PHYSICS

BOOKS - PUNJAB BOARD PREVIOUS YEAR PAPERS

Structure of Nucleus

Exercise

1. Find mass defect

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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

5. Find binding energy

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.

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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

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.

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

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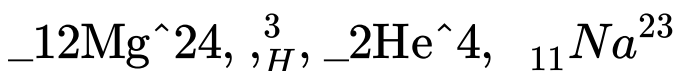**12.** Select the pairs of isobars and isotones from the following :

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

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

$_{12}Mg\hat{\ }24$, $_{H}^{3}$, $_{2}He\hat{\ }4$, $_{11}Na^{23}$

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

$_{11}Na\hat{\ }22$, $_{12}Mg^{24}$, $_{11}Na\hat{\ }24$, $_{10}Na^{23}$
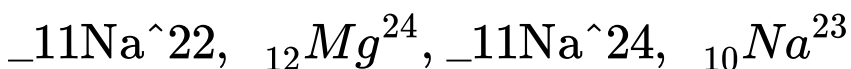
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15. What are Isotopes ?

16. Find mass defect

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.

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

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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.

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

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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.

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

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30. What are nuclear forces ? State theirfour properties.Explain the possible cause of these forces.

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