

GCSE Chemistry A (Gateway Science) J248/03 C1-C3 and C7 Higher (Higher Tier)

Question Set 22

1 The table shows information about some atoms and ions.

Particle	Atomic number	Mass number	Number of protons	Number of neutrons	Number of electrons	Electronic structure		
А	11	23	11		11	2.8.1		
В	9	19	9	10	9			
С		37	17		17	2.8.7		
D	13	27			10	2.8		

- (a) Complete the missing information in the Table above. [4]
- (b) Particle A is a metal atom, particle D is an ion. Explain why. [2]
- (c) Particle C has the electronic structure 2.8.7.

What does this electronic structure tell you about the position of particle ${\bf C}$ in the Periodic Table?

Explain your answer. [4]

(d) Complete the table below to give information about protons, neutrons and electrons.

	Charge	Mass in atomic mass units
proton		1
neutron		
electron	negative	

(e) Rutherford was a scientist who helped to develop the atomic model.

State how Rutherford's work contributed to the development of the atomic model. [1]

[2]

Total Marks for Question Set 22: 13

The Periodic Table of the Elements

0	18	He hellum	2 4	_ 8	neon 20.2	18	Ar	argon 39.9	36	첫	krypton 83.8	54	Xe	xenon 131.3	98	R	radon			
(2)	_	1	2	நட	fluorine 19.0	17	CI	chlorine 35.5	35	Ŗ	bromine 79.9	53	-	lodine 126.9	85	Αt	astatine			
(9)		9	٥	o O	oxygen 16.0	16	S	suffur 32.1	34	Se	selenium 79.0	52	Te	tellurium 127.6	84	Ъ	polonium	116	۲	livermorium
(2)		4	2 1	- Z	nitrogen 14.0	15	۵	phosphorus 31.0	33	As	arsenic 74.9	51	Sb	antimony 121.8	83	ö	bismuth 209.0			
(4)		7	<u> </u>	၀ ပ	carbon 12.0	14	Si	silicon 28.1	32	Ge	germanium 72.6	20	Sn	tin 118.7	82	Pb	lead 207.2	114	F1	flerovium
(3)		5	2 4	ი თ	boron 10.8	13	PΙ	aluminium 27.0	31	Ga	gallium 69.7	49	딥	Indium 114.8	81	11	thallium 204.4			
								12	30	Zn	zinc 65.4	48	ၓ	cadmium 112.4	80	Нg	mercury 200.6	112	5	copernicium
								29	ರ	ооррег 63.5	47	Ag	sliver 107.9	79	Αn	gold 197.0	111	Rg	roentgenium	
	10							28	Z	nickel 58.7	46	Pd	palladium 106.4	78	¥	platinum 195.1	110	Ds	darmstadfum	
	თ							27	ပိ	oobalt 58.9	45	R	modium 102.9	77	I	iridium 192.2	109	Mt	meitnerium	
	∞							56	Fe	lron 55.8	44	Ru	ruthenium 101.1	9/	SO.	08mium 190.2	108	£	hassium	
_	~							7	25	Mn	manganese 54.9	43	ည	technetium		Re	menium 186.2	107	뮵	bohrium
	j	mass]					9	24	ပ်	chromium 52.0	42	Mo	molybdenum 95.9	74	>	tungsten 183.8	106	Sg	seaborgium
Key atomic number Symbol name relative atomic mass							2	23	>	vanadium 50.9			niobium 92.9		Та	tantalum 180.9	105	op C	dubnium	
	ofe.	relativ						4	22	ij	ttanium 47.9	40	Zr	arconium 91.2	72	Ξ	hafinium 178.5	104	ጟ	rufherfordium
								က	21	သွင	scandium 45.0	39	>	yttrium 88.9		57-71	lanthanoids	00,00	89-103	actinolds
(2)	_	·	<u>.</u>	Be 4	beryllum 9.0	12	Mg	magnesium 24.3	20	Sa	calcium 40.1	38	s	strontium 87.6	26	Ba	barium 137.3	88	Ra	radium
(1)	-	H hydrogen	?	ر ت	lithium 6.9	11	Na	sodium 23.0	19	¥	potassium 39.1	37	Rb	nubidium 85.5	22	CS	caesium 132.9	87	F	francium



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