

Qn No	Sub Qns	Answer Key/Value Points	Score	Total
1.	a) b) c)	i / ii / iii / iv CH ₂ O CH CH ₂ O CHCl Law of multiple proportion	1 1 1	
2	a) i) ii) iii) b)	1s ² 2s ² 2p ⁶ 3s ² 3p ⁶ 4s ¹ 3d ⁵ or [Ar] 4s ¹ 3d ⁵ 10 electrons in d subshell 1s or diagram Statement / mathematical expression / significance	1 1 1 2	5
3.	a) b) c)	Definition size of atom / effective nuclear charge / electronic configuration oxidation state = +3 or Covalency = 6	2 2 2	4
4.	a) b)	Trigonal bipyramidal / diagram sp ³ d hybridisation Axial bonds are longer and weaker than equatorial bonds / PCl ₅ is unstable	1 1	

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		repulsion between axial and equatorial bond / $PCl_5 \rightarrow PCl_3 + Cl_2$ or correct explanation c) $CN^- / O_2^- / NO^+ / CN^+$ / definition of bond order / equation of bond order / related explanation	2 1	5
5.	a) i) ii) b) i) ii)	viscosity or related explanation Surface Tension or related explanation velocity possessed by maximum fraction of molecules N_2	2 2 2 2	4
6	a) b)	intensive / extensive / Heat capacity / Entropy / Refractive index / surface tension $\Delta G = \Delta H - T\Delta S$ $\Delta H = \Delta U + \Delta n RT$ $\Delta H = \Delta U + P\Delta V$ correct substitution	2 2 2 2 2	4
7.	a) b) c)	NaCl - neutral NH_4NO_3 - acidic NaCN - basic $NaNO_2$ - basic or correct equation / explanation Blood is a buffer solution Equation Substitution	2 2 2 2 2 2 1 1	5

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8.		skeletal equation with oxidation number Correct answer	2 1	3
9.	a) b)	One method of preparation of H ₂ gas explanation	3 1	4
10.	a) b)	explanation i) NaOH / sodium hydroxide ii) NaHCO ₃ / sodium hydrogencarbonate iii) Ca(OH) ₂ / calcium hydroxide iv) Ca(OH) ₂ / calcium hydroxide Two correct name / formula	2 1 1 1 1 2	4
11.	a) b) c)	formation of NaOH / equation / explanation one use 3-D network structure / strong C-C bond / sp ³ hybridisation / hardest substance / no free electron	2 2 2	4
12.	a) ii) b)	(i) 3-bromo CH ₃ -CH(CH ₃)-CH ₂ -CH(CH ₃)-CH ₂ -CH ₂ -CH(CH ₃)-CH ₃ ii) CH ₃ -CH(Cl)-CH ₂ -CH(CH ₃)-CH ₃ b) CH ₃ CH ₂ ⁻ is more stable / correct explanation	2 2 2	

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	<p>c)</p> <p>a) i) 3 -</p> <p>ii) 4 -</p> <p>b)</p> <p>c)</p>	<p>difference in solubility/principle/ expl...</p> <p>3 - ...</p> <p>4 - ...</p> <p>(CH₃)₃C is more stable/hyperconjugation or +I effect</p> <p>Liquid boils at a lower temp. without decomposition or correct explanation</p>	<p>2</p> <p>2</p> <p>2</p> <p>2</p> <p>2</p>	<p>6</p>
13.	<p>a)</p> <p>b)</p> <p>c) i)</p> <p>ii)</p>	<p>i / ii / iii / iv</p> <p>ethyne passed through red hot iron tube / cyclic polymerisation or equation</p> <p>Friedel Crafts alkylation / methyl benzene / toluene or structure</p> <p>Addition reaction / C₆H₆Cl₆ / BHC / gamma hexene or lindane or structure</p>	<p>1</p> <p>2</p> <p>2</p> <p>2</p>	<p>5</p>
14.	<p>a)</p> <p>b)</p>	<p>one adverse effect of global warming / definition of global warming / green house effect</p> <p>SO₂</p>	<p>3</p> <p>1</p>	<p>3</p>