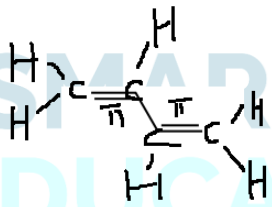
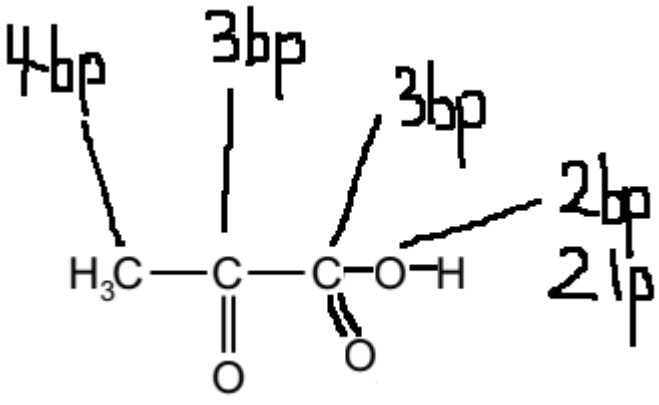
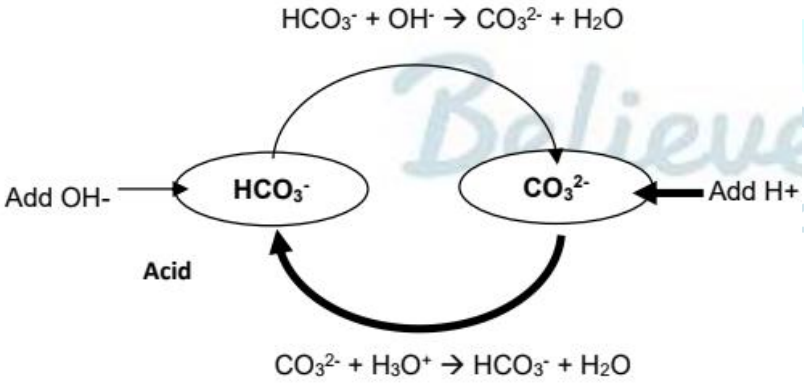
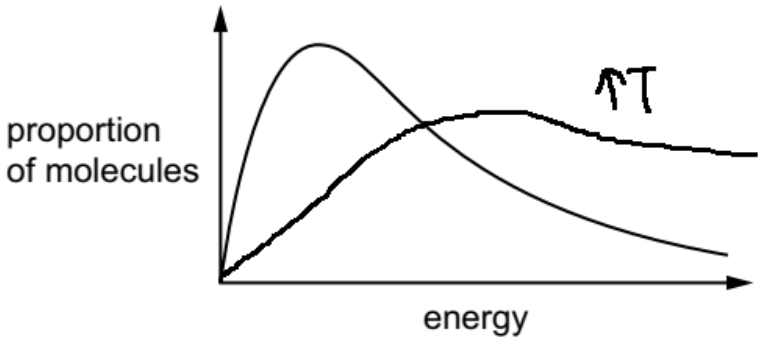
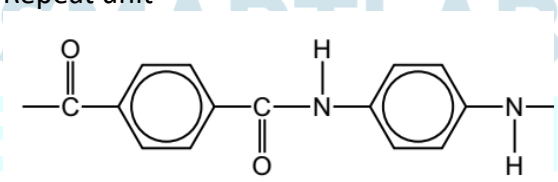
2026 H1 Chem Sample P1 Ans

1.	**Ans: C** Covalent – sharing valence electrons
2.	**Ans: C** Mass = 1.673×10^{-27} x 28 + 1.675×10^{-27} x 34 + 2 x 9.109×10^{-31}
3.	**Ans: A**
4.	**Ans: B** Bond angle is 109° as hydrogen bond is considered as a bond pair
5.	**Ans: B** Oxidation of sulfur is -2 in Sb_2S_3 and +4 in SO_2 Oxidation of chlorine is +7 in $KClO_3$ and -1 in KCl
6.	**Ans: C** Major increase in IE is from 7000 t0 13,200 as electrons are being removed from the inner quantum shell which has lower shielding effect Group number of element is 16
7.	**Ans: D** 
8.	**Ans: B** BE (C-C) < BE (C=C) Longer bond length for weaker bond energy
9.	**Ans: C** All non polar covalent molecules. Larger the number of electrons better the ability to polarize the molecule leading to stronger instantaneous dipole induced dipole attraction forces
10.	**Ans: A** 
11.	**Ans: A** Higher the pressure, closer the molecules to bring about substantial intermolecular forces amongst molecules leading to condensation (gas → liquid)

