2024 'N' Level Preliminary Examination Marking Scheme
Sc(Chemistry) 5015/3 & 4
Sec 4 Normal (Academic)

Paper 3

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

Paper 4

Section A

1 (a) K and N — 1

(b) M — 1

(c) No. J contains an unknown dye. — 1

(d) Change the solvent (water) to ethanol. — 1

2 (a) (i)

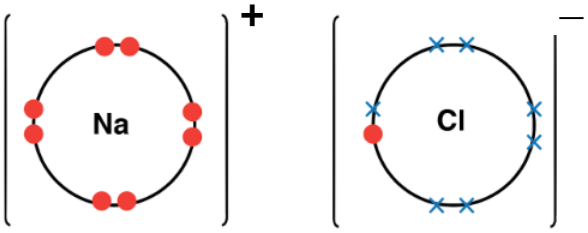
Chlorine	Mass number	Number of protons in nucleus	Number of neutrons in nucleus
^{35}Cl	**35**	17	**18**
^{37}Cl	37	**17**	20

1

(ii) Both are **chlorine atoms** with (same number) **17 protons** but different number of neutrons. **^{35}Cl has 18 neutrons** and **^{37}Cl has 20 neutrons**. — 1

(b)(i) NaCl — 1

(ii)



Correct charge and number of electrons around sodium ion – 1m
Correct charge and number of electrons around chloride ion – 1m

2

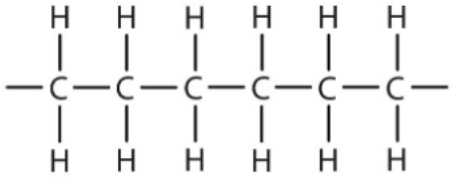
(iii) Ionic Bonding — 1

3 (a)

Test tube	E	F	G	H
Mass of nails after 1 week/g	**4.9**	**4.2**	**4.4**	**4.0**

1

	(b)	In test tube **H**, there is **<u>no oxygen in the boiled water</u>** and the layer of **<u>oil prevents oxygen from the air from entering</u>**.	1
	(c)	There will be **<u>brown rust</u>** on the surface of the nails.	1
	(d)	Paint the nails or coat the nails with zinc, grease, etc.	1
4	**(a)**	Copper(II) oxide / Copper(II) hydroxide / Copper(II) carbonate	1
	(b)	Measuring cylinder	1
	(c)	Step 2: Filtration Step 3: Crystallisation	1 1
	(d)	To obtain a saturated solution/ To prevent thermal decomposition of the crystals	1
	(e) (i)	M_r = 108 + 35.5 = **<u>143.5</u>**	1
	(e) (ii)	No of mols = $\frac{50}{143.5}$ = **<u>0.0348</u>**	1
Section B			
5	**(a)**	Propene	1
	(b) any one	**X** The difference in relative molecular mass of W and X is more than 14(CH_2) The number of hydrogen atoms in X is more than twice the number of carbon atoms. X does not follow the general formula of the other five hydrocarbons	1 1
	(c)	C_nH_{2n}	1
	(d)	Correct rectangle block with M_r = 126	1
	(e)	Carbon dioxide and water.	1
	(f)	<u>Test:</u> Add (Bubble) **aqueous bromine** separately to the saturated and unsaturated hydrocarbons. <u>Results</u>**: Unsaturated** hydrocarbon will decolourise **reddish brown aqueous bromine to colourless solution**. **Aqueous bromine remains as reddish brown in saturated hydrocarbon**s.	1 1
6	**(a) (i)**	Fractional distillation	1
	(ii)	Bitumen It is collected near to the bottle of the column	1 1
	(b) (i)	Cracking / Catalytic cracking	1
	(ii)	C_8H_{18}	1

	(c) (i)		1
	(ii)	Poly(ethene) is **<u>non-biodegradable, it can not be broken down by bacteria or other living organism in the soil.</u>** • Harmful gases may produce when poly(ethene) is burnt • Burying poly(ethene) in landfills can lead to increasing amount of built-up waste. • When thrown into the sea can harm marine animals	1 1 Any one