

Early Attempts at Classification of Elements: 5 Intriguing Questions

CBSE: Term 2 Grade 10th: Chemistry

Instructions:

1. This set contains 5 questions.
2. Go through the questions properly.
3. Attempt all the questions.
4. Each question contains four options.
5. Only one of the options is correct.

1.	<p>Given below is a set of few elements:</p> <p style="text-align: center;">Sodium, Bromine, Carbon, Potassium, Oxygen, Fluorine, Hydrogen, Lithium</p> <p>Which of the following properties can be used as the basis of classification for the majority of these elements?</p> <p>A. Physical state B. Malleability C. Reactivity towards water D. Valency</p>
2.	<p>The increasing order of the atomic masses for four elements, P, Q, R and S is: M_p, M_q, M_r and M_s. The following relationships have been observed:</p> <p>(i) $(M_p + M_q) / 3 = M_r$ (ii) $2M_q - M_s = M_p$ (iii) $M_p - M_q = 2M_r$ (iv) $M_q - 2M_r = M_s$</p> <p>Which of the following sets of elements is expected to exhibit similar physical properties?</p> <p>A. P, Q and R B. P, R and S C. P, Q and S D. Q, R and S</p>

3.

Newlands proposed the following table based on the law of octaves.

H	Li	Be	B	C	N	O
F	Na	Mg	Al	Si	P	S
Cl	K	Ca	Cr	Ti	Mn	Fe
Co, Ni	Cu	Zn	Y	In	As	Se
Br	Rb	Sr	Ce, La	Zr	Di, Mo	Ro, Ru
Pd	Ag	Cd	U	Sn	Sb	Te
I	Cs	Ba, V	Ta	W	Nb	Au
Pt, Ir	Tl	Pb	Th	Hg	Bi	Os

Which of the following sets of elements will have the same reactivity towards oxygen?

A. Silicon and titanium
B. Calcium and zinc
C. Beryllium and magnesium
D. Potassium and copper

4.

Elements with similar properties tend to react in a similar fashion with other chemical substances. Early attempts of classification by Döbereiner and Newlands were successful in predicting some of these similarities. Which of the following sets of elements can be expected to exhibit the same reactivities towards acids?

A. Nickel and iron
B. Nickel and fluorine
C. Chromium and aluminium
D. Chlorine and cobalt

5.

Elements X, Y and Z form a Döbereiner triad. The masses of elements Y and Z are 88 and 137, respectively. Among the following elements, select the one that would exhibit periodicity in properties with the element X.

A. Calcium
B. Sodium
C. Fluorine
D. Magnesium