Worksheet: Structure of the Atom

NIOS · Class 9 · Science · 15 questions · 39 marks

Name: _____ Date: _____ Score: _____ / 39

Q1. Name the scientist who discovered the (a) electron, (b) proton, (c) neutron. *[1 mark]*

Q2. Find the number of protons, neutrons and electrons in $_{20}Ca^{40}$. *[1 mark]*

Q3. Write the electronic configuration of phosphorus (Z = 15). *[1 mark]*

Q4. Find the valency of nitrogen (Z = 7). *[1 mark]*

Q5. State two postulates of Bohr's model of the atom. *[2 marks]*

Q6. Define isotopes. Give one example. *[2 marks]*

Q7. What were the three observations of Rutherford's gold-foil experiment, and what did each suggest about the structure of the atom? *[3 marks]*

Q8. State two drawbacks of Rutherford's atomic model and explain how Bohr addressed them. *[3 marks]*

Q9. (a) Write the electronic configurations of sulphur (Z = 16) and chlorine (Z = 17). (b) Predict the most likely ion each will form and explain. *[3 marks]*

Q10. Why do $^{40}_{18}\text{Ar}$ and $^{40}_{20}\text{Ca}$ have very different chemical properties despite having the same mass number? *[2 marks]*

Q11. Explain why neon, argon and krypton are placed in the same group of the periodic table even though they have different atomic numbers. *[3 marks]*

Q12. An element X has the following composition: ^{79}Br (80 % abundance) and ^{81}Br (20 % abundance). Calculate the average atomic mass of bromine. *[4 marks]*

Q13. Why is the electronic configuration of potassium 2, 8, 8, 1 instead of 2, 8, 9? *[4 marks]*

Q14. Match the isotope to its application: (a) Carbon-14, (b) Iodine-131, (c) Cobalt-60, (d) Uranium-235. *[4 marks]*

Q15. An atom X has mass number 27 and atomic number 13. (a) Identify X. (b) Write its electronic configuration. (c) State the valency. (d) Predict the ion it forms. (e) Write the formula of its oxide. *[5 marks]*