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Class 11



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A COLLECTION OF
COMPULSORY QUESTIONS

SUBJECT:

CHEMISTRY

MR. SS PRITHVI

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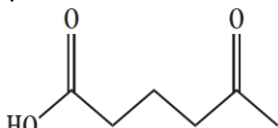
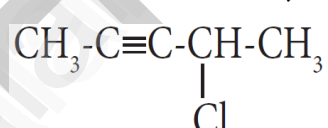
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THE COMPULSORY QUESTIONS ARE EXTRACTED

FROM SEVERAL (ALMOST ALL) QUESTION PAPERS OF 11TH STD [NEW SYLLABUS QUESTION PAPERS]

FIRST MID TERM COMPULSORIES

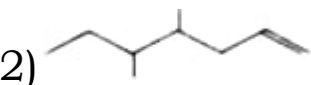
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1	Calculate the molecular mass of glucose.
2	Calculate the no. of moles in 9g of ethane.
3	Give the IUPAC name. 1)  2) 
4	What is inversion temperature ?
5	Give the values of critical constants by using van der Waals constants.
6	An unknown gas diffuses at a rate of 0.5 time that of nitrogen at the same temperature and pressure. Calculate the molar mass of the unknown gas. [repeated]
7	Distinguish between diffusion and effusion.
8	What are the four variables that are used to describe the gaseous state ?
9	Calculate the covalent radius of hydrogen using the experimental dH-Cl value is 1.28 Å and the covalent radius of chlorine is 0.99 Å. In pauling scale the electronegativity of chlorine and hydrogen are 3 and 2.1 respectively.
10	By using paulings method calculate the ionic radii of K ⁺ and Cl ⁻ ions in the potassium chloride crystal. Given that dK ⁺ -Cl ⁻ = 3.14 Å
11	What is the empirical formula of the following ? i) Fructose (C ₆ H ₁₂ O ₆) found in honey ii) Caffeine (C ₈ H ₁₀ N ₄ O ₂) a

	substance found in tea and coffee. [repeated]
12	For each of the following, give the sub level designation, the allowable m values and the number of orbitals i) $n = 4, l = 2$, ii) $n = 5, l = 3$ iii) $n = 7, l = 0$
13	Define Hess's law of constant heat summation?
14	Give the structure for the following compounds: (a) tertiary butyl iodide (b) 2, 2-dimethyl-1-chloropropane
15	Describe the reactions involved in the detection of nitrogen in an organic compound by Lassaigne method.
16	How many radial nodes for 2s, 4p, 5d and 4f orbitals exhibit? How many angular nodes?
17	Define orbital? what are the n and l values for $3p_x$ and $4d_{x^2-y^2}$ electron?
18	Find out the equivalent mass of H_2SO_4 .
19	State the zeroth law of thermodynamics?
20	Give the IUPAC name. <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;"> $\begin{array}{c} \text{CH}_3 \quad \text{CH}_3 \\ \quad \\ \text{CH}_3 - \text{C} = \text{CH} - \text{CH} - \text{CH}_3 \end{array}$ <p>1)</p> $\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CH} = \text{CH}_2 \\ \\ \text{COOH} \end{array}$ </div> <div style="text-align: center;"> $\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{C} - \text{OH} \\ \\ \text{CH}_3 \end{array}$ <p>2)</p> </div> <div style="text-align: center;"> <p>3)</p> </div> </div>

QUARTERLY COMPULSORIES

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1	Calcium Hydroxide cannot be used to remove permanent hardness of water. why?
2	Calculate the amount of water produced by the combustion of 32 g of methane.
3	Calculate the no of moles of Ethane required to produce 44g of $\text{CO}_{2(g)}$ after combustion.
4	A gas contained in a cylinder fitted with a frictionless piston expands against a constant external pressure of 1 atm from a volume of 5 litres to a volume of 10 litres. In doing so it absorbs 400 J of thermal energy from its surroundings. Determine the change in internal energy of system.
5	State Le Chatlier's principle.
6	What are electrophiles and nucleophiles ? give examples.
7	Give the electronic configuration of Fe and Cr^{3+} .
8	<p>Give the IUPAC name.</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>1)</p> $\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{C} - \text{CH}_3 \\ \\ \text{OH} \end{array}$ </div> <div style="text-align: center;"> <p>2)</p>  </div> <div style="text-align: center;"> <p>3)</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start; margin-top: 10px;"> <div style="text-align: center;"> <p>1)</p> $\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CHO} \\ \\ \text{OH} \end{array}$ </div> </div>
9	Give one example for β elimination reaction.
10	Calculate the molar mass of the following compounds. i) Acetone [CH_3COCH_3] ii) Boric acid [H_3BO_3]
11	Explain intensive properties with two examples.
12	Give the IUPAC names of the following compounds.

