



Class 12 Physics | Nuclei

MCQ WORKSHEET • 15 questions • Choose one correct option • Suggested time: 25 minutes

1. A nucleus with atomic number Z and mass number A contains neutrons numbering:

- A. $A+Z$ B. A C. $A-Z$ D. Z

2. Isotopes have the same:

- A. Neutron number always
B. Atomic number but different mass numbers
C. Mass number but different atomic numbers
D. Nuclear mass exactly

3. Isobars have the same:

- A. Charge necessarily B. Neutron number
C. Mass number D. Atomic number

4. Nuclear radius approximately follows:

- A. $R=R_0A^{1/3}$ B. $R=R_0/A$ C. $R=R_0A$ D. $R=R_0A^2$

5. For mass numbers 8 and 64, nuclear-radius ratio R_{64}/R_8 is:

- A. 8 B. 2 C. 4 D. $1/2$

6. Nuclear density is approximately:

- A. Proportional to A
B. Inversely proportional to A^2
C. Independent of mass number
D. Proportional to A^2

7. Mass defect is the difference between:

- A. Sum of free nucleon masses and nuclear mass
B. Radius and diameter
C. Atomic number and mass number
D. Proton and electron counts

8. Binding energy equals:

- A. $\Delta m/c^2$ B. Δmc^2 C. Δmc D. $c^2/\Delta m$

9. If mass defect is 0.01 u, binding energy is ($1 \text{ u } c^2=931.5 \text{ MeV}$):

- A. 0.9315 MeV B. 93.15 MeV
C. 9315 MeV D. 9.315 MeV

10. A nucleus has binding energy 80 MeV and $A=10$. Binding energy per nucleon is:

- A. 0.125 MeV B. 70 MeV C. 800 MeV D. 8 MeV

11. Greater binding energy per nucleon generally indicates:

- A. Greater stability against separation into free nucleons
B. Larger mass defect per nucleus always
C. Larger atomic number always
D. Lower nuclear density always

12. Binding energy per nucleon is near its maximum for nuclei around:

- A. Uranium B. Iron and nickel
C. Hydrogen D. Helium only

13. Nuclear fission refers to:

- A. Splitting a heavy nucleus into lighter nuclei
B. Removing orbital electrons
C. Chemical combustion
D. Combining light nuclei

14. Nuclear fusion refers to:

- A. Combining light nuclei into a heavier nucleus
B. Splitting uranium only
C. Emission of visible light only
D. Ionising a gas

15. Fusion requires very high temperature primarily to:

- A. Make protons neutral
B. Help nuclei overcome electrostatic repulsion
C. Eliminate nuclear forces
D. Remove gravitational attraction

ANSWER KEY — check after completing all 15 questions

1.C 2.B 3.C 4.A 5.B 6.C 7.A 8.B 9.D 10.D 11.A 12.B 13.A 14.A 15.B

Original exam-style practice • Reference notes: www.physics.guru/cbse-practice-papers/ • Not an official paper