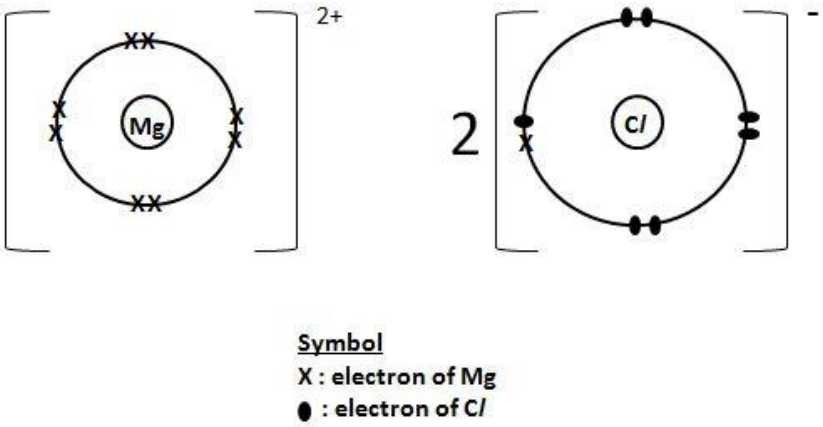
S3E 2020 WA1 Answers

Section A [5 marks]

1	2	3	4	5
D	A	B	B	C

Section B [20 marks]

B1ai	A E	1 1
B1aii	B & C	1
B1aiii	D (*Accept: Magnesium*)	1
B1aiv	37	1
B1av	Sulfur	1
B1avi	2- OR -2	1
B1bi	consisting of <u>oppositely charged magnesium and chloride ions</u> (*Accept: oppositely charged ions*) held together by <u>strong electrostatic forces of attraction</u>.	1 1
B1bii	 *1 mark for correct ratio;* *1 mark for correct charges;* *1 mark for correct number of electrons*	3
B2ai	100ºC	1
B2aii	250ºC	1
B2bi	solid	1
B2bii	solid + liquid	1
B2biii	gas	1
B2c	As the temperature increases, the particles <u>gain energy</u> and move faster. When the temperature is high enough, the particles have sufficient energy <u>to overcome the forces of attraction</u>. The particles are <u>spread far apart</u> and can <u>move about rapidly</u> in all directions.	1 1 1 1

B3ai	4^{o}C	1
B3aii	Kidney: 48 hours Pancreas: 17 hours	1 1
B3bi	Hydrogen bonds are formed between the slight positive and slight negative charges on the water molecules. *Accept: Hydrogen bonds are a type of weak van der Waals' force of attraction.*	1
B3bii	Hexagon/ 6-sided shape/ 6-sided polygon	1
B3biii	This is because the cooling of water forces the water molecules to be in an arrangement that would crowd them. To create more space, the cooling water then expands until it reaches freezing point.	1 1
B3c	Student C. If the blood was cooled to a lower temperature, the red blood cells may get damaged by the formation of ice crystals and haemoglobin would be lost when the blood is thawed.	1 1