



Sri Chaitanya
Educational Institutions



JEE MAINS 2026

MEMORY BASED QUESTIONS AND SOLUTIONS



BORA VARUN CHAKRAVARTHI
NEET 2023

VAVILALA CHIDVILAS REDDY
JEE ADVANCE 2023

SINGARAJU VENKAT KOUNDINYA
JEE MAIN 2023



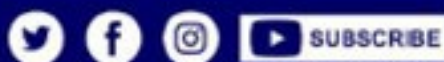
4 Students in Top 11 in JEE-Advanced 2025, All India Open Category

Congratulations to Students, Parents & Staff

#TransformingYourDreamsIntoReality

*In One or More Subjects

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Memory Based Questions and Answers

JEE MAIN 2026

SESSION 2

Test Date: 02nd April 2026 | Shift 1

Instructions

- The test is of **3 hours** duration.
- This test paper consists of 75 questions. Each subject (PCM) has 25 questions. The maximum marks are 300.
- This question paper contains Three Parts. Part-A is Physics, Part-B is Chemistry and Part-C is Mathematics. Each part has only two sections: Section-A and Section-B.
- Section - A: Attempt all questions.
- Section - B: Attempt all questions.
- Section - A (01–20) contains 20 multiple choice questions which have only one correct answer. Each question carries +4 marks for correct answer and –1 mark for wrong answer.
- Section - B (21–25) contains 5 Numerical value based questions. The answer to each question should be rounded off to the nearest integer. Each question carries +4 marks for correct answer and -1 mark for wrong answer.

TOPPERS ARE NOT BORN, THEY'RE MADE @ SRI CHAITANYA
3 RANKS IN TOP 10 IN JEE MAIN 2025 (ALL-INDIA OPEN CATEGORY)

1  **1**  **10** 

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HT. NO. 250310236696*

300
300

295
300
Marks

BELOW
100

31

BELOW
500

95

BELOW
10

10

BELOW
100

98

BELOW
1000

579

TOTAL QUALIFIED RANKS
FOR JEE ADVANCED-2025

22,094



JEE Main – 02nd April – 2026 (Shift-1)

[Memory-Based Questions]

PHYSICS

1. The velocity of a particle is given as $\vec{v} = -x\hat{i} + 2y\hat{j} - z\hat{k}$ m/s. The magnitude of acceleration at point (1,2,4) is ___ m/s² ?

Ans: ($\sqrt{65} = 8$)

2. The dimensional formula for $\frac{1}{2} \in E^2$ is given as $M^a L^b T^c$. Find the value of $2a - b + c$.

Ans: (1)

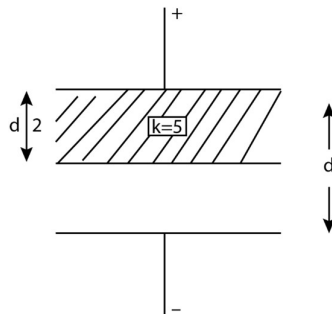
3. The equation of a plane progressive wave is given by $y = 5 \cos \pi \left(200t - \frac{x}{150} \right)$. Where x and y are in cm and t is in seconds. Find the wave velocity for the given wave function.

Ans: (300m/s)

4. If angular momentum of the electron in a hydrogen atom is $\frac{3h}{2\pi}$, then find the energy of the electron in - ___ ev.

Ans: (-1.51 ev)

5. A parallel plate air capacitor has a capacitance C . When it is half filled as shown in the figure with dielectric constant $K = 5$, find the percent Increase in the capacitance.



Ans: (66.67)

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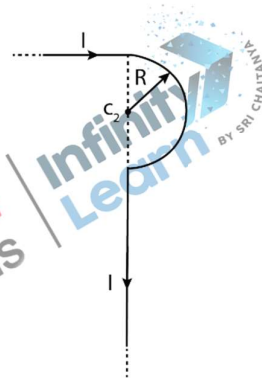
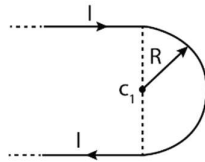
6. A wooden cubic block of relative density 0.4 is floating in water. The side of the cubic block is 10 cm. When a coin is placed on the block, it dips 0.3 cm to achieve equilibrium. The weight of the coin is _____

Ans: (0.03kg)

7. Heat is supplied to a diatomic gas at constant pressure. Then the ratio of $\Delta Q : \Delta U : \Delta W$ is ____

Ans: (7:5:2)

8. Consider two arrangements of wires. Find the ratio of magnetic field at the centre c_1 , c_2 of the semi-circular part.



