

MHT CET 2022 Mathematics Answer Key PDF

Answer Key

Question 1 -Option- (2) Reduction of nitro compounds to primary amines

Explanation: The reagent combination of tin (Sn) and concentrated hydrochloric acid (HCl) acts as a reducing agent in organic synthesis, primarily used to reduce nitro groups to primary amine groups. code Code

Question 2 -Option- (2) $-[CH_2 - CH(CN)]_n -$

Explanation: Polyacrylonitrile (PAN) is an addition polymer synthesized from the monomer acrylonitrile ($CH_2 = CH - CN$), resulting in a repeating backbone containing cyano substituents.

Question 3 -Option- (2) Monoatomic gases

Explanation: Noble gases have stable, completely filled valence electron configurations (ns^2np^6) and exist as isolated monoatomic gaseous particles under standard conditions.

Question 4 -Option- (3) London dispersion forces (Van der Waals)

Explanation: Iodine (I_2) is a non-polar homonuclear diatomic molecule, meaning its solid-state molecular crystal lattice is held together predominantly by weak, transient London dispersion forces.

Question 5 -Option- (1) $k = \frac{[A]_0 - [A]_t}{t}$

Explanation: The differential rate law for a zero-order reaction is $-d[A]/dt = k$. Integrating this expression yields the linear concentration profile $[A]_t = -kt + [A]_0$.

Question 6 -Option- (1) 4-methylpent-3-en-2-one

Explanation: Mesityl oxide has the structure $(CH_3)_2C = CH - CO - CH_3$. Numbering from the ketone end gives the systematic IUPAC name 4-methylpent-3-en-2-one.

Question 7 -Option- (1) 2-chlorobutane

Explanation: In 2-chlorobutane, the carbon-2 atom is bonded to four distinct substituents ($-H$, $-Cl$, $-CH_3$, and $-CH_2CH_3$), creating an asymmetric chiral center.

Question 8 -Option- (3) Fluorine

Explanation: Fluorine has the highest electronegativity of any element in the periodic table, with an assigned value of 4.0 on the Pauling scale.

Question 9 -Option- (4) Both (2) and (3)

Explanation: There are 50 odd numbers in the first 100 natural numbers, which gives a probability of $50/100$, simplifying to $1/2$. Thus, both representations (2) and (3) are correct.