

MHT CET 2025 Biology Answer Key PDF

1. Option (B) It shows negative deviation due to strong dipole-dipole interactions.

Explanation: When chloroform (CHCl_3) and acetone (CH_3COCH_3) are mixed, a new intermolecular hydrogen bond forms between the hydrogen atom of chloroform and the oxygen atom of acetone. This $A - B$ interaction is stronger than the $A - A$ or $B - B$ interactions, leading to a decrease in vapor pressure and a negative deviation from Raoult's law.

2. Option (A) Copper metal is deposited.

Explanation: During the electrolysis of aqueous CuSO_4 with platinum (inert) electrodes, the Cu^{2+} ions are reduced at the cathode because the reduction potential of copper is higher than that of water/hydrogen. The reaction is: $\text{Cu}^{2+}(\text{aq}) + 2e^- \rightarrow \text{Cu}(\text{s})$.

3. Option (B) Sodium deposited at cathode, chlorine at anode.

Explanation: In the electrolysis of molten NaCl , there are no water molecules to compete. At the cathode (negative electrode), Na^+ ions gain electrons to form sodium metal ($\text{Na}^+ + e^- \rightarrow \text{Na}$). At the anode (positive electrode), Cl^- ions lose electrons to form chlorine gas ($2\text{Cl}^- \rightarrow \text{Cl}_2 + 2e^-$).

4. Option (C) Egg cell and antipodals.

Explanation: In a typical angiosperm embryo sac, the egg cell and the three antipodal cells are products of meiosis and are haploid (n). The polar nuclei are also haploid but usually fuse to form a diploid secondary nucleus before fertilization.

5. Option (A) Amniocentesis.

Explanation: Amniocentesis is a medical procedure used primarily for prenatal diagnosis of chromosomal abnormalities and fetal infections. It involves collecting a small amount of amniotic fluid for genetic screening.

6. Option (A) transpired.

Explanation: While the question text is slightly garbled, it refers to the physiological process where water is lost by the plant. Transpiration is the evaporation of water from plant leaves, which is a form of water loss and not absorption.

7. Option (C) Providing nourishment to the egg.

Explanation: The primary functions of sperm include reaching the egg (motility), penetrating the egg (fertilization), and delivering the male genetic material. Nourishment for the developing embryo is provided by the egg's cytoplasm and the uterine environment, not the sperm.

8. Option (D) They are both layers of the ovum, but have different functions.

Explanation: The zona pellucida is a glycoprotein membrane surrounding the plasma membrane of an oocyte, while the corona radiata is the outer layer of follicular cells. Both protect the egg and play roles in sperm-egg recognition.

9. Option (A) Magnesium (Mg^{2+})

Explanation: Polymerase Chain Reaction (PCR) requires Mg^{2+} ions as a mandatory cofactor for the activity of *Taq* polymerase, which catalyzes the synthesis of DNA.

10. Option (A) vg^+

Explanation: In *Drosophila* genetics, the wild-type (normal) allele is usually designated with a plus sign (+). Therefore, vg^+ represents the genotype for normal (wild-type) wings, whereas vg represents the vestigial wing mutation.

11. Option (B) Avery.

Explanation: While Frederick Griffith discovered the "transforming principle" in 1928, it was Avery, MacLeod, and McCarty in 1944 who provided the definitive biochemical proof that the transforming principle was DNA.

12. Option (A) Proteins.

Explanation: Almost all enzymes are proteins (with the exception of ribozymes, which are RNA). They are composed of long chains of amino acids folded into specific three-dimensional shapes.

13. Option (B) Biomass pyramid.

Explanation: In aquatic ecosystems (like the sea), the pyramid of biomass is often inverted because the biomass of the primary producers (phytoplankton) is much less than the biomass of the consumers (fish) at any given time.

14. Option (B) 7.

Explanation: A mature angiosperm embryo sac (the female gametophyte) is characterized as being 7-celled and 8-nucleate. It contains 3 antipodals, 2 synergids, 1 egg cell, and 1 large central cell containing 2 polar nuclei.

15. Option (D) Length of stem.

Explanation: In Mendel's pea plant experiments, "dwarf stem" is a recessive trait. While the other options (Inflated pod, Purple flower, Axile position) describe dominant traits, "Length of stem" is the category that includes the recessive "dwarf" phenotype.

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