

CASE STUDY QUESTION 32

Read the following and answer any four questions from (i) to (v)

In his periodic table, Mendeleev arranged all the then known 63 elements in the order of increasing atomic masses in horizontal rows but in such a way that elements having similar properties came directly under one another in the same vertical column. In the classification of the then known elements, Mendeleev was guided mainly by two factors. In order to make sure that the elements having similar properties fell in the same vertical column, Mendeleev left some gaps in his periodic table. Though the leaving of gaps in the periodic table was considered to be a big drawback of his classification of elements at that time but Mendeleev stuck to his decision.

H 1.01										
Li 6.94	Be 9.01	B 10.8	C 12.0	N 14.0	O 16.0	F 19.0				
Na 23.0	Mg 24.3	Al 27.0	Si 28.1	P 31.0	S 32.1	Cl 35.5				
K 39.1	Ca 40.1		Ti 47.9	V 50.9	Cr 52.0	Mn 54.9	Fe 55.9	Co 58.9	Ni 58.7	
Cu 63.5	Zn 65.4			As 74.9	Se 79.0	Br 79.9				
Rb 85.5	Sr 87.6	Y 88.9	Zr 91.2	Nb 92.9	Mo 95.9		Ru 101	Rh 103	Pd 106	
Ag 108	Cd 112	In 115	Sn 119	Sb 122	Te 128	I 127				
Ce 133	Ba 137	La 139		Ta 181	W 184		Os 194	Ir 192	Pt 195	
Au 197	Hg 201	Tl 204	Pb 207	Bi 209						
			Th 232			U 238				

(i) What are the horizontal rows of Mendeleev's periodic table known as ?

- (a) periods (b) groups
(c) metals (d) non-metals

Ans: (a) periods

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Rb 85.5	Sr 87.6	Y 88.9	Zr 91.2	Nb 92.9	Mo 95.9		Ru 101	Rh 103	Pd 106	
Ag 108	Cd 112	In 115	Sn 119	Sb 122	Te 128	I 127				
Ce 133	Ba 137	La 139		Ta 181	W 184		Os 194	Ir 192	Pt 195	
Au 197	Hg 201	Tl 204	Pb 207	Bi 209						
			Th 232		U 238					

(ii) How many horizontal rows of elements were there in Mendeleev's original periodic table ?

- (a) 6 (b) 7 (c) 8 (d) 9

Ans: (b) 7

(iii) How many vertical rows were there in Mendeleev's original periodic table ?

- (a) 6 (b) 7 (c) 8 (d) 9

Ans: (c) 8

(iv) The three elements having chemical symbols of Si, B and Ge are :

(a) all metals (b) all non-metals

(c) all metalloids (d) Si is metalloid, B is metal and Ge is non-metal

Ans: (c) all metalloids

(v) According to Mendeleev's periodic law, the elements were arranged in the periodic table in the order of :

(a) decreasing atomic numbers

(b) increasing atomic numbers

(c) decreasing atomic masses

(d) increasing atomic masses

Ans: (d) increasing atomic masses