Look at	t the information about a chl	orine atom and an oxid	e ion.	
	37 17	i l 8	O ²⁻	
	omplete the table to show the	e number of protons, ne	eutrons and electrons in e	ach partic
		Chlorine atom, C1	Oxide ion, O ²⁻	
	Number of protons		8	
	Number of neutrons			

[3]

(b) Many scientists have helped in the development of the theory of atomic structure.

17

Two of these scientists were J. J. Thomson and Niels Bohr.

Number of electrons

Dooribo	what I I	Thomasn	and Niala	Dahr	contributed to	that	thaania	fatamia	atrijatijra
Describe	wiiai J. J.	THOMSON	anu meis	DOLL	commontea to	III C	meory o	n atomic	Siruciure
							, .		

J. J. Thomson

Niels Bohr

.....[2]

2	This of	question	is about	atomic	structure	and bonding.
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(a)	Atoms are	made up	of	protons.	neutrons	and	electrons.
١,	u,	/ ttorrio are	made ap	U I	pi 0 t0 i 10,	110 ati 0110	ana	CICCLI CI IC.

Complete the table.

Particle	Relative charge	Relative mass
proton	+1	1
neutron	0	
electron		0.0005

[2]

(b) Sodium chloride is an ionic compound.

Carbon dioxide is a **covalent** compound.

Look at the table.

	Sodium chloride	Carbon dioxide
Formula	NaC1	CO ₂
Type of particles present	ions	
Melting point		low

(i)	Complete the table.	[2
(ii)	Carbon dioxide has a low melting point.	
	Explain why, using ideas about forces.	
		. [1]

[Total: 5]

3	An a	aluminium atom can be shown as
		²⁷ ₁₃ A <i>l</i>
	(a)	What can be deduced from this information about the structure of an aluminium atom and the position of aluminium in the Periodic Table?
		The quality of written communication will be assessed in your answer to this question.
		[6]

(b) Rutherford was a scientist who contributed to the development of the theory of atomic structure.

He worked with two other scientists called Geiger and Marsden.

ideas about atomic structure.

Write about Geiger and Marsden's experiment and how it contributed to the development of

[Total: 8]

4 Atoms contain electrons, neutrons and protons.

Look at the table. It shows the number of electrons, neutrons and protons in some atoms and ions.

Atom or ion	Number of					
Atom or ion	electrons	neutrons	protons			
1 1 1	1					
² ₁ H	1					
³¹ ₁₅ P	15	16	15			
	15	17	15			
³² ₁₆ S ^{2–}		16	16			

(a)	Complete the table.	[2]
(b)	¹ ₁ H and ² ₁ H are isotopes of hydrogen.	
	What is meant by the term isotope?	
		. [1]
(c)	In 1808, a scientist named Dalton published his atomic theory.	
	About a century later, a scientist called Rutherford published another atomic theory.	
	Why is it important that scientists publish their theories?	
		. [2]

[Total: 5]

This question is about compounds containing carbon. Look

5 at the displayed formulas of some compounds.

	C=C H H	H — Ç — Ç — H	H — C — C — O — H	
	Й Н Н	нн	H-C-C-O-H 	
	compound A	compound B	compound C	
	H	0	H H H	
	Н —Ċ—Н _!	H—C—O—H	C=C-C-H	
	Н		н н	
	compound D	compound E	compound F	
(a)	What is the molecula	r formula for compound B?		
				[1]
(b)	Explain why compoun	nd B is a hydrocarbon but compoun	d C is not a hydrocarbon.	
				[2]
, ,				[3]
(C)	Two compounds are u	insaturated.		
	Which two?			
	and			[1]
			[T/	otal: 5]