MHT CET 2026 May 12 Shift 2

Question Paper (Memory-Based)

Conducted by Maharashtra State CET Cell

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 C:** 50 Multiple Choice Questions (Mathematics)

(iv) **Compulsory Questions:** All 150 questions are compulsory.

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

(vi) **Right Answer:** +1 marks for Physics and Chemistry Questions. +2 marks for Mathematics Questions

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

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

1. A capillary tube of radius r is dipped vertically in water. If the radius of the tube is doubled, then the height of capillary rise becomes:

(A) Half

(B) Double

(C) Four times

(D) Unchanged

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2. The dimensional formula of coefficient of viscosity is:

(A) $[ML^{-1}T^{-1}]$

(B) $[MLT^{-1}]$

(C) $[ML^{-2}T^{-1}]$

(D) $[M^0LT^{-1}]$

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3. The radius of gyration of a thin circular ring about its central axis perpendicular to its plane is:

(A) $R/\sqrt{2}$

(B) R

(C) $\sqrt{2}R$

(D) $2R$

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4. Two soap bubbles of radii 2 cm and 4 cm combine to form a bigger bubble. The radius of the new bubble will be:

(A) 6 cm

(B) 4.8 cm

(C) 8 cm

(D) 5 cm

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5. A body floats in water with 80% of its volume submerged. The density of the body is:

(A) $0.8\rho_w$

(B) $1.25\rho_w$

(C) $0.2\rho_w$

(D) $0.5\rho_w$

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6. Which intermolecular force is strongest among the following?

(A) London dispersion force

(B) Dipole-dipole force

(C) Hydrogen bonding

(D) Dipole-induced dipole force

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7. A gas mixture contains 2 moles of oxygen and 3 moles of nitrogen. If the total pressure of the mixture is 5 atm, then the partial pressure of oxygen is:

(A) 1 atm

(B) 2 atm

(C) 3 atm

(D) 4 atm

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8. Which of the following molecules possesses distorted tetrahedral geometry due to the presence of one lone pair on the central atom?

(A) BF_3

(B) NH_3

(C) CO_2

(D) $BeCl_2$

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9. The conjugate base of $H_2PO_4^-$ is:

(A) H_3PO_4

(B) HPO_4^{2-}

(C) PO_4^{3-}

(D) $H_2PO_3^-$

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10. A particle executes simple harmonic motion such that its displacement is given by

$$x = A\cos(\omega t + \phi)$$

If its kinetic energy is equal to three times its potential energy, then the displacement of the particle from the mean position is:

(A) $\pm\frac{A}{2}$

(B) $\pm\frac{A}{\sqrt{2}}$

(C) $\pm\frac{A}{2\sqrt{2}}$

(D) $\pm\frac{\sqrt{3}A}{2}$

11. If the lines

$$\frac{x-1}{2}=\frac{y+2}{3}=\frac{z}{\lambda}$$

and

$$\frac{x}{1}=\frac{y-1}{2}=\frac{z+1}{3}$$

are perpendicular to each other, then the value of λ is:

(A) -8

(B) -7

(C) -6

(D) -5

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12. A solution contains 0.1 mole of weak acid HA and 0.1 mole of sodium salt NaA in one litre solution. If the dissociation constant of the acid is

$$K_a = 1 \times 10^{-5},$$

then the pH of the solution is:

(A) 3

(B) 4

(C) 5

(D) 6

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13. The shortest distance between the lines

$$\frac{x-1}{1}=\frac{y}{2}=\frac{z+1}{-1}$$

and

$$\frac{x}{2}=\frac{y-1}{-1}=\frac{z}{1}$$

is:

(A) $\frac{1}{\sqrt{2}}$
(B) $\frac{2}{\sqrt{3}}$
(C) $\sqrt{2}$
(D) $\frac{\sqrt{6}}{3}$

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14. A Carnot engine operates between temperatures $500\,K$ and $300\,K$. If it absorbs $600\,J$ heat from the source, then the work done by the engine is:

(A) $120\,J$
(B) $180\,J$
(C) $240\,J$
(D) $300\,J$

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15. If

$$y = x^x,$$

then

$$\frac{dy}{dx}$$

is equal to:

(A) x^x
(B) $x^x(1+\log x)$
(C) x^{x-1}
(D) $(1+x)^x$
