

KSS / N-Level Prelim / Science (Chemistry) Suggested Answers

Section A

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

Section B

1a	Brass	1
1b	Helium	1
1c	Methane	1
1d	Sodium hydroxide and ammonium nitrate	1
		[Total: 4]
2a	Fractional distillation	1
2b	Nitrogen	1
2ci	Nitrogen oxide(s) / Nitrogen dioxide	1
2cii	Carbon monoxide It is toxic to humans	1 1
		[Total: 5]
3a	Beryllium: 2,2 Magnesium: 2,8,2 Calcium: 2,8,8,2	1
3b	They have the same number of valence/outer electrons.	1
3ci	Correctly drawn ions, with <ul style="list-style-type: none"> • correct use of dots and crosses • correct charges • correct ratio of ions • correct number of electrons [1m lost for each error above]	[2]
3cii	Calcium conducts electricity in all states, but calcium chloride only conducts electricity in the aqueous and molten states.	1
		[Total: 5]
4a	Hydrogen The gas extinguishes a lighted splint with a 'pop' sound.	1 1
4b	The gas produces escapes into the surroundings.	1
4c	Correctly plotted points	1
4d	Correctly plotted curve	1
4e	8 mins	1
4f	Gas syringe	1
4g	Sodium is very reactive and will react explosively with acid.	1
		[Total: 8]

5a	Y, X, Z, W	1
5b	Gas	1
5ci	Diatomic means containing two atoms bonded together in a molecule.	1
5cii	Correctly drawn diagram, with correct number of electrons, correct number of shared electrons.	1 1
5ciii	Group 17 elements are covalent molecules with weak intermolecular forces of attraction, which require little energy to overcome. Hence they have low melting points.	1 1
5d	$\text{Cl}_2 + 2\text{NaI} \rightarrow \text{I}_2 + 2\text{NaCl}$ [1m for correct formula, 1m for balanced equation]	2
		[Total: 8]
6ai	Hydrogen; H_2	1
6aii	Ethene; C_2H_4	1
6b	Reagent: aqueous bromine Observation for Q: reddish-brown aqueous bromine decolourises/turns from reddish-brown to colourless Observation for ethane: aqueous bromine remains reddish brown.	1 1
6c	Mr of nonane = $9 \times 12 + 20 \times 1 = 128$ Mass of nonane = $15 \times 128 = 1,920\text{g}$	1 1
6d	Correct structure of poly(propene)	1
6e	Some steps involved in recycling plastics may produce waste water containing harmful substances. Recycling plastics can be expensive and cost more than disposing plastics in landfills or through incineration. There is cost involved for transporting/sorting/cleaning/hiring manpower for the plastic waste to the processing plant. Many people do not know the proper way of using the recycling bins. Often, the plastic waste contains leftover food which cannot be recycled (and has to be incinerated). Any one of the above or any other plausible answer	1
		[Total: 8]