# PHYSICS

# BOOKS - PUNJAB BOARD PREVIOUS YEAR PAPERS

# Structure of Nucleus

## Exercise

**1.** Find mass defect

▶ **Watch Video Solution**

**2.** Find binding energy

**3.** Find binding energy per nucleon for helium nuclei. Given that mass of helium nucleus = 4.001509 amu, mass of proton=1.007277 amu and mass of neutron = 1.0086666 amu.

**4.** Find mass defect

> ▶ **Watch Video Solution**

**5.** Find binding energy

> ▶ **Watch Video Solution**

**6.** Find binding energy per nucleon for helium nuclei. Given that mass of helium nucleus =

4.001509 amu, mass of proton=1.007277 amu and mass of neutron = 1.0086666 amu.

**7.** Calculate mass defect, binding energy and binding energy per nucleon of deuteron $(_1H^2)$ nucleus. Given mass of proton=1.007275 a.m.u., mass of neutron = 1.008665 a.m.u. and mass of deuteron =2.013553 a.m.u.

**8.** Find out binding energy and binding energy per nucleon of $_3Li^7$ nucleus. Given mass of proton = 1.00782 amu mass of a neutron = 1.00866 amu and mass of "_3Li^7"_3(Lithium)^7` nucleus = 7.01599 amu.

▶ Watch Video Solution

**9.** Calculate the binding energy per nucleon of $_3Li^7$ nucleus. Given mass of $_3Li^7$ nucleus = 7.01599 a.m.u., mass of proton =1.007825 a.m.u.,

mass of neutron = 1.008665 a.m.u. and 1 a.m.u.

= 931.5 MeV

▶ Watch Video Solution

**10.** Calculate the binding energy per nucleon of $_{20}Ca^{40}$ nucleus. Given mass of $_{20}Ca^{40}$ nucleus = 39.962589 a.m.u., mass of proton = 1.007825 a.m.u., mass of neutron = 1.008665 a.m.u. and 1 a.m.u. = 931.5 MeV.

▶ Watch Video Solution

**11.** Find mass defect, binding energy and binding energy per nucleon for $_{26}Fe^{56}$ nucleus. Mass of $_{26}Fe^{56}$ nucleus = 55.934939 , Mass of neutron =1.008665 amu ,Mass of proton =1.007825 amu and 1 amu = 931 MeV

▶ Watch Video Solution

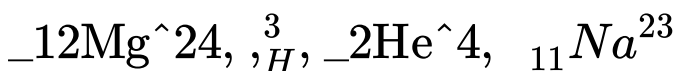**12.** Select the pairs of isobars and isotones from the following :

$_6C^{14}$, $_7N^{14}$, $_8O^{16}$, $_7N^{13}$.

▶ Watch Video Solution

**13.** Select the pairs of isobars and isotones from the following :

$_{12}Mg\char`\^24, \, _H^3, \, _2He\char`\^4, \, _{11}Na^{23}$

▶ **Watch Video Solution**

**14.** Select the pairs of isobars and isotones from the following :

$_{11}Na\char`\^22, \, _{12}Mg^{24}, \, _{11}Na\char`\^24, \, _{10}Na^{23}$
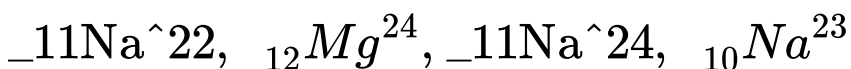
▶ **Watch Video Solution**

**15.** What are Isotopes ?

▶ **Watch Video Solution**

**16.** Find mass defect

▶ **Watch Video Solution**

**17.** One atomic mass unit is equal to $1.67 \times 10^{-27} g$.

**18.** Binding energy per nucleon is lower for both light (A < 30) and heavy (A > 170) nuclei.

**19.** Differentiate between Isobars and Isotones with suitable examples.

**20.** ifferentiate between Isotopes and Isobars with suitable examples.

▶ **Watch Video Solution**

**21.** What do you mean by binding energy ? Explain the significance of binding energy per nucleon in the stability of nucleus.

▶ **Watch Video Solution**

**22.** Differentiate between Isotones and Isotopes with suitableexamples.

**23.** Define Binding energy of the nucleus. Draw and explain curve between Binding Energy per nucleon and mass number.

**24.** Define binding energy, binding energy per nucleon. Draw and explain a curve between binding energy per nucleon and mass number.

> ▶ **Watch Video Solution**

**25.** What are nuclear forces ? State their four properties.

> ▶ **Watch Video Solution**

**26.** Define binding energy, binding energy per nucleon. Draw and explain a curve between binding energy per nucleon and mass number.

**27.** Draw the graph showing variation of binding energy per nucleon with mass number. Write the inferences drawn from the graph.

**28.** What do you mean by nuclear forces and give their four properties.

▶ **Watch Video Solution**

**29.** Define Binding energy of the nucleus. Draw and explain curve between Binding Energy per nucleon and mass number.

▶ **Watch Video Solution**

**30.** What are nuclear forces ? State their four properties.Explain the possible cause of these forces.

▶ Watch Video Solution