Paper 3 Section B (20 marks)

Answer any **two** questions in this section. Write your answer in the spaces provided.

7	(a)	(i)	Name an element from Period 3 and explain how the electronic structure of this element can be used to determine the group the element belongs.	
				.[3]
		(ii)	Moving from Group I to Group VII across period 3, the character of the elements change.	
			Describe and explain this change.	
				.[3]
	(b)		element with an atomic number of 87 is extremely rare and only about 30 g exi ighout the Earth crust.	ist
		Write	ict one physical and one chemical property of this element. e a balanced chemical equation, with state symbols, to represent the chemical erty that you have described.	
				[4]

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Coal contains sulfur. When coal is burnt at power stations in an excess of oxygen, sulfur dioxide is formed according to the reaction shown below.

		$S + O_2 \rightarrow SO_2$
(a)	(i)	Explain why sulfur is considered to be oxidised in this reaction.
		[1]
	(ii)	Find the mass of sulfur burnt if 320 dm ³ of sulfur dioxide is formed at room temperature and pressure.
		[3]
	(iii)	Describe how the release of sulfur dioxide can indirectly cause damage to buildings made of limestone.
		[2]
(b)	Two	pollutants can be produced in the internal combustion engines of automobiles.
		e the pollutants and describe how they are produced in the engines of nobiles.
		[4]

9	(a)	Explain, in terms of collision theory, how the temperature of reactants affect the speed of reaction.				
	(b)			[2]		
		A student wants to investigate the rate of reaction involving particle size.				
			en that he has magnesium strips and magnesium powder with some hydrochlo , describe how he can conduct a laboratory experiment to do his investigation.			
		Your reac	r description should include the measurement obtained to measure the rate of tion.			
				.[5]		
	(c)	Mag	nesium can also react with copper(II) sulfate as shown below.			
			Mg + CuSO₄ → MgSO₄ + Cu			
		(i)	During this reaction, the temperature of the solution increases. Based on this observation, state what kind of reaction this is.			
				[1]		
		(ii)	Explain why this reaction is also considered a displacement reaction.			
				[2]		

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