	1) $\text{CH}_3\text{-O-CH}_3$ 2) $\text{CH}_2 = \text{CH-CH=CH}_2$
13	Calculate the empirical and molecular formula of a compound containing 76.6% carbon, 6.38 % hydrogen and rest oxygen its vapour density is 47.
14	Calculate the oxidation no. of carbon in the following i) CO_3^{2-} ii) CH_4
15	How many orbitals are possible for $n = 2$ and $n = 4$?
16	Complete the following reactions. i) $\text{CH}_3\text{Br} + \text{KOH} \rightarrow ?$ ii) $\text{CH}_3\text{OCH}_3 + \text{HI} \rightarrow ?$
17	Write k_p and k_c for the following and give its relation. $\text{PCl}_5(\text{g}) \rightleftharpoons \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$
18	How will you convert ethyl chloride into n-butane ?
19	0.284 g of an organic substance gave 0.287 g AgCl in a carius method for the estimation of halogen. Find the Percentage of Cl in the compound.
20	Give the actual electronic configuration of chromium and copper.
21	Give the structure for the following compounds: i) 3-ethyl, 2-methyl, 1-hexene ii) 2-chlorobut-3-ene
22	Consider the following equilibrium reactions and relate their equilibrium constants i) $\text{N}_2 + \text{O}_2 \rightleftharpoons 2\text{NO}$; K_1 ii) $2\text{NO} + \text{O}_2 \rightleftharpoons 2\text{NO}_2$; K_2 iii) $\text{N}_2 + 2\text{O}_2 \rightleftharpoons 2\text{NO}_2$; K_3
23	What is the de-Broglie wavelength of a 160g Cricket ball travelling at 140 km hr^{-1} .
24	Write the K_p and K_c for the following reaction: $\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$
25	What is Syn gas? How Is It prepared?
26	Inside a certain automobile engine, the volume of air in a cylinder is 0.375 dm^3 , when the pressure is 1.05 atm . When the gas is compressed to a volume of 0.125 dm^3 at the same temperature, what is the pressure of the compressed air? {evaluate yourself lesson 6}
27	Identify the possible isomerism exhibited by $\text{C}_3\text{H}_8\text{O}$ with examples.

28	How much volume of chlorine is required to form 11.2 L of HCl at 273 K and 1 atm pressure?
29	If an automobile engine burns petrol at a temperature of 816°C and if the surrounding temperature is 21° C calculate its maximum possible efficiency.
30	Give the names of geometrical isomers. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\begin{array}{c} \text{H} & & \text{H} \\ & \diagdown & / \\ & \text{C} = \text{C} \\ & / & \diagdown \\ \text{H}_3\text{C} & & \text{CH}_3 \end{array}$ <p>1)</p> </div> <div style="text-align: center;"> $\begin{array}{c} \text{H} & & \text{CH}_3 \\ & \diagdown & / \\ & \text{C} = \text{C} \\ & / & \diagdown \\ \text{H}_3\text{C} & & \text{H} \end{array}$ <p>2)</p> </div> </div>
31	Give the IUPAC names of the following compound. (i) $(\text{CH}_3)_2\text{CH}-\text{CH}_2-\text{CH}(\text{CH}_3)-\text{CH}(\text{CH}_3)_2$
32	The equilibrium concentrations of NH_3 , N_2 and H_2 are $1.8 \times 10^{-2} \text{ M}$, $1.2 \times 10^{-2} \text{ M}$ and $3 \times 10^{-2} \text{ M}$ respectively. Calculate the equilibrium constant for the formation of NH_3 from N_2 and H_2 . [Hint: $\text{M} = \text{mol lit}^{-1}$]
33	Write the K_p and K_c for the following reaction: $2\text{SO}_{2(g)} + \text{O}_{2(g)} \rightleftharpoons 2\text{SO}_{3(g)}$
34	Identify the state and path functions out of the following. a) entropy b) heat c) work d) free energy
35	Give examples for the following types of organic reactions (i) β - elimination (ii) electrophilic substitution.
36	Calculate ΔG for the following reactions: 1) $\text{H}_2 (\text{g}) + \text{I}_2 (\text{g}) \rightleftharpoons 2\text{HI} (\text{g})$ 2) $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$ 3) $\text{CaCO}_3 (\text{s}) \rightleftharpoons \text{CaO} (\text{s}) + \text{CO}_2 (\text{g})$

