

CUET 2025 Physics Memory Based Questions

Binding Energy:

1. The binding energy per nucleon initially increases and then decreases with mass number because:

- (1) The force of attraction between nucleons increases initially and then decreases.
 - (2) The strong nuclear force between nucleons increases with mass number.
 - (3) The size of the nucleus increases with mass number, leading to decreased binding energy per nucleon.
 - (4) The weak nuclear force has no significant effect on the binding energy.
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2. Energy is released in both nuclear fission and fusion because:

- (1) The total mass before and after the reaction remains the same.
 - (2) The mass of the products is less than the mass of the reactants.
 - (3) Energy is not related to mass change.
 - (4) Both reactions involve a change in atomic number.
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3. Calculate the binding energy of a helium nucleus ${}^4_2\text{He}$.

Given: Mass of helium nucleus = 4.0026 u,

Mass of proton = 1.0073 u, neutron = 1.0087 u,

1 u = 931.5 MeV

- (1) 28.2 MeV

(2) 25.6 MeV

(3) 30.5 MeV

(4) 26.7 MeV

Kinetic Energy:

4. A body moves in a circular path with constant speed. Its kinetic energy:

(1) Remains constant

(2) Goes on increasing

(3) Goes on decreasing

(4) Becomes zero

5. In nuclear models, a negative kinetic energy value indicates:

(1) The system is in a stable state.

(2) The system is in an unstable state.

(3) The energy is being absorbed by the system.

(4) The system is not bound.

6. A particle of mass 2 kg moves at 3 m/s. Its kinetic energy is:

(1) 9 J

(2) 18 J

(3) 12 J

(4) 6 J

Wavelength:

7: When light enters a different medium, its wavelength changes because:

(1) The frequency of the light changes.

(2) The speed of light changes in the new medium.

(3) The energy of the light changes.

(4) The color of the light changes.

8: Smaller wavelengths in light result in:

(1) Lower energy and lower frequency.

(2) Higher energy and higher frequency.

(3) Lower energy and higher frequency.

(4) Higher energy and lower frequency.
