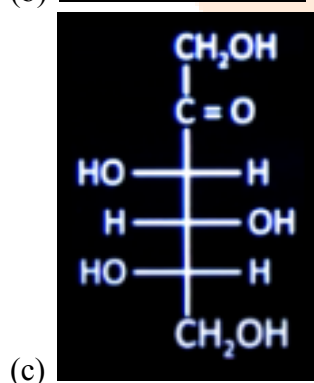
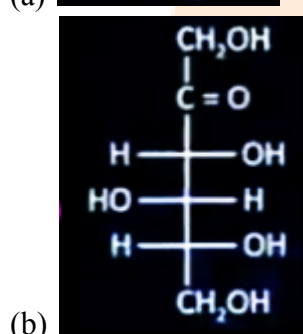
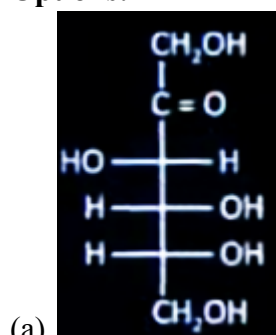
**Options:**

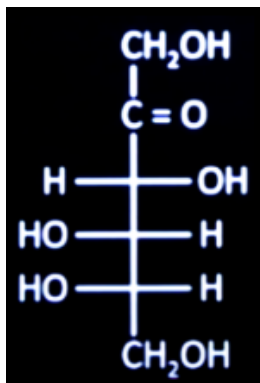
- (a)  $\text{Na}^+ > \text{K}^+ > \text{Ca}^{2+} > \text{Mg}^{2+}$
- (b)  $\text{Mg}^{2+} > \text{Ca}^{2+} > \text{Na}^+ > \text{K}^+$
- (c)  $\text{Ca}^{2+} > \text{Mg}^{2+} > \text{K}^+ > \text{Na}^+$
- (d)  $\text{Mg}^{2+} > \text{Ca}^{2+} > \text{K}^+ > \text{Na}^+$

**Answer:** (c)

**Question:** Which of the following represents the L-form of fructose?

**Options:**





(d)

Answer: (d)

**Question:** Which of the following is/are correct?

- $\text{CH}_3\text{CH}_2\text{CH}_2\text{-COCH}_3$  and  $\text{CH}_3\text{-CH}_2\text{-COCH}_2\text{CH}_3$  metamers
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$  and  $\text{CH}_3\text{CH}_2\text{CH}_2\text{-CH(OH)-CH}_3$  position isomers
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{NH}_2$  and  $\text{CH}_3\text{-CH}_2\text{NH-CH}_2\text{CH}_3$  homologues
- $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{CN}$  and  $\text{CH}_3\text{CH}_2\text{CH}_2\text{NC}$  functional isomers

**Options:**

- (a) and (d)
- (a) and (c)
- (b) and (c)
- (b) and (d)

Answer: (a)

**Question:** Correct set of four Quantum numbers for last electron of  $\text{Cr}^{3+}$  ion is:-

**Options:**

- $n = 4, l = 1, m = 0, s = +\frac{1}{2}$
- $n = 4, l = 2, m = 0, s = +\frac{1}{2}$
- $n = 3, l = 2, m = 0, s = +\frac{1}{2}$
- $n = 3, l = 2, m = -1, s = 0$

Answer: (c)

**Question:** Given below are two statements about X-ray spectra of elements:

**Statement-I:** A plot of  $\sqrt{\nu}$  ( $\nu$  = frequency of X-rays emitted) vs atomic mass is a straight line

**Statement-II:** A plot of  $\nu$  ( $\nu$  = frequency of X-rays emitted) vs atomic number is a straight line

In the light of the above statements, choose the correct answer from the options given below:

**Options:**

- Statement-I is true but statement-II is false
- Statement-I is false but statement-II is true
- Both Statement-I and Statement-II are false
- Both Statement-I and Statement-II are true

Answer: (c)

**Question:** How many of the following statements are correct?

- First ionisation energy of Boron is more than Beryllium.

- b. Lithium is strong reducing agent
- c. Electronegativity of carbon is 2.5 (approx.) in  $\text{CCl}_4$
- d. Removal of electron from isolated gaseous atom is endothermic and addition of electron to isolated gaseous atom is generally exothermic

Answer: (3)

Question: 0.5 g of an organic compound gives 1.46 g  $\text{CO}_2$  and 0.9 g  $\text{H}_2\text{O}$ . What is the % of carbon in organic sample.

Options:

Answer: (80)

Question: In two first order reactions initial concentration of  $[A]_0 = 8[B]_0$ . Find the time after which concentration of A and B become equal. Given that  $(t_{1/2})_A = 20$  min and  $(t_{1/2})_B = 80$  min.

Options:

Answer: (80)

