MHT CET 2026 May 12 Shift 1

Question Paper (Memory-Based)

Conducted by CET Cell, Maharashtra

General Instructions

(i) **Duration:** The total duration of the examination is 3 hours (180 minutes).

(ii) **Total Marks:** The complete paper carries a maximum of 200 marks.

(iii) **Structure:** The paper has 3 Sections:

- **Section A:** 50 Multiple Choice Questions (Physics).
- **Section B:** 50 Multiple Choice Questions (Chemistry).
- **Section B:** 100 Multiple Choice Questions (Mathematics).

(iv) **Compulsory Questions:** All 200 questions are compulsory.

(v) Each question has four options. Only **one** option is correct.

(vi) **Correct Answer:** +1 marks.

(vii) **Incorrect Answer:** (No Negative marking).

(viii) **Unanswered/Marked for Review:** 0 marks.

PHYSICS

1. Eight identical spherical liquid drops, each falling with a terminal velocity v, coalesce to form a single large drop. The terminal velocity of the new large drop is:

(A) $2v$

(B) $4v$

(C) $8v$

(D) $16v$

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2. A uniform solid sphere of mass M and radius R is placed on a smooth horizontal surface. It is struck by a horizontal cue at a height h above the center. For the sphere to roll without slipping immediately after the impact, the value of h must be:

(A) $\frac{R}{2}$
(B) $\frac{2R}{5}$
(C) $\frac{2R}{3}$
(D) $\frac{3R}{5}$

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3. A disc of mass M and radius R has a concentric hole of radius $\frac{R}{2}$. Its moment of inertia about an axis passing through its center and perpendicular to its plane is:

(A) $\frac{15}{32}MR^2$
(B) $\frac{13}{32}MR^2$
(C) $\frac{5}{16}MR^2$
(D) $\frac{3}{8}MR^2$

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4. The work done in increasing the radius of a soap bubble from R to $2R$ is W. The work done in further increasing its radius from $2R$ to $3R$ will be:

(A) $\frac{5}{3}W$
(B) $\frac{4}{3}W$
(C) $\frac{7}{3}W$
(D) W

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5. Water flows through a horizontal pipe. At one point, the velocity is 2 m/s and the pressure is 2 m of water column. What is the pressure at another point where the velocity is 3 m/s? (Density of water $= 10^3$ kg/m^3)

(A) 1.75 m of water

(B) 1.2 m of water

(C) 1 m of water

(D) 1.5 m of water

CHEMISTRY

6. Identify the type of intermolecular force present between benzene and ammonia.

(A) Hydrogen bonding

(B) Dipole-induced dipole interaction

(C) Dipole-dipole interaction

(D) Ion-dipole interaction

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7. What is the SI unit for rate of diffusion?

(A) cm^3 $minute^{-1}$

(B) dm^3 $hour^{-1}$

(C) dm^3 s^{-1}

(D) mL $hour^{-1}$

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8. Which of the following pair of liquids has dipole-induced dipole interaction?

(A) Water and ammonia

(B) Water and chloroform

(C) Water and benzene

(D) Water and ethyl alcohol

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9. A certain mass of a gas occupies a volume of 2.5 dm^3 at NTP. Calculate the change in volume of gas at the same temperature, if pressure of gas is changed to 1.25 atm.

(A) 3.0 dm^3

(B) 0.5 dm^3

(C) 4.5 dm^3

(D) 1.5 dm^3

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10. A gas occupies a volume of 4.2 dm^3 at 101 kPa pressure. What volume will the gas occupy if the pressure is increased to 235 kPa keeping the temperature constant?

(A) 1.8 dm^3

(B) 3.6 dm^3

(C) 0.9 dm^3

(D) 2.1 dm^3

MATHEMATICS

11. Let $f(x)=\int \frac{x\sqrt{x}}{(1+x)^2}dx \quad (x \geq 0)$. Then $f(3)-f(1)$ is equal to:

(A) $-\frac{1}{12}+\frac{1}{2}+\frac{\sqrt{3}}{4}$

(B) $\frac{1}{12}+\frac{1}{2}-\frac{\sqrt{3}}{4}$

(C) $-\frac{1}{6}+\frac{1}{2}+\frac{\sqrt{3}}{4}$

(D) $\frac{1}{6}+\frac{1}{2}-\frac{\sqrt{3}}{4}$

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12. Gas is being pumped into a spherical balloon at the rate of 30 ft^3/min. Find the rate at which the radius increases when the radius becomes 15 ft.

(A) $\frac{1}{30}$ ft/min

(B) $\frac{1}{15}$ ft/min

(C) $\frac{1}{30\pi}$ ft/min

(D) $\frac{1}{20\pi}$ ft/min

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13. Let the function $f(x) = \frac{x-|x|}{x}$. Then:

(A) the function is continuous everywhere

(B) the function is not continuous

(C) the function is continuous when $x < 0$

(D) the function is continuous for all x except zero

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14. If the direction ratios of two lines are given by $l + m + n = 0$ and $mn - 2ln + lm = 0$, then the angle between the lines is:

(A) $\frac{\pi}{4}$

(B) $\frac{\pi}{3}$

(C) $\frac{\pi}{2}$

(D) 0

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15. The equation of normal to the curve $y = \log_e x$ at the point $P(1, 0)$ is:

(A) $2x + y = 2$

(B) $x - 2y = 1$

(C) $x - y = 1$

(D) $x + y = 1$
