

- 1. Rutherford scattering experiment fails for very small scattering angles because: Answer:**  
The impact parameter between the alpha-particles and the target nucleus is very large.  
A large impact parameter means the alpha particle passes far from the nucleus, causing minimal deflection.
- 2. Usha swims in a 90 m long pool, covering 180 m in one minute. The average velocity is: Answer: Zero**  
Since displacement is zero (starting and ending at the same point), average velocity is zero.
- 3. Heat affects the formation of a solution because temperature change: Answer: Changes the energy of the particles**  
Higher temperature increases kinetic energy, aiding dissolution.
- 4. Fermentation of grapes is an example of: Answer: Chemical Change**  
Fermentation produces new substances (like alcohol), making it a chemical change.
- 5. The angle between force and displacement for maximum work done is: Answer: 0°**  
Work is maximized when force and displacement are in the same direction.
- 6. The mass ratio of N and H in NH<sub>3</sub> is: Answer: 14:3**  
NH<sub>3</sub> has one nitrogen (14 u) and three hydrogens (1 u each), giving a 14:3 ratio.
- 7. Lysosomes arise from: Answer: Golgi apparatus**  
Golgi apparatus modifies and packages enzymes into lysosomes.
- 8. If the weight of a 60 kg mass is W on the Moon, then W is: Answer: 96 N**  
Weight = mass × gravity; on the Moon ( $g = 1.6 \text{ m/s}^2$ ),  $W = 60 \times 1.6 = 96 \text{ N}$ .
- 9. The energy currency of the cell is: Answer: ATP**  
ATP stores and releases energy for cellular processes.
- 10. The process to purify an impure naphthalene sample is: Answer: Sublimation**  
Naphthalene sublimates directly from solid to gas, separating impurities.
- 11. Identify the incorrect statement: Answer: None of these**  
All given statements are scientifically valid.
- 12. Plants can be made disease-resistant by: Answer: Both hybridisation and genetic modification**  
Both techniques enhance disease resistance in plants.
- 13. Tyndall effect is observed in: Answer: Starch + Water**  
Colloidal solutions (like starch in water) scatter light, causing the Tyndall effect.

14. **Elements with valency 1 are:**

**Answer: Either metal or non-metal**

Both alkali metals (e.g., Na) and halogens (e.g., Cl) have valency 1.

15. **Which is NOT a characteristic of mechanical waves?**

**Answer: Speed is comparatively higher**

Mechanical waves travel slower than electromagnetic waves.



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