	Higher pressure is required for molecules that have weaker intermolecular forces like propane which has fewer number of electrons (weaker instantaneous dipole induced dipole) relative to 2-methylpropane and butane. Higher pressure is required for butane which has weaker instantaneous dipole induced dipole as it is more cylindrical with larger molecular area to polarize its molecule relative to 2-methylpropane (which has the same number of electrons as butane)
12.	**Ans: D** $NH_3 + HCl \rightarrow NH_4Cl$ (NH_4^+ & Cl^-) BL BL BL means Bonsted-Lowry Base Acid Not Arrhenius acid or base as reaction does not occur in aqueous solution.
13.	**Ans: D** Weak acid required to produce buffer with strong base: CH_3COOH & CH_3COO^- Amount of Weak acid > Amount of strong base In Option A, all the weak acid CH_3COOH would be neutralised only forming CH_3COO^- (which is not a buffer solution)
14.	**Ans: A** bromocresol-green is blue → pH > 5.5 phenol-red is yellow → pH < 6.8
15.	**Ans: D** Carbon dioxide is acidic releasing H^+ which is neutralised by carbonate 
16.	**Ans: A** Not related to ionisation energy which focus on the ability for the element to lose electrons
17.	**Ans: C** (c) Period 3 metallic: Na 0.186, Na^+ 0.095 Mg 0.160, Mg^{2+} 0.065 Al 0.143, Al^{3+} 0.050 single covalent: Si 0.117, Si^{4+} 0.041 P 0.110, P^{3-} 0.212 S 0.104, S^{2-} 0.184 Cl 0.099, Cl^- 0.181
18.	**Ans: B**

	 Statement 2 is correct as there is higher proportion of molecules that have higher energies Statement 3 is wrong as proportion of molecules for lower energy decreases
19.	**Ans: D** Higher activation energy $\Delta H < 0$
20.	**Ans: C** Catalyst does not change the position of equilibrium, yield or Kc. Catalyst increases the rate constant for the forward and reverse reaction
21.	**Ans: D** At low concentration of acid, rate ∝ [acid] At high concentration of acid, rate $is\ constant$
22.	**Ans: D** $N_2\ (g) + 3H_2\ (g) \Leftrightarrow 2NH_3\ (g)$, $\Delta H = -92kJ/mol$ • Statement 1 is wrong as coating the surface provide a larger surface area to increase the rate of reaction • Statement 3 is wrong as product molecules should weakly attracted to the catalytic surface in order that desorption can take place **$2CO + 2NO \rightarrow 2\ CO_2 + N_2$ (Catalyst:Rh)** $2CO + O_2 \rightarrow 2\ CO_2$ (Catalyst:Pt, Pd) $C_xH_y + (x+y/4)\ O_2 \rightarrow xCO_2 + y/2\ H_2O$ (Catalyst:Pt, Pd)
23.	**Ans: C** $N_2O_4(g) \rightleftharpoons 2NO_2(g)$ Lower pressure favours more gaseous molecules Higher temperature favours endothermic reaction
24.	**Ans: C** $\Delta H^{\ominus} = -88\ kJ\ mol^{-1}$ $ICl(s) + Cl_2(g) \rightarrow ICl_3(s)$ $\frac{1}{2} \times \Delta H^{\ominus} = \frac{+14\ kJ\ mol^{-1}}{2}$ ↑ $\frac{1}{2}I_2(s) + \frac{1}{2}Cl_2(g)$ + $Cl_2(g)$ ↑ ΔH $\Delta H = ½ \times 14 + -88$
25.	**Ans: C**

	$CH_3CH_2SH + 4\frac{1}{2}O_2 \rightarrow 2CO_2 + 3H_2O + SO_2$ −20 −90 +40 +20 Unused/excess Oxygen gas = 100-90 = 10cm^3 CO_2 and SO_2 are both acidic and can be dissolved in alkali Volume of CO_2 and SO_2 = 60cm^3 Total volume of cooled gas = 60+10 = 70 cm^3
26.	**Ans: C** 2 groups of methyl at carbon number 2
27.	**Ans: B** n = 3, 2n+2 = 8 molecule 2, 3 and 4 are short of 2H/X (halogen) so able to form C=C Molecule 2 displays cis-trans: CH*I*=CHCH$_3$ Molecule 3 displays cis-trans: CH*I*=C(*I*)CH$_3$ Molecule 4 displays cis-trans: CH*I*=C(Br)CH$_3$
28.	**Ans: B** Condensation polymer which has an ester linkage that can undergo acid hydrolysis
29.	**Ans: A** Repeat unit 
30.	**Ans: B** Interaction forces like hydrogen bonds, instantaneous dipole-induced dipole attraction forces can be overcome by the heating **Covalent bonds like peptide linkage would be broken during heating. Hydrolysis does not occur due to heating alone, as acid/alkali is required.**