



General Instructions

- (i) The examination is conducted in Computer-Based Test (CBT) mode.
- (ii) Each question carries **+4 marks** for a correct answer and **-1 mark** for a wrong answer.
- (iii) The total number of questions is **100**.
- (iv) The total duration of the exam is **150 minutes** (2 hours and 30 minutes).

1. A rainbow is formed due to which of the following phenomena of light?

- (A) Refraction
 - (B) Dispersion
 - (C) Reflection
 - (D) All of these
-

2. A particle moves uniformly in a circular path of radius 10 m. It takes 10 s to complete one revolution. Its speed after 20 s will be-

- (A) 1 m/s
 - (B) 2π m/s
 - (C) 0
 - (D) π m/s
-

3. The relative density of silver is 10.8. If the density of water is 1000 kg/m^3 , then the density of silver will be-

- (A) $10.8 \times 10^{-3} \text{ kg/m}^3$
 - (B) $10.8 \times 10^3 \text{ kg/m}^3$
 - (C) 10.8 kg/m^3
 - (D) $1.08 \times 10^{-3} \text{ kg/m}^3$
-

4. A boy of mass 50 kg runs with a speed of 4 m/s. His kinetic energy is-

- (A) 40 J
 - (B) 4 J
 - (C) 400 J
 - (D) 0.4 J
-

5. In diamond, each carbon atom is bonded to four other carbon atoms forming a:

- (A) Hexagonal structure
 - (B) Rigid three-dimensional structure
 - (C) Football-shaped structure
 - (D) Ring structure
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6. The number of molecules involved in a molecular reaction is called:

- (A) Molecularity
 - (B) Order of reaction
 - (C) Unimolecular reaction
 - (D) Rate of reaction
-

7. Which of the following shows an addition reaction?

- (A) CH_4
 - (B) C_3H_8
 - (C) C_2H_6
 - (D) C_2H_4
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8. The allotrope of carbon that is a good conductor of heat and electricity is:

- (A) Diamond
 - (B) Graphite
 - (C) Charcoal
 - (D) Coal
-

9. The rate of a homogeneous reaction is affected by:

- (A) Only temperature
 - (B) Only pressure
 - (C) Only concentration of reactants
 - (D) Temperature, pressure, and concentration of reactants
-

10. A particle moves with uniform speed along a circular path. The direction of its acceleration (if any) is-

- (A) Radially outward
 - (B) Radially inward
 - (C) Tangentially
 - (D) No acceleration
-

11. $\tan 1^\circ \cdot \tan 2^\circ \cdot \tan 3^\circ \cdots \tan 89^\circ =$

- (A) 2
- (B) 0

(C) 3

(D) 1

12. If $\log_{10} 3 = 0.4771$, $\log_{10} 7 = 0.8450$, then the value of $\log_3 7$ is

(A) 1.771

(B) 1.5710

(C) 1.8460

(D) 1.6842

13. $(x - y)^8 + (y - z)^8 + (z - x)^8 =$

(A) $3xyz$

(B) $(x - y)(y - z)(z - x)$

(C) $3(x - y)(y - z)(z - x)$

(D) 0

14. If $x = 2 + \sqrt{3}$, $y = 2 - \sqrt{3}$, then the value of $x^8 + y^8$ is

(A) 50

(B) 52

(C) 45

(D) 56

15. The L.C.M. of $7/3$, $5/6$, $14/9$ is

(A) $70/18$

(B) $70/9$

(C) $70/3$

(D) 70
