Class 11 Chemistry · Chapter 3: Classification of Elements and Periodicity in Properties

Worksheet · 20 marks · about 40 minutes · based on NCERT

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1. An element X has atomic number 38. The element whose chemical properties would be most like those of X has the atomic number [1]

(a) 37 (b) 20
(c) 39 (d) 36

2. Which of the following elements is a metalloid? [1]

(a) germanium (b) gallium
(c) selenium (d) tin

3. Which of the following pairs is isoelectronic? [1]

(a) Na^+ and Mg (b) O^{2-} and Cl^-
(c) N^{3-} and Ne (d) K^+ and Ne

4. Moseley plotted the square root of the frequency of the characteristic X-rays of elements against another property and obtained a straight line. That property is [1]

(a) atomic mass (b) mass number
(c) atomic number (d) density

5. Sulphur (atomic weight 32), selenium and tellurium (atomic weight 127.6) behave as a Dobereiner triad. The atomic weight the Law of Triads predicts for selenium is [1]

(a) 95.6 (b) 79.8
(c) 47.8 (d) 159.6

6. Why are the lanthanoids and actinoids placed in separate rows at the foot of the periodic table? [2]

7. Why is the chemistry of the early actinoids more complicated than that of the corresponding lanthanoids? What are transuranium elements? [2]

8. Lithium and beryllium form compounds with pronounced covalent character, while the other members of their groups form mainly ionic compounds. Give two reasons for this behaviour of the first members. [2]

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9. Classify MgO, Al_2O_3 and SO_3 as basic, acidic or amphoteric, and write one equation for each to show its nature. [3]

10. What did Moseley observe in the X-ray spectra of the elements? How did this change the Periodic Law, and what became of Mendeleev's placing of tellurium before iodine? [3]

11. Mendeleev left a gap below silicon in his table and called the missing element eka-silicon. (a) Explain how he could predict the formulas of its oxide and chloride. (b) He predicted an atomic weight of 72 and a density of 5.5 g cm^{-3}; germanium, discovered later, has 72.6 and 5.36 g cm^{-3}. What do these figures show about his gaps? (c) What did the success of such predictions do for his Periodic Table? [3]