
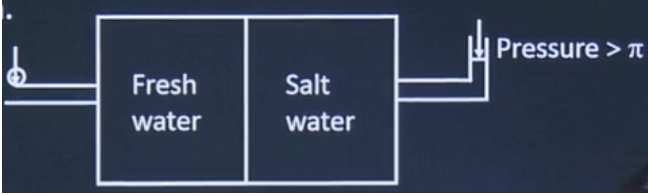
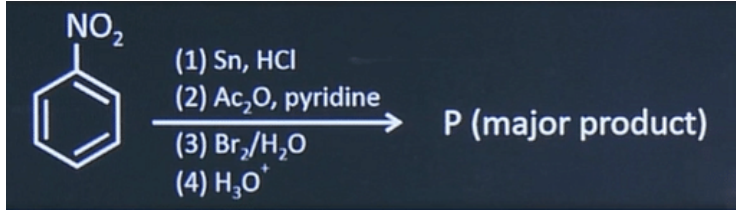
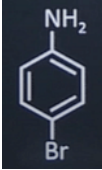
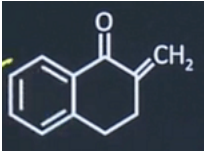


JEE MAIN 4 APRIL 2025 SHIFT 1

CHEMISTRY QUESTION PAPER WITH ANSWER KEY

Q.No.	Question	Answers
1	In the following, the number of paramagnetic molecules are: O_2, N_2, F_2, B_2, Cl_2	2
2	Which of the following is the ratio of 5 th Bohr orbit (r_5) of He^+ & Li^{2+} ?	3/2
3	Which of the following pair of ions have equal number of unpaired electrons?	Mn^{3+} and Fe^{2+}
4	Incorrect order of atomic radius is:	$Al < Ga$
5	In the reaction sequence: <div style="background-color: #1a2b3c; color: white; padding: 10px; margin: 10px 0;"> $\text{C}_6\text{H}_6 + \text{oleum} \longrightarrow (X)$ $(X) \xrightarrow{(i) NaOH, (ii) H^+, \Delta} (Y)$ $(Y) \xrightarrow{\text{Zn dust}} (Z)$ </div> The compound (Z) is:	
6	One mole of an ideal gas expands from 10dm^3 to 20dm^3 through isothermal reversible process. Find ΔU , q & w	$\Delta U = 0, q \neq 0, w \neq 0$
7	Observe the following diagram. <div style="background-color: #1a2b3c; color: white; padding: 10px; margin: 10px 0;">  </div>	Cellulose acetate

	For reverse osmosis, which of the following can be used for porous membrane?	
8		
9	Which of the following is correct option regarding 1s orbital?	It is symmetrical
10	Total number of stereoisomers possible for complexes $[\text{Cr}(\text{Cl}_3)(\text{Py})_3]$ and $[\text{CrCl}_2(\text{C}_2\text{O}_4)_2]$ respectively are	2, 3
11	In lead storage battery during charging oxidation state of lead show changes at anode from x_1 to y_1 at cathode from x_2 to y_2 Find value of x_1, y_1, x_2, y_2	$x_1 = +2, y_1 = 0$ $x_2 = +2, y_2 = +4$
12	Which of the following compound is not a product of intramolecular aldol condensation reaction?	
13	0.01 M HX ($K_a = 4 \times 10^{-10}$) is diluted till the solution has pH = 6. If the new concentration is $x \times 10^{-4}$ M, then find x.	25
14	Consider the reaction $A+B \rightarrow \text{Product}$ $R = k[A]^m[B]^n$ When conc. of A & B taken are A_1 & B_1 respectively, then rate of reaction is R_1 . When conc. of A & B taken are $2A_1$ & $B_1/2$ then rate of reaction is R_2 . Find R_2/R_1 ?	2^{m-n}

15	The complex ion having crystal field stabilization energy is zero and value of spin only magnetic moment is 5.92 BM.	$[\text{Mn}(\text{SCN})_6]^{4-}$
16	<p>Statement I: (A) $\text{C}_2\text{H}_5 - \overset{2}{\text{C}}\text{H} = \overset{1}{\text{C}}\text{H} - \overset{1}{\text{C}}\text{HO}$ has higher dipole moment than (B) $\text{C}_2\text{H}_5 - \overset{2}{\text{C}}\text{H}_2 - \overset{1}{\text{C}}\text{HO}$.</p> <p>Statement II: C1 – C2 bond length in (A) is longer than (B)</p> <p>In the light of above statements, choose the correct option:</p>	Statement-I is correct but Statement-II is incorrect
17	<p>In following sequence of reaction. A is converted to D.</p> $\text{C}_3\text{H}_6\text{O} \xrightarrow{\text{H}_2/\text{Pd}} \text{B} \xrightarrow{\text{HBr}} \text{C} \xrightarrow{\text{Mg/Ether}} \text{D}$ <p>D is treated with A followed by hydrolysis to give 2,3-dimethyl-butan-2-ol. Then identify A, B, C.</p>	<p>A = CH_3COCH_3, B = $\text{CH}_3 - \text{CH}(\text{OH})\text{C}_2\text{H}_5$, C = $\text{CH}_3 - \text{CH}(\text{Br})\text{C}_2\text{H}_5$</p>
18	The activation energy of forward reaction and backward reaction is 100 kJ/mole and 180 kJ/mole respectively. Find the correct statement if catalyst is added under same condition of temperature.	Catalyst does not change ΔG of reaction
19	KMnO_4 oxidises others in acidic medium, Difference between two oxidation states of Mn is x. Neutral FeCl_3 reacts with oxalate to form a complex compound having y-d-electrons. Find x + y.	10
20	In Duma's method for estimation of N, 0.5 g of an organic compound gave 150 mL of N_2 collected at 300 K and 900 mmHg pressure (Aq tension is 15 mm Hg). Find % of N.	40
21	<p>Given below is a sample of DNA strand 5' GGCAATGCTACAG 3'</p> <p>Find the number of hydrogen bonds present in this DNA strand.</p>	33

22	A sample of 150 kg wheat contains Fe-metal. Find mass of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ in g. so that sample contains 12 ppm Fe-metal. (Atomic mass of Fe = 55.85 g/mol)	9
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