(1) $\frac{\pi+3}{\pi-1}$

(2) $\frac{\pi+4}{\pi+2}$

(3) $\frac{\pi+2}{\pi+1}$

(4) $\frac{\pi-1}{\pi+1}$

Ans: (3)

9. A particle is rotating in a circular path and at any instance it's position θ and time t are related as $\theta = \frac{5t^4}{40} - \frac{t^3}{3}$. The angular acceleration after 10 seconds is ____

Ans: (130rad/s²)

10. A liquid drop of diameter 2 mm breaks into 512 droplets. The change in the surface energy is $a \times 10^{-6}$, the value of a is ____ (take the surface tension of the liquid = 0.08 N/m)

Ans: (7)

11. Two charged conducting spheres s_1 and s_2 of radius 8cm and 18cm are connected to each other by a wire. After achieving equilibrium, find the ratio of electric fields on s_1 and s_2 _____

Ans: (9:4)

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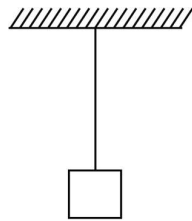


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12. A planet P_1 is moving around the star of mass $2M$ in the orbit of radius R . Another planet P_2 is moving around another star of mass $4M$ in an orbit of radius $2R$. Find the ratio of time period of revolution of P_2 and P_1 is, ____

Ans: (2:1)

13. In the given arrangement weight of the string is W and weight of the block is w . If the cross-sectional area of the string is A , then the stress at a distance $L/3$ from top is given by $\frac{w}{A} + \frac{2W}{\gamma A}$. Determine the value of γ .



Ans: (3)

14. Photons of wavelength λ & 3λ are incident on a metal surface. If the stopping potential for the ejected photoelectrons are $4V_0$ and V_0 respectively, then find the threshold wavelength of the metal surface.

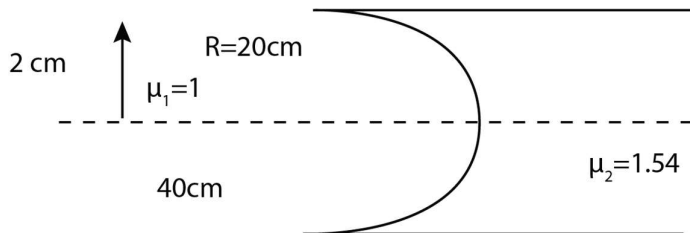
- (1) 6λ (2) 9λ (3) 2λ (4) 8λ

Ans: (2)

15. For an ideal gas having $C_p = 3R$ and $C_v = 2R$. Find the work done by one mole of the gas in an adiabatic expansion when pressure reduces from 8 bar to 1 bar. (Given the initial temperature = 140°C)

Ans: (3434J)

16. Find the image height after refraction from the curved surface.



Ans: (0.96cm)

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CHEMISTRY

1. **Statement I:** The order of Bond length $O_2^-, O_2^{2-}, O_2^+, O_2^{2+}$
Statement II: The order of unpaired electrons in $O_2^-, O_2^{2-}, O_2^+, O_2^{2+}$
- (1) Statement I and II both true (2) Both the statements are false
(3) Statement I True, Statement II False (4) Statement I False, Statement II true.

Ans: (3)

2. The correct increasing order of bond length among the following is

- (1) $O_2^+, O_2, O_2^-, O_2^{2-}$ (2) $O_2^+, O_2, O_2^{2-}, O_2^-$
(3) $O_2^{2-}, O_2^-, O_2, O_2^+$ (4) $O_2^-, O_2^{2-}, O_2^+, O_2$

Ans: (1)

3. K_{sp} of $Ag_2CrO_4 = 32x$, K_{sp} of $AgBr = 4y$

Then, the ratio of molarity (solubility) of (1) to (2) is:

- (1) $\frac{2\sqrt[3]{x}}{y}$ (2) $\frac{\sqrt[3]{x}}{\sqrt{y}}$ (3) $\sqrt{\frac{x}{y}}$ (4) $\sqrt{\frac{x}{y}}$

Ans: (2)

4. For a first order reaction, rate constant at $27^\circ C$ and $t^\circ C$ is 1.5×10^3 and 4.5×10^3 respectively. If the activation energy of reaction is 60 kJ then find temperature t .

