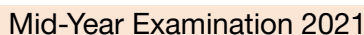




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ANSWERS

	1	2	3	4	5	6	7	8	9	10
	D	B	B	C	C	A	C	D	D	C
	11	12	13	14	15	16	17	18	19	20
	A	C	D	B	D	C	D	B	B	C
	21	22	23	24	25					
	D	D	B	C	C					

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		S atom has 18 electrons $\Rightarrow$ S atom has 18 protons. (X)
3	B	Each single covalent bond contains 1 pair of electrons shared between 1 pair of atoms. To form a single covalent bond, each atom shares 1 of its valence electron. P = Group V element = 5 valence electrons (<i>P shares 3 (eg. PH_3) or 5 (eg. P_4O_{10}) valence electrons to form covalent bonds</i>) From the diagram, each P atom formed 5 covalent bonds by sharing all 5 valence electrons. X forms 3 covalent bonds = shares 3 of its valence electrons = Group III or V element Y forms 1 covalent bond = shares 1 of its valence electrons = Group VII element or hydrogen
4	C	- XY is a salt. Salts are ionic compounds composed of a cation (from metal or NH_4^+) and an anion (from acid). - Ions in XY form a crystal lattice structure that are held in a fixed and regular arrangement. Ionic compounds are not able to conduct electricity in the solid state as the ions are in their fixed positions (lattice structure). Since XY is a binary compound, the ratio of X^+ to Y^- is 1:1.
5	C	For this series of reactions: excess reactant – the acids (CH_3COOH, HCl, H_2SO_4) limiting reactant – Na_2CO_3 All 3 reactions will give the same volume of gas (CO_2) produced. CH_3COOH : Weak acid (partially ionises in solution), monobasic $\Rightarrow$ slowest reaction HCl : Strong acid (completely ionises in solution), monobasic H_2SO_4 : Strong acid (completely ionises in solution), dibasic $\Rightarrow$ fastest reaction
6	A	Properties of simple covalent compounds: - Low melting and boiling points - Does not conduct electricity - Insoluble in water; Soluble in organic solvents
7	C	Mass of calcium = $\frac{40}{56} \times 14.0\text{g} = 12.5\text{ g}$ %Calcium in the bone = $\frac{12.5}{50} \times 100\% = 20\%$
8	D	Hydrocarbons are compounds that contain hydrogen and carbon only. $\text{C}_m\text{H}_n + \text{O}_2 \rightarrow m\text{CO}_2 + (n/2)\text{H}_2\text{O}$ Mole ratio of hydrocarbon : CO_2 1 : m 5 : 30 m = 6
9	D	$\text{H}_2\text{SO}_4 + 2\text{NaOH} \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$ Moles of $\text{H}_2\text{SO}_4 = 1 \times 0.03 = 0.03\text{ mol}$

		Moles of NaOH = 0.06 mol
		Concentration of NaOH = $0.06 \div 0.02 = 3\text{mol/dm}^3$
10	D	Each N atom has 2 inner electrons and 2 outer electrons not involved in bonding.
11	A	
12	C	
13	D	
14	B	
15	D	
16	C	
17	D	
18	B	
19	B	
20	C	
21	D	
22	D	
23	B	
24	C	
25	C	