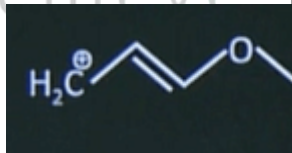
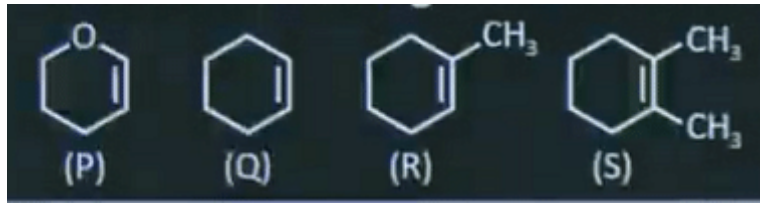


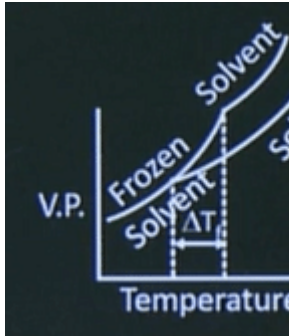
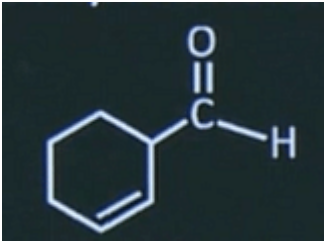
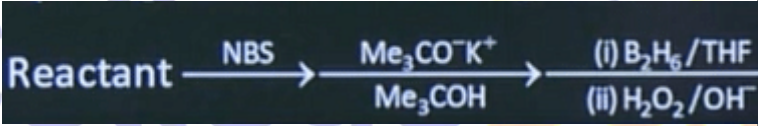
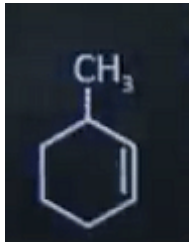
JEE MAIN 24 JANUARY 2025 SHIFT 1

CHEMISTRY QUESTION PAPER WITH ANSWER KEY

Q.No.	Questions	Answers
1	Which of the following is the strongest oxidising agent?	Ce^{4+}
2	The difference in melting point and boiling point of oxygen and sulphur can be explained by	Atomicity
3	Ribose present in DNA is (A) It is a pentose sugar (B) Present in pyranose form (C) α anomeric carbon is present (D) Present in D configuration (E) It is reducing sugar in free form Choose the correct statements.	(A), (D) & (E) only
4	If the K_{sp} of $\text{Cr}(\text{OH})_3$ is $1.6 \times 10^{-30} \text{ M}^4$. The molar solubility of salt in water is 1.56×10^{-x} , then value of x is	8
5	Find the most stable carbocation among the following carbocations.	
6	Which of the following is most reactive towards nucleophilic addition reaction?	Para-nitro benzaldehyde
7	In H_2O , NH_3 and CH_4 (A) All central atoms are sp^3 hybridised (B) Order of dipole moment is $\text{CH}_4 < \text{NH}_3 < \text{H}_2\text{O}$ (C) NH_3 in H_2O is basic in nature, NH_3 and H_2O are Bronsted-Lowry acid and bases respectively	A, B and D only

	(D) Bond angle of H ₂ O, NH ₃ and CH ₄ , respectively are 104.5°, 107° and 109.5°	
8	<p>Which of the following is most reactive towards aq. HBr?</p> 	(P)
9	At the freezing point of water, the process is non-spontaneous, at boiling point it becomes spontaneous (Temperature varies linearly with pressure). The correct option is	$\Delta H = +ve$ $\Delta S = +ve$
10	In the preparation of potassium permanganate from pyrolusite ore (MnO ₂), the fusion of the pyrolusite ore is done with an alkali metal hydroxide like KOH in the presence of air or an oxidising agent like KNO ₃ , which first produces.	K ₂ MnO ₄
11	<p>Statement 1: Duma's method is used for estimation of nitrogen</p> <p>Statement 2: In Duma's method N present in compound is converted to (NH₄)₂SO₄</p>	Statement 1 is correct but Statement 2 is incorrect
12	$Fe^{2+} + Ag^+ \rightarrow Fe^{3+} + Ag; E_{net}^0 = ?$ $Ag^+ + e^- \rightarrow Ag; E^0 = x$ $Fe^{2+} + 2e^- \rightarrow Fe; E^0 = y$ $Fe^{3+} + 3e^- \rightarrow Fe; E^0 = z$ The value of $E_{net}^0 = ?$	$x + 2y - 3z$
13	Consider the given reactions and choose proper solvent.	Statement-I: polar aprotic, Statement-II: polar aprotic

	<p>Statement-I: $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{Cl} \xrightarrow{\text{OH}^-} \text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{OH}$</p> <p>Statement-II: $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{Cl} \xrightarrow{\text{R}_3\text{N}} \text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 - \text{N}(\text{R})_3$</p>	
14	<p>2.32 x 10³ kg of Fe₃O₄ reacts with 2.8 × 10³ kg of CO according to the following reaction:</p> $\text{Fe}_3\text{O}_4 + \text{CO} \rightarrow \text{CO}_2 + \text{Fe}$ <p>If x kg of Fe is formed. Find the value of x?</p>	1680 kg
15	<p>Consider the following reaction</p> $\text{CH}_3 - \text{C} \equiv \text{CH} \xrightarrow[\text{(iii) H}_2/\text{Ni}]{\text{(i) Hg}^{2+}/\text{H}_2\text{SO}_4, \text{(ii) HCN}} \text{P}$	$\begin{array}{c} \text{OH} \\ \\ \text{CH}_3 - \text{C} - \text{CH}_2 - \\ \\ \text{CH}_3 \end{array}$
16	<p>When x g of Benzoic acid reacts with NaHCO₃, 11.2 L of CO₂ is released at 273 K and 1 atm pressure, calculate mass of benzoic acid in gram?</p>	61 gm
17	<p>How many of the following cation shows characteristic coloured ppt. with K₄[Fe(CN)₆]?</p> <p>Cu²⁺, Ca²⁺, Ba²⁺, Fe³⁺, Zn²⁺, Mg²⁺, Mn²⁺</p>	3
18	<p>Consider the following reaction of a complex compound</p> $\text{CoCl}_3 \cdot 5\text{NH}_3 \xrightarrow{\text{H}_2\text{O}} \text{Total 3 moles of ion}$ <p style="margin-left: 40px;">↓ AgNO₃ soln</p> <p style="margin-left: 40px;">2 moles of AgCl precipitated</p> <p>The formula of complex is</p>	[Co(NH ₃) ₅ Cl] Cl ₂

<p>19</p>	<p>Consider the following plots of vapour pressure of a solution containing non-volatile solute versus temperature in K and choose the correct graph which represents depression in freezing of solvent.</p>	
<p>20</p>	<p>A student synthesised the compound given below</p>  <p>By using one of the following compounds available in the lab and using following reagents:</p> 	
<p>21</p>	<p>Select the incorrect statement about the modern periodic table.</p>	<p>Physical and chemical properties of elements are based on their atomic weight</p>