

JEE MAIN 2026 – Memory-Based Questions and Answers

Session 1 | Date: 21 January 2026

Shift: 2

Duration: 3 Hours

Maximum Marks: 300

Note: This paper is prepared based on students' memory and post-exam discussions. Questions may not be exact replicas of the actual exam and are meant only for practice and analysis.

Mathematics

- Let $f(x) = x \dots + x \dots f(x) = x^{\{\dots\}} + x^{\{\dots\}} f(x) = x \dots + x \dots$. Find the value of $f(5)(1) f^{\{5\}}(1) f(5)(1)$.
Options: 55, 43, 39, 78
Answer: 55
- One end of a focal chord of the parabola $y^2 = 16x$ is $(16, 16)$. If a point $P(\alpha, \beta)$ divides this chord internally in the ratio 5:2, find the minimum value of $\alpha + \beta$.
Answer: 7
- The largest natural number n for which 7^n divides $101!101!101!$ is:
Answer: 16
- For the parabola $y^2 = 12x$ with vertex at the origin, if O is the origin, P is a point on the parabola and A is the foot of the perpendicular from P to the axis, find the locus of the centroid of triangle OPA .
Answer: As per given option
- A line passes through $(-3, 5, 2)$ and makes equal angles with the coordinate axes. Find the sum of all possible values of its direction ratios.
Answer: As per given option
- Let z be a complex number such that $|z-5| \leq 3$. If the argument of z is maximum and positive, find the required value.
Answer: As per given option

7. In a GP, the sum of the first 24 terms is 62. Find the first term.
Answer: As per given option
8. For matrices A and B , if
 $(A+B)[xy] = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$ and $(A^5 + B)[xy] = \begin{bmatrix} 0 \\ 0 \end{bmatrix}$
 choose the correct statement.
Answer: As per given option
9. If the area of a given region is $\frac{\alpha}{\beta}$, where α and β are coprime, find $\alpha + \beta$.
Answer: As per given option
10. If the line $\alpha x + 4y = 7$ touches a given ellipse, find one focal distance of the point of contact.
Answer: As per given option
11. A point P lies on the circle $x^2 + y^2 = 4$. Given additional conditions, find 13 times the sum of abscissas.
Answer: As per given option
12. The maximum value of $(\cos 5x)^2 + (\sin 5x)^2$ is $\frac{m}{n}$. Find $m + n$.
Answer: 65
13. If α and β are roots of $x^2 + 2ax + (3a + 10) = 0$ such that $\alpha < 1 < \beta$, find the set of values of a .
Answer: As per given option
14. Solve the given differential equation and find the required value.
Answer: As given
15. Evaluate the integral. If the result is $a + b$, find $2a + b$.
Answer: 204
-

Physics

A battery of emf \mathcal{E} and internal resistance r is connected to an external resistance R . Maximum power is delivered when:

Answer: $R=r$

Keeping significant figures in mind, find the sum of 5.01 m, 153.2 m and 0.123 m.

Answer: 205.3 m

Find the energy of an electron in a given Bohr orbit.

Answer: As per given option

A particle executes SHM with angular frequency 176 rad/s. Find its frequency.

Answer: 88 Hz

The rms speed of oxygen molecules at 47°C is equal to that of hydrogen molecules at:

Answer: -253°C

In a potentiometer wire AB, the galvanometer shows zero deflection at point P. Find the length AP.

Answer: 30 cm

A ray of light is incident parallel to the base of a prism. The emergent ray just grazes the second surface. Given refractive index $2\sqrt{2}$, find the angle of the prism.

Answer: 75°

Find the charge stored on a capacitor in steady state.

Answer: $10\ \mu\text{C}$

The motion of a particle is given by $x = \alpha t^3 + \beta t^2 + \gamma t$. Find the work done from $t = 2\text{ s}$ to $t = 3\text{ s}$.

Answer: 867 J

Find the de Broglie wavelength of a charged particle accelerated through a given potential difference.

Answer: $9.4 \times 10^{-15}\text{ m}$

Two charged spheres move towards each other. Find the minimum velocity required.

Answer: As given

A charged capacitor is connected to an inductor. When 25% of energy is transferred, find the time.

Answer: $\pi 6LC \frac{\pi}{6} \sqrt{LC} 6\pi LC$

Find the equivalent resistance of the given circuit.

Answer: $(3-1)R(\sqrt{3} - 1)R(3-1)R$

A block is placed on a rotating cylinder. Find the minimum coefficient of friction.

Answer: As per given option

Interference fringes: Statement-based question.

Answer: Both statements are true

A diatomic gas does 100 J of work during isobaric expansion. Find the heat supplied.

Answer: 350 J

Chemistry

1. One gram of an organic compound produces 1.49 g of $Mg_2P_2O_7$. Find the percentage of phosphorus.

Answer: 41.6%

2. Match the following:

Answer: a-ii, b-iv, c-i, d-iii

3. Statements based on atomic radius and electronegativity.

Answer: Both statements are incorrect

4. Arrange the following species in decreasing order of nucleophilicity.

Answer: $3 > 2 > 1 > 4$

5. One of the given molecules is optically active. Find the percentage of carbon.

Answer: 51.89%

6. When 8.74 g of MnO_2 reacts with excess HCl, find the mass of chlorine gas produced.

Answer: 7.1 g

7. Find the oxidation state of the central atom in the product formed during the reaction of potassium dichromate.

Answer: +6

8. Find the number of bromine atoms in the final product of the given reaction.

Answer: 5

9. Match List-I with List-II based on structural isomerism.

Answer: A–Q, B–P, C–R, D–S

10. 10–17. Additional conceptual and statement-based questions.

Answers: As given



GETMYUNI