SECOND MID TERM - COMPULSORIES

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1	Calculate the molecular mass of glycerine if its solution containing 10gm of glycerine per litre is Isotonic with 2% of glucose.
2	Give the preparation of Toluene by: 1) Friedel craft reaction 2) Wurtz - Fittig reaction
3	The depression in freezing point is 0.24K obtained by dissolving 1g NaCl in 200g water. Calculate van't-Hoff factor. The molal depression constant is 1.86 K Kg mol ⁻¹
4	Draw the structural Formula: 4,5- diethyl - 3,4,5 trimethyl octane.
5	0.24 g of a gas dissolves in 1 L of water at 1.5 atm pressure. Calculate the amount of dissolved gas when the pressure is raised to 6.0 atm at constant temperature. [repeated]
6	What happens when ethylene is passed through cold dilute alkaline potassium permanganate.
7	A 5.845 g of sodium chloride is dissolved in water and the solution was made up to 500 mL using a standard flask. Find the concentration in molarity.
8	Define co-ordinate covalent bond. Give example.
9	The observed depression in freezing point of water for a particular solution is 0.0930C. Calculate the concentration of the solution in molality. Given that molal depression constant for water is 1.86 K Kg mol ⁻¹
10	Calculate the molality of a solution containing 7.5 g of glycine (NH ₂ -CH ₂ -COOH) dissolved in 500 g of water.
11	Define the following : i) Bond order i) Hybridisation.
12	Define Henry's law.
13	Define 'osmosis' and 'isotonic solutions'.
14	Write any four possible isomer of C ₆ H ₁₄ .
15	In the dissociation of HI 40% of HI is dissociated at equilibrium

	at a certain temperature. Calculate its K _p value.
16	Define Raoult's law.
17	What is the effect of added inert gas on the reaction at equilibrium at constant volume ?
18	Draw the structural Formula: i) 2-Carbamoyl cyclo butane -1 – carboxylic acid. ii) 2 – methyl propan – 2 - ol
19	The depression in freezing point is 0.24K obtained by dissolving 1g NaCl in 200g water. Calculate van't-Hoff factor. The molal depression constant is 1.86 K Kg mol ⁻¹
20	Write the increasing order of the acidic nature of chloroacetic acid, dichloroacetic acid, acetic acid and trichloroacetic acid. Give reason.
21	Give the systematic names for the following (i) milk of magnesia (ii) lye (iii) lime (iv) Caustic potash (v) washing soda (vi) soda ash (v) trona
22	A Formula for compound A is C ₂ H ₄ . It react with O ₂ to give compound B. B react with Zn/H ₂ O to give compound C. find A,B and C and give the equation.
23	Write balanced chemical equation for the following processes i)heating calcium carbonate. ii)lithium metal with nitrogen gas.
24	What is aromatization ?
25	i)2-methyl-1-propene ii)3-methyl-1-butyne
26	Complete the following : 1) $\text{CH}_2 = \text{CH}_2 \xrightarrow{\text{I}_2}$ 2) $\text{CH} \equiv \text{CH} \xrightarrow[873 \text{ K}]{\text{Red hot iron tube}}$
27	7.5g of glycine is dissolved in 500g of water. Calculate its molality.
28	Complete the following : 1) 2 – butyne $\xrightarrow{\text{Lindlar Catalyst}}$ 2) $\text{CaC}_2 \xrightarrow{\text{H}_2\text{O}}$

29	Draw the lewis structures for: 1) SO_4^{2-} 2) O_3
30	An organic compound (A) with molecular formula $\text{C}_2\text{H}_5\text{Cl}$ reacts with KOH gives compounds (B) and with alcoholic KOH gives compound (C). Identify (A), (B), and (C)
31	How will you distinguish 1-butyne and 2-butyne ?

