

MHT CET 2026 Biology Answer Key PDF

Biology

1. **Option (c) Ethylene**

Explanation:

Ethylene is a gaseous plant hormone that acts as a natural regulator of growth and development. It is primarily responsible for coordinating the physiological processes involved in fruit ripening.

2. **Option (b) Nephron**

Explanation:

The nephron is the structural and functional unit of the kidney. Each human kidney contains approximately one million nephrons, which perform the vital roles of filtration, reabsorption, and urine formation.

3. **Option (b) 1**

Explanation:

The Hardy–Weinberg principle states that allele and genotype frequencies in a population remain constant in the absence of evolutionary influences. Mathematically, the sum of all gene frequencies is represented as $p + q = 1$.

4. **Option (d) AB**

Explanation:

Individuals with blood group AB possess both A and B antigens on their red blood cells but lack anti-A and anti-B antibodies in their plasma. This allows them to safely receive blood of any type, making them universal recipients.

5. **Option (c) Grana**

Explanation:

The light-dependent reactions of photosynthesis occur in the grana, which are stacks of disc-shaped thylakoid membranes within the chloroplasts. These membranes contain the pigments and protein complexes needed to harness light energy.

Chemistry

6. **Option (a) Propanal**

Explanation:

The given compound $\text{CH}_3\text{-CH}_2\text{-CHO}$ is a three-carbon aliphatic aldehyde. According to IUPAC nomenclature, the suffix for aldehydes is “-al”, which gives the systematic name propanal.

7. **Option (a) HF**

Explanation:

Among the hydrogen halides, fluorine has the highest electronegativity and smallest atomic size. This enables hydrogen fluoride (HF) molecules to engage in exceptionally strong intermolecular hydrogen bonding.

8. **Option (c) 7**

Explanation:

At 25°C, the ion product of water (K_w) is $1.0 \times 10^{-14} \text{ M}^2$. For a neutral solution, the concentrations of H^+ and OH^- ions are equal at $1.0 \times 10^{-7} \text{ M}$, resulting in a pH of exactly 7.

9. **Option (b) sp^2**

Explanation:

In an ethene ($\text{CH}_2=\text{CH}_2$) molecule, each carbon atom forms three sigma bonds (two with hydrogen and one with carbon) and one pi bond. This trigonal planar arrangement requires sp^2 hybridization.

10. **Option (c) Sodium**

Explanation:

Highly reactive alkali metals like sodium cannot be reduced easily by chemical reducing agents. Instead, they are extracted through the electrolysis of their molten salts, such as in Down's process for molten NaCl.

Physics

11. **Option (c) Newton/Coulomb**

Explanation:

The electric field strength (E) at a point is defined as the electrostatic force (F) experienced per unit positive test charge (q). Consequently, the standard SI unit of electric field is Newton/Coulomb (N/C).

12. **Option (c) $[\text{MLT}^{-2}]$**

Explanation:

According to Newton's second law of motion, force is the product of mass (M) and acceleration (a). Since the dimensions of acceleration are $[\text{LT}^{-2}]$, the dimensional formula for force is derived as $[\text{MLT}^{-2}]$.

13. **Option (c) 11.2 km/s**

Explanation:

The escape velocity from the surface of the Earth is calculated using the formula $v_e = \sqrt{2gR_e}$. Substituting the standard values for gravitational acceleration and Earth's radius yields approximately 11.2 km/s.

14. **Option (a) $V \propto I$**

Explanation:

Ohm's law states that the electric current (I) flowing through a conductor is directly proportional to the potential difference (V) across its ends, provided physical conditions like temperature remain constant.

15. **Option (b) $E = h\nu$**

Explanation:

According to Planck's quantum theory, electromagnetic radiation is emitted or absorbed in discrete packets of energy called photons. The energy (E) of a single photon of frequency ν is given by $E = h\nu$.