SRMJEEE 2026 June 10 Shift 1

Question Paper (Memory-Based)

Conducted by SRMIST

General Instructions

(i) **Duration:** The total duration of the examination is 150 minutes.

(ii) **Total Marks:** The paper carries a maximum of 130 marks.

(iii) **Questions:** The paper has 130 questions.

(iv) **Marking Scheme:** Each question carries 1 mark and there is no negative marking for incorrect answers.

1. Monochromatic light of frequency 8×10^{14} Hz is incident on a metal surface whose threshold frequency is 5×10^{14} Hz. The stopping potential is approximately:
(Given $h = 6.6 \times 10^{-34}$ J s, $e = 1.6 \times 10^{-19}$ C)

(A) 0.62 V
(B) 1.24 V
(C) 2.48 V
(D) 3.72 V

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2. A planet has mass $81M_E$ and radius $9R_E$, where M_E and R_E are the mass and radius of Earth respectively. The escape velocity from the planet is:

(A) Equal to Earth's escape velocity
(B) 3 times Earth's escape velocity
(C) $\frac{1}{3}$ times Earth's escape velocity

(D) 9 times Earth's escape velocity

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3. The depletion region width of a p-n junction is 4×10^{-6} m and the potential barrier is 0.8 V. The electric field intensity in the depletion region is:

(A) 1×10^5 V/m
(B) 2×10^5 V/m
(C) 4×10^5 V/m
(D) 8×10^5 V/m

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4. An AC source of frequency 50 Hz is connected to a pure capacitor. The phase difference between voltage and current is:

(A) 0°
(B) 45°
(C) 90° (current leads)
(D) 90° (voltage leads)

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5. An object of height 4 cm is placed 15 cm in front of a convex lens of focal length 10 cm. The height of the image formed is:

(A) 4 cm
(B) 6 cm
(C) 8 cm
(D) 12 cm

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6. The statement that is NOT correct is:

(A) Angular quantum number signifies the shape of the orbital

(B) Energies of stationary states in hydrogen like atoms is inversely proportional to the square of the principal quantum number

(C) Total number of nodes for 3s orbital is three.

(D) The radius of the first orbit of He^+ is half that of the first orbit of hydrogen atom.

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7. Which of following is correct?

(A) the lowering of vapour pressure is equal to the mole fraction of solute

(B) the relative lowering of vapour pressure is equal to the mole fraction of solute

(C) the relative lowering of vapour pressure is proportional to the amount of solute in solution

(D) the vapour pressure of the solution is equal to the mole fraction of solvent

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8. K_2HgI_4 is 40% ionised in aqueous solution. The value of its van't Hoff factor (i) is:

(A) 1.6

(B) 1.8

(C) 2.2

(D) 2.0

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9. The molal boiling point elevation constant for water is $0.510\,K\,mol^{-1}$ kg. The boiling point of a solution made by dissolving $6.0\,g$ urea in $200\,g$ water is:

(A) 100.255°C

(B) 100°C

(C) 0.255°C

(D) 99.1°C

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10. For an ideal binary liquid mixture:

(A) $\Delta S_{(\text{mix})} = 0; \Delta G_{(\text{mix})} = 0$

(B) $\Delta H_{(\text{mix})} = 0; \Delta S_{(\text{mix})} < 0$

(C) $\Delta V_{(\text{mix})} = 0; \Delta G_{(\text{mix})} > 0$

(D) $\Delta S_{(\text{mix})} > 0; \Delta G_{(\text{mix})} < 0$

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11. The indefinite integral of $\sin(x)$ **w.r.t** $\cos(x)$ **is:**

(A) $\frac{\sin(2x)}{4} + \frac{x}{2} + c$

(B) $\frac{\sin(2x)}{4} - \frac{x}{2} + c$

(C) $2\sin(2x) + c$

(D) $\sin(x) + \cos(x) + c$

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12. The equation of the lines through $(1, 1)$ **and making angles of** 45° **with the line** $x + y = 0$ **are:**

(A) $x - 1 = 0, x - y = 0$

(B) $x - y = 0, y - 1 = 0$

(C) $x + y - 2 = 0, y - 1 = 0$

(D) $x - 1 = 0, y - 1 = 0$

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13. If the standard deviation of n **elements of the series** $x_1, x_2, x_3, \ldots, x_n$ **is** σ**, then find the variance of the series** $ax_1, ax_2, ax_3, \ldots, ax_n$ **is:**

(A) $a^2\sigma$

(B) $a^2n\sigma$

(C) $a\sigma$

(D) $a^2\sigma^2$

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14. If $1+\sin\theta+\sin^2\theta+\ldots$ upto $\infty = 2\sqrt{3}+4$, then $\theta =$

(A) $\frac{3\pi}{4}$

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

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

(D) $\frac{\pi}{6}$

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15. Find the value of $\begin{vmatrix} 0 & c & b \\ c & 0 & a \\ b & a & 0 \end{vmatrix}^2$

(A) $a^2b^2c^2$

(B) $4a^2b^2c^2$

(C) $2a^2b^2c^2$

(D) $(a+b+c)^2$