HALF YEARLY- COMPULSORIES

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1	Write the combustion of n-hexane with equation.
2	Write the K _p and K _c for the following reactions: Decomposition of ammonia, formation of NO.
3	Draw the lewis structure for <u>nitric</u> acid.
4	Draw the lewis structure for <u>nitrous</u> acid.
5	Calculate the Effective nuclear charge for 4s electron in potassium.
6	Write k _p and k _c for decomposition of calcium carbonate.
7	An alkaline earth metal A belongs to 3 rd period reacts with Oxygen and nitrogen to form compound B and C respectively. Find A,B and C and write the equations.
8	Why is it necessary to avoid even the traces of moisture during the use of grignard reagent ?
9	Calculate the formal charge of carbon atom in carbondioxide structure. $\text{:O}=\text{C}-\ddot{\text{O}}\text{:}$
10	Write n, l values for the subshells: 3d, 7s, 5f and 2p.
11	Give the IUPAC name for the following: i) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CHO}$ ii) $\text{CH}_3 - \text{CH}_2 - \text{CH} - \text{CH}_3$ iii) $\text{CH}_2 - \text{CH} - \text{CH} - \text{CH}_2$
12	2g of a non electrolyte solute dissolved in 75 g of benzene lowered the freezing point of benzene by 0.20 K. The freezing point depression constant of benzene is 5.12 K Kg mol ⁻¹ . Find the molar mass of the solute. {evaluate yourself}
13	0.30 g of a substance gives 0.88 g of carbon dioxide and 0.54 g of water calculate the percentage of carbon and hydrogen in it.
14	Linear form of carbondioxide molecule has two polar bonds. yet the molecule has Zero dipole moment why?
15	Write the function group for the following: 1)aldehyde 2)ketone

	3)carboxylic acid 4)ether
16	If an automobile engine burns petrol at a temperature of 816degree C and if the surrounding temperature is 21degree C, calculate its maximum possible efficiency.
17	Write lucas reagent equation.
18	A 60 mL of paracetamol paediatric oral suspension contains 3g of paracetamol. The mass percentage of paracetamol is ?
19	What will happen if the green house gases were totally missing from the earth's atmosphere ?
20	Write simple test to distinguish propane and propene.

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REVISION 1&2

1	Calculate the molality of the solution containing 45 g of glucose dissolved in 2 kg of water.
2	<p>Calculate the lattice energy of CaCl_2 from the given data</p> $\text{Ca}(s) + \text{Cl}_2(g) \rightarrow \text{CaCl}_2(s) \Delta H_f^\circ = -795 \text{ kJ mol}^{-1}$ <p>Atomisation : $\text{Ca}(s) \rightarrow \text{Ca}(g) \quad \Delta H_1^\circ = +121 \text{ kJ mol}^{-1}$</p> <p>Ionisation : $\text{Ca}(g) \rightarrow \text{Ca}^{2+}(g) + 2e^- \quad \Delta H_2^\circ = +2422 \text{ kJ mol}^{-1}$</p> <p>Dissociation : $\text{Cl}_2(g) \rightarrow 2\text{Cl}(g) \quad \Delta H_3^\circ = +242.8 \text{ kJ mol}^{-1}$</p> <p>Electron affinity : $\text{Cl}(g) + e^- \rightarrow \text{Cl}^-(g) \quad \Delta H_4^\circ = -355 \text{ kJ mol}^{-1}$</p>
3	In degenerate orbitals, why do the completely filled and half filled configurations are more stable than the partially filled configuration?
4	<p>Give the structural formula for the following compounds:</p> <p>a) m-dinitro benzene b) p-dichloro benzene c) 1,2,5-Tri-methyl benzene</p>
5	Draw the Lewis Structures for the following species: (i) HNO_3 (ii) O
6	<p>Identify the compounds X, Y and Z in the following reaction.</p> $\text{C}_2\text{H}_6\text{O} \xrightarrow[623\text{K}]{\text{Al}_2\text{O}_3} \text{X} \xrightarrow{\text{O}_3} \text{Y} \xrightarrow[\text{H}_2\text{O}]{\text{Zn}} \text{Z}$
7	A litre of sea water weighing about 1.05kg contains 5mg of dissolved oxygen. Express the concentration of dissolved oxygen in ppm.