Ans: ($43^\circ C$)

5. Match the follow column – I with column – II.

Column-I	Column-II
A) Vitamin - B1	P) Pyridoxine
B) Vitamin-B2	Q) Ascorbic acid
C) Vitamin-B6	R) Thiamine
D) Vitamin-C	S) Riboflavin

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(1) A-R, B-S, C-P, D-Q

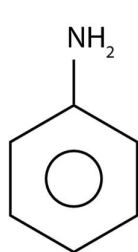
(2) A-R, B-P, C-Q, D-S

(3) A-P, B-Q, C-R, D-S

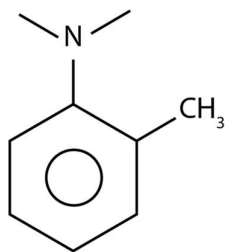
(4) A-Q, B-S, C-R, D-P

Ans: (1)

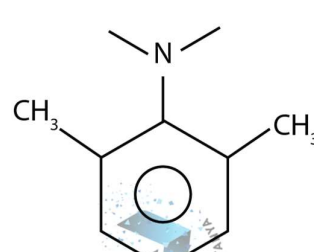
6. The correct order of rate of reaction of following with PhN_2Cl



R



P



Q

(1) $R > P > Q$

(2) $P > R > Q$

(3) $Q > P > R$

(4) $P > Q > R$

Ans: (1)

7. Compound of molecular formula C_5H_{10} can not decolorize Baeyer's reagent, how many hypothetical mono-halo products (Structural only) are obtained by all the isomers of C_5H_{10} .

Ans: (14)

8. 1 mole of an alkane on complete combustion required 8 moles of O_2 find out sum of carbon and Hydrogen in the alkane.

Ans: (17)

9. According to IUPAC nomenclature which is decreasing priority order of given functional groups

(1) amide > aldehyde > ketone > amine > alkyne

(2) aldehyde > amide > ketone > amine > alkyne

(3) aldehyde > amide > amine > alkyne > ketone

(4) alkyne > aldehyde > amide > amine > ketone

Ans: (1)

10. The relation between the time required for 100% completion (t_{100}) and 50% completion (t_{50}) for zero order and first-order reactions is:

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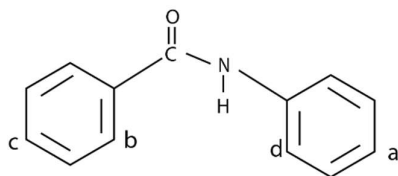


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- (1) For zero order: $t_{100} = 2t_{50}$, for first order: $t_{100} = \infty$
 (2) For zero order: $t_{100} = t_{50}$, for first order: $t_{100} = 2t_{50}$
 (3) For zero order: $t_{100} = \infty$, for first order: $t_{100} = 2t_{50}$
 (4) For zero order: $t_{100} = 2t_{50}$, for first order: $t_{100} = 2t_{50}$

Ans: (1)

11. Consider the electrophilic attack on given compound, the electrophilic substitution reaction is



- (1) Predominately at 'a' position
 (2) Predominately at 'b' position
 (3) Predominately at 'c' position
 (4) Predominately at 'd' position

Ans: (1)

12. Distinguish the compounds given in list-I to list-II (Reagent)

Column-I	Column-II
A) Acetophenone & Acetaldehyde	P) Neutral FeCl_3
B) Phenol & Ethanol	Q) Ammonical AgNO_3
C) Diethyl amine & ethyl amine	R) Alcoholic KOH/CHCl_3
D) Propane & Cyclobutene	S) $\text{Br}_2/\text{H}_2\text{O}$

- (1) A-Q, B-P, C-R, D-S
 (2) A-R, B-P, C-Q, D-S
 (3) A-P, B-Q, C-R, D-S
 (4) A-Q, B-S, C-R, D-P

Ans: (1)

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13. Which compound gives Apple green colour in flame test?

