



YOUR
FUTURE
DEPENDS ON
WHAT YOU DO
TODAY

AIR 1

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Memory Based Questions and Answers

JEE MAIN 2026

SESSION 1

Test Date: 23rd January 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.

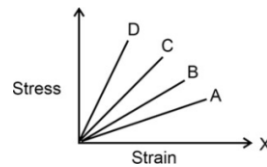


JEE Main – 23rd January – 2026 (Shift-1)

[Memory-Based Questions]

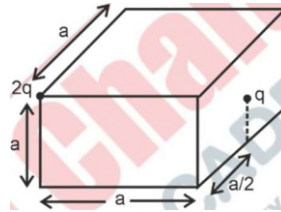
PHYSICS

1. Which graph has the maximum Young's modulus?



Ans: (Graph D)

2. There are two-point charges, one at the vertex and other at the face of a cube as shown in the figure. Find electric flux through the cube.



(1) $3q/\epsilon_0$

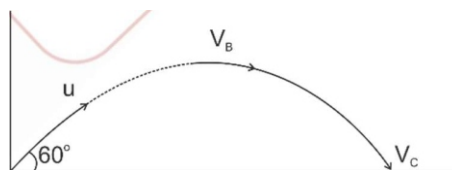
(2) q/ϵ_0

(3) $3q/4\epsilon_0$

(4) $5q/\epsilon_0$

Ans: (3)

3. If a projectile is being launched with speed u and angle of projection is 60° with horizontal. Find the ratio of speed at highest point to the speed at final point .



Ans: (1:2)

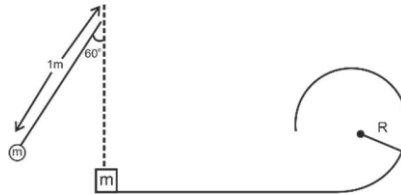
4. Find de - broglie wavelength of O_2 molecule.
Given mass of O_2 molecule is m and the Temp is $27^\circ C$.

Ans: $(\frac{h}{\sqrt{900mk_B}})$



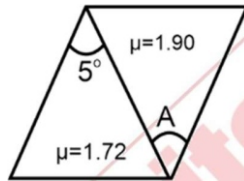
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5. A bob of mass m is released as shown when it was making 60° with the vertical. Another identical mass ' m ' is kept at rest. Elastic collision occurs. Find R for completing circle.



Ans: (0.2 m)

6. What is the value of A , if the combination of prism shows dispersion without any deviation.



Ans: (4)

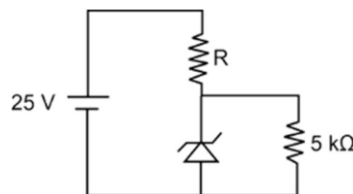
7. Two bodies, one of mass ' m ', and the other of mass $2m$ are connected by a massless rod of length D . If the angular momentum of the system about an axis passing through the com of the system & perpendicular to the rod is L , find the angular velocity of the system.

Ans: $(\frac{3L}{2mD^2})$

8. A rod of mass m and length l falls from rest in horizontal magnetic field B . Find the value of induced emf when it falls through height ' h ' _____

Ans: $(Bl\sqrt{2gh})$

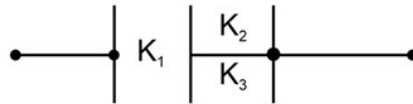
9. For the given circuit the breakdown voltage of Zener diode is $V_z = 5$ volts. And it can withstand maximum current of $I_z = 5$ mA. Find the value of R .



Ans: $(\frac{10}{3} k\Omega)$



10. If $k_1 = 2, k_2 = 3, k_3 = 5$
If $C = \frac{\epsilon_0 A}{d}$ then equivalent capacitance is nC. Find n.



Ans: $(\frac{92}{35})$

11. The stress is taken on Y axis and Strain is taken on x-axis then Young's modulus of the object



- (1) $10^8 \frac{N}{m^2}$ (2) $2 \times 10^8 \text{ N/m}^2$ (3) $4 \times 10^8 \frac{N}{m^2}$ (4) $5 \times 10^8 \text{ N/m}^2$

Ans: (1)

12. In YDSE the fringe width for two monochromatic light waves are equal. If the ratio of wavelengths is $\frac{\lambda_1}{\lambda_2} = \frac{1}{2}$ and ratio of distance b/w slits is 2: 1, find the ratio of Distance between the slit plane and screen

Ans: (4:1)

13. Simple pendulum of length 3 m completes 20 oscillations in 10 seconds.

If one another pendulum completes 40 oscillations in same 10 seconds, then what will be the length of that pendulum?

Ans: $(\frac{3}{4} \text{ m})$

14. A 25 kg mass moving with 30 m/s collides perfectly inelastically with another mass 15 kg of same material moving with 10 m/s in opposite direction. Find the rise in temperature of the system