8	Give an example for each of the following type of organic compounds. i) Benzenoid Aromatic compound ii) Aromatic Heterocyclic compound, iii) Unsaturated open chain compound
9	Which bond is stronger σ (or) π bond? why?
10	A sample of 12M Conc HCl has a density of 1.2 gL^{-1} calculate molality?
11	Why chlorination of methane is not possible in dark.
12	Justify the position of Hydrogen in the periodic table.
13	The equilibrium constant of a reaction is 10. What will be the sign of ΔG ? Will this reaction be spontaneous?
14	0.456 g of a metal gives 0.606 g of its Chloride. Calculate the equivalent mass of the metal.
15	Find A and B: $\text{R} - \text{C} \equiv \text{N} \xrightarrow{\text{H}_2\text{O}/\text{H}^+} \text{A} \xrightarrow{\text{H}_2\text{O}/\text{H}^+} \text{B}$
16	Explain SN^1 mechanism.
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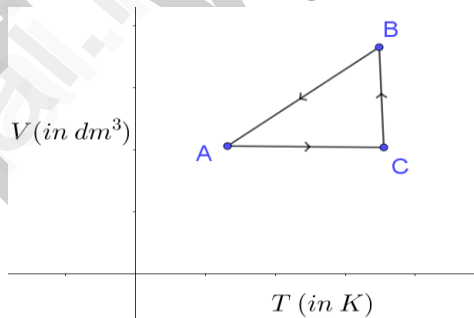
17	How will you prepare chloropicrin and mention its use.
18	How is Alkane prepared from Grignard reagent?
19	Identify the A, B, C compound in following reaction. $\text{CH}_3 - \text{CH}_2 - \text{Br} \xrightarrow{\text{alc.KOH}} [\text{A}] \xrightarrow{\text{Cl}_2 / \text{CCl}_4} [\text{B}]$
20	How is Lindane prepared? and give its use.
21	Find A and B $\text{CH}_3 - \text{CH} = \text{CH}_2 \xrightarrow{\text{HBr}} \overset{\text{A}}{(\text{major product})} + \overset{\text{B}}{(\text{minor product})}$
22	Which is considered to be earth's protective umbrella? Why?
23	How will you convert ethyl chloride into i) Ethane ii) n - butane.
24	What is called functional isomers? Give an example.
25	Write the possible isomers in $\text{C}_2\text{H}_6\text{O}$
26	Give the IUPAC name for the following compounds. (i) $\begin{array}{c} \text{CH}_3 \\ \\ \text{CH}_3 - \text{C} - \text{CH}_3 \\ \\ \text{Cl} \end{array}$ (ii) $\text{CH}_2 = \text{CH} - \text{CH}_2\text{Br}$ (iii) $\begin{array}{ccccccc} & & & & & & \\ & & & & & & \\ \text{CH}_2 & - & \text{CH} & - & \text{CH} & - & \text{CH}_3 \\ & & & & & & \\ \text{Br} & & \text{Cl} & & \text{Cl} & & \end{array}$
27	What are Freons?

28	Explain co-ordinate covalent bond.
29	How many moles of ethane is required to produce 44 g of $\text{CO}_{2(g)}$ after combustion.
30	State Gay-Lussac's law.
31	Explain the mechanism of E_2 reaction.
32	Define : Smog.
33	The mass of one atom of an element is $6.645 \times 10^{-23}\text{g}$. Calculate no. of moles present in 0.320 kg of the element.
34	Give the conditions for a spontaneous process.
35	Starting from CH_3MgI , how will you prepare i) acetic acid ii) acetone
36	Two isomers (A) and (B) have the same molecular formula $\text{C}_2\text{H}_4\text{Cl}_2$. Compound (A) reacts with aqueous KOH to give (C) of M.F $\text{C}_2\text{H}_4\text{O}$. Compound (B) reacts with aqueous KOH to give (D) of M.F. $\text{C}_2\text{H}_6\text{O}_2$. Identify (A), (B), (C) and D.
37	Why do astronauts have to wear protective suits when they are on the surface of moon?

