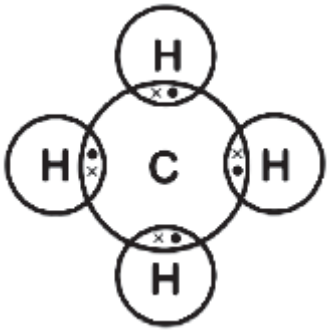
Bukit Batok Secondary School
Preliminary Exam 2018
Science (Chemistry) 5105
Secondary 4NA

Answer Sheet

MCQ (20 marks)

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

Section A: (14 marks)

Qns	Answers	Comments
1a	A, C, F [1m for all three answers]	Well attempted. A handful gave two answers so no mark awarded.
1b	B, G [1m for both answers]	Well attempted
1c	D	Well attempted
1d	Ink consists of dyes which will be separated as well, thus interfering with the results.	None of the student could explain using the word dyes will be separated and most students explained as the dyes can dissolve but could not state that it causes interference to the results.
2a	$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$	Well attempted. A handful still could not balance the equation.
2b		Well attempted. A handful still cannot draw the structure. One student drawn the structural formula instead. No marks awarded.

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	[1m for four pair of shared electrons between carbon and hydrogen atoms; 1m for correct no. of valence electrons for each atom]	
3a	2, 8, 7	Quite well attempted. Handful left the question blank. Maybe could not understand the requirement.
3b (i)	K^+ S^{2-} [1m for both answers]	Well attempted for K^+. students lost the mark when they could not write S^{2-} .
3b (ii)	K_2S	Students who could do 3b, were able to give the correct answer.
3c (i)	Mr = 2 + (2x16) = 34 [No mark if working is not shown or unit is given.]	Most common error: multiplying 2 to the M_r. Misconception between number of moles to M_r. Few students gave the unit. No mark awarded.
3c (ii)	aq – aqueous; *l* – liquid [1m for both answers]	Well attempted
3c (iii)	No. of moles of oxygen = 8÷32 = 0.25 mol. [1] No. of moles of H_2O_2 = 2 x no. of moles of oxygen = 0.25 x 2 = 0.5 mol. Mass of hydrogen peroxide = 0.5 x 34 = 17 g [1] [allow e.c.f]	Badly attempted. Handful left the question not done. Students who attempted most were awarded the first mark for mole of oxygen.

Section B (16 marks)

Qns	Answers	comments
4a	calcium nitrate sodium carbonate [1m for both answers]	Badly attempted.
4b	sodium hydroxide sulfuric acid [1m for both answers]	Well attempted
4c	ammonium chloride sodium hydroxide [1m for both answers]	Well attempted
4d	Filter the mixture. [1] Rinse the residue (calcium carbonate) with some deionised water.[1] Dry the residue using filter paper. [1]	Common error: evaporate to crystallisation. Spelling filter for “fitrate”
4e (i)	It turns from **green to purple/violet**.	Blue was the most common answer. No mark awarded.
4e (ii)	OH^-	Poorly attempted

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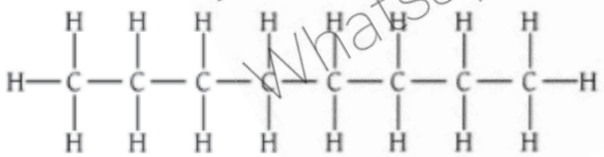
5a (i)	epsilon	Well attempted
5a (ii)	Alpha and beta. [1m for both answers]	Poorly attempted
5a (iii)	delta	Poorly attempted
5a(iv)	epsilon	Well attempted
5b (i)	Tube B	Very well attempted
5b (ii)	**Iron rusts in the presence of water and air / oxygen while copper does not rust.**	No mark awarded when students did not write "in the presence of water & oxygen"
5d (iii)	oxygen	Well attempted
5d(iv)	**Comparing the results of tube E with tube C, iron rusts more badly in sea water.**	Poorly attempted. Students did not use the experiment to explain the observation. Thus no mark awarded when tube C and tube E were not compared in the explanation
6a	butane – gas; hexane – liquid [1m for both answers]	Handful still gave butane as liquid even though this was taught in class.
6b	$C_{10}H_{22}$	Well attempted.
6c (i)	Plot all six points correctly – [1] Draw a best fit curve passing through all the six points and extent the line to show boiling point of heptane / 7 carbon atoms – [1]	Most students could plot and draw the graph but many lost the mark for not extending the line to C_7.
6c (ii)	100 °C [accept range of temperature between 95 °C - 105 °C]	Mark was awarded even though students did not indicate on the graph where the value was taken from.
6d		Well attempted.
6e (i)	**Addition reaction** (of bromine) / bromination	Common error. Students wrote as substitution even through the question was on alkene.
6e (ii)	$C_2H_4 + Br_2 \rightarrow C_2H_4Br_2$	Poorly attempted.

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The End