- (1) BaSO_4 (2) $\text{Mn}_3(\text{PO}_4)_2$ (3) $\text{Ca}_3(\text{PO}_4)_2$ (4) $\text{Al}_2(\text{SO}_4)_3$

Ans: (1)

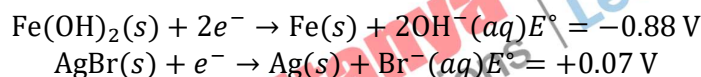
14. Statement – I: The correct order of ionization energy is $\text{Na} > \text{Mg} > \text{Al} > \text{Ar}$

Statement – II: Among the following elements Sc, Ca and Mg. Only Ca has highest 3rd ionization energy.

- (1) Statement I and II both true (2) Both the statements are false
(3) Statement I True, Statement II False (4) Statement I False, Statement II true.

Ans: (2)

15. An electrochemical cell is constructed using half-cells in the direction of spontaneous change:



Which of the following option is correct?

- (1) AgBr electrode acts as cathode and $\text{Fe}(\text{OH})_2$ electrode acts as anode.
(2) $\text{Fe}(\text{OH})_2$ electrode acts as cathode and AgBr electrode acts as anode.
(3) Both electrodes act as cathode.
(4) Both electrodes act as anode.

Ans: (1)

16. Which of the following sets includes all the species that will change the orange colour of $\text{K}_2\text{Cr}_2\text{O}_7$ in acidic medium?

- (1) $\text{Fe}^{2+}, \text{Sn}^{2+}, \text{I}^-, \text{S}^{2-}$ (2) $\text{Fe}^{2+}, \text{NO}_2^-, \text{SO}_2, \text{Sn}^{4+}$
(3) $\text{S}^{2-}, \text{Fe}^{3+}, \text{I}^-, \text{C}_2\text{O}_4^{2-}$ (4) $\text{Fe}^{3+}, \text{SO}_4^{2-}, \text{S}^{2-}, \text{Sn}^{4+}$

Ans: (1)

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17. Match the Column-I with Column-II.

List -1 Chromium (III) complexes	List -2 $\Delta_0 (cm^{-1})$
A. $[Cr(CN)_6]^{3-}$	(i) 15,060
B. $[CrF_6]^{3-}$	ii) 17,400
C. $[Cr(H_2O)_6]^{3+}$	iii) 22,300
D. $[Cr(en)_3]^{3+}$	iv) 26,600

(1) A-iv, B-i, C-ii, D-iii

(2) A-i, B-ii, C-iv, D-iii

(3) A-iv, B-ii, C-i, D-iii

(4) A-iv, B-iii, C-ii, D-i

Ans: (1)

18. 18 g of H_2O reacts with x g of Fe to produce Fe_3O_4 . The value of 'x' is, (Atomic mass of Fe = 56u)

(1) 84g

(2) 63 g

(3) 42 g

(4) 51 g

Ans: (3)

19. The orbit angular momentum of electron in n^{th} shell of H atom is $\frac{3h}{\pi}$. The total energy of electron is:

(1) -0.38eV

(2) -3.4eV

(3) -0.544eV

(4) -0.85eV

Ans: (1)

20. Calculate the energy required for the following process



Given: Ground state energy of Hydrogen is -13.6 eV/atom

(1) 13.6eV/atom

(2) 122.4eV/atom

(3) 54.4eV/atom

(4) 30.6eV/atom

Ans: (2)

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MATHEMATICS

1. The number of seven-digit numbers, that can be formed by using the digits 1, 2, 3, 5, 7 such that each digit is used at least once is

- (1) 16800 (2) 15400 (3) 29400 (4) 17800

Ans: (1)

2. Let $\sin \frac{\pi}{18} \sin \frac{5\pi}{18} \sin \frac{7\pi}{18} = k$. Then find $\sin 10k \frac{\pi}{3}$

Ans: $\frac{\sqrt{3}+1}{2\sqrt{2}}$

3. $\lim_{x \rightarrow 2} \frac{\sin(x^3 - 5x^2 + ax + b)}{(\sqrt{x-1} - 1) \log_e(x-1)} = m$, then $a + b + m$ is equal to

- (1) 8 (2) 4 (3) 10 (4) 6

Ans: (2)

4. Find midpoint of sides of triangle ABC be $(\frac{5}{2}, 7)$, $(\frac{5}{2}, 3)$ and $(4, 5)$. If its incenter is (h, k) then $3h + k$ is equal to

- (1) 12 (2) 11 (3) 13 (4) 14

Ans: (3)

5. Let $\sum_{k=1}^n a_k = 6n^3$, then $\sum_{k=1}^6 \left(\frac{a_{k+1} - a_k}{36}\right)^2$ equal to

Ans: (139)

6. Let $S = \{x \in [-\pi, \pi]: \sin x(\sin x + \cos x) = a, a \in \mathbb{Z}\}$. Then $n(S) =$

- (1) 6 (2) 8 (3) 7 (4) 9

Ans: (2)

7. The number of elements in set $S = \{(r, k): k \in \mathbb{Z} \text{ and } {}^{36}C_{r+1} = \frac{6({}^{35}C_r)}{(k^2-3)}\}$ is

- (1) 4 (2) 8 (3) 16 (4) 2

Ans: (1)

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8. The number of critical points of $f(x) = \begin{cases} \left| \frac{\sin x}{x} \right|, & x \neq 0 \\ 1, & x = 0 \end{cases}$ in the interval $(-2\pi, 2\pi)$ is equal to

Ans: (5)

9. If curve $y = f(x)$ passes through the point $(1, e)$ and satisfies the differential equation $dy = y(2 + \log_e x)dx, x > 0$, then $f(e)$ is equal to

(1) e^2 (2) e^{2e} (3) e^e (4) e^{e^2}

Ans: (2)

10. Let $\alpha, \beta \in \mathbf{R}$. If $x + 2y + z = 5, 2x + y + \alpha z = 5, 8x + 4y + \beta z = 18$ has no solution, then $\frac{\beta}{\alpha}$ is equal to

Ans: (4)

11. If the point of intersection of the lines $\frac{x+1}{3} = \frac{y+a}{5} = \frac{z+b+1}{7}$ and $\frac{x-2}{1} = \frac{y-b}{4} = \frac{z-2a}{7}$ lies on xy -plane then the value of $a + b$ is

(1) 3 (2) 6 (3) 7 (4) 9

Ans: (3)

12. Let x and y be real numbers such that $50 \left(\frac{2x}{1+3i} - \frac{y}{1-2i} \right) = 31 + 17i, i = \sqrt{-1}$. Then the value of $10(x - 3y)$ is:

(1) 75 (2) 35 (3) 31 (4) 20

Ans: (1)

13. Let $\alpha, \alpha + 2, \alpha \in \mathbf{Z}$ be the roots of quadratic equation $x(x + 2) + (x + 1)(x + 3) + (x + 2)(x + 4) + \dots + (x + n - 1)(x + n + 1) = 4n$ for some $n \in \mathbf{N}$. Then $n + \alpha$ is equal to:

(1) 0 (2) 3 (3) 2 (4) 1

Ans: (3)

14. $\int_0^{2\sqrt{3}} \log_2(x^2 + 4)dx + \int_2^4 \sqrt{2^x - 4}dx =$

Ans: $8\sqrt{3}$

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15. $\int_0^3 \frac{e^x + e^{-x}}{[x]!} dx =$

Ans: $\frac{1}{2}(e^2 - 1/e^2 + e^3 - 1/e^3)$

17. A : is the set containing 101 terms in A.P with common difference '5' and first term 1.

B : is the set containing 71 terms in A.P with common difference 7 and first term is 9.

Then the number of elements in $A \cap B$ which are divisible by 3

Ans: (5)

18. Let $a, b, c \in \{1, 2, 3, 4\}$, if the probability that $ax^2 + 2\sqrt{2}bx + c > 0, \forall x \in R$, is $\frac{m}{n}$ where $\gcd(m, n) = 1$ then $m + n =$

Ans: (81)

19. $(1 + \sin x) \frac{dy}{dx} + \cos xy = -\cos x, y(0) = 0$ then find α , where $(\alpha, \frac{-1}{2})$ lies on $y = f(x)$

Ans: $\frac{\pi}{2}$

20. A line passes through (1,1,1) and perpendicular to the vectors $2i - 2j + k$ and $i + 2j + 2k$. Let $P(a, b, c)$ be the foot of perpendicular from origin to the line then $34(a + b + c) =$

Ans: (10)

21. Ellipse: $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ passes through (3, 4) with eccentricity $\frac{\sqrt{5}}{3}$ then the length of latus rectum.

Ans: $4\sqrt{145}/9$

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Sri Chaitanya

ACADEMY

JEE Mains 2026 Session 2



DETAILED PAPER SOLUTIONS



LIVE

2nd Apr - Shift 1



JEE ADVANCED



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