38	What is called diagonal relationship? Explain by using Be and Al.
39	Calculate the amount of heat necessary to raise 180g of water from 25°C to 100°C. Molar heat capacity of water is $75.3 \text{ J mol}^{-1}\text{K}^{-1}$.
40	Write the K_p and K_c for the following reactions. i) $2\text{SO}_{2(g)} + \text{O}_{2(g)} \rightleftharpoons 2\text{SO}_{3(g)}$ ii) $2\text{CO}_{(g)} \rightleftharpoons \text{CO}_{2(g)} + \text{C}_{(s)}$
41	Argon is an inert gas used in light bulbs to retard the vaporization of the tungsten filament. A certain light bulb containing argon at 1.2 atm and 18°C is heated to 85°C at constant volume. Calculate its final pressure in atm.
42	Why is the freezing point depression of 0.1 M NaCl solution nearly twice that of 0.1 M glucose solution?
43	For the reaction at 298 K $2\text{A} + \text{B} \rightarrow \text{C}$, $\Delta H = 400 \text{ kJ mol}^{-1}$, $\Delta S = 0.2 \text{ JK}^{-1} \text{ mol}^{-1}$. Determine the temperature at which the reaction would be spontaneous.
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PUBLIC EXAM COMPULSORIES

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1	Write the balanced equation for each of the following chemical reactions. (i) Heating calcium carbonate (ii) Reaction of metallic Lithium with Nitrogen gas
2	Give any three similarities between beryllium and aluminum.
3	One mole of an ideal gas is put through a series of changes as shown below in a cyclic process. Name the process A B, B C and C A 
4	At identical temperature and pressure, the rate of diffusion of hydrogen gas is $3\sqrt{3}$ times that of a hydrocarbon having molecular formula C_nH_{2n-2} . what is the Value of n .
5	Give IUPAC names for the atomic numbers. 102, 108, 110.
6	Which is the suitable method for detection of nitrogen present in food in food and fertilizers ?
7	Give the structural formula. 1) m-dinitrobenze 2) p-dichlorobenzene 3) 1,3,5 Tri-methyl Benzene
8	The bond length between all the four carbon atoms is same in 1,3-butadiene.Explain.
9	Calculate the orbital angular momentum for d and f orbital.
10	In degenerate orbitals, why do the completely filled and half filled configurations are more stable than the partially filled configuration ?
11	Explain geometrical isomerism in 2-butene.

12	<p>Complete the following:</p> <p>(a) $\text{CH}_3 - \text{CH} = \text{CH}_2 + \text{H}_2 \xrightarrow{\text{Pt}}$</p> <p>(b) $\text{CH}_3\text{MgCl} + \text{H}_2\text{O} \longrightarrow$</p>
13	Inside a certain automobile engine, the volume of air in a cylinder is 0.375 dm ³ , when the pressure is 1.05 atm. When the gas is compressed to a volume of 0.125 dm ³ at the same temperature, what is the pressure of the compressed air?
14	Why the trans isomer is more stable than the Cis isomer?
15	State Gay -Lussac's Law.
16	<p>Complete the following:</p> $\text{C}_6\text{H}_5\text{Cl} + 2\text{NH}_3 \xrightarrow[50 \text{ atm}]{250^\circ\text{C}}$ $\text{C}_6\text{H}_5\text{Cl} + 2\text{Na} + \text{Cl} - \text{C}_6\text{H}_5 \xrightarrow[\Delta]{\text{ஈதிர}}$
17	The equilibrium concentrations of NH ₃ , N ₂ and H ₂ are 1.8×10 ⁻² M, 1.2×10 ⁻² M and 3×10 ⁻² M respectively. Calculate the equilibrium constant for the formation of NH ₃ from N ₂ and H ₂ .
18	If an automobile engine burns petrol at a temperature of 1089K and if the surrounding temperature is 294K, calculate its maximum possible efficiency.
19	Give an example for each type of the following compounds. 1)non benzanoid aromatic compound 2)aromatic heterocyclic compound 3)carbocyclic compound
20	Calculate the entropy change during the melting of one mole of ice into water at 0°C and 1 atm pressure. Enthalpy of Fusion of ice is 6008 J mol ⁻¹ .
21	Write the structural formula for the following compounds. (i) m-dinitro benzene (ii) p-dichloro benzene (iii) 1,3,5 trimethyl benzene

22	Complete the following: $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow[430 - 440\text{K}]{\text{Conc. H}_2\text{SO}_4} \text{A} \xrightarrow[\text{Benzoyl Peroxide}]{\text{HBr}} \text{B}$
23	Define: 1)sigma bond 2)pi bond

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ALL THE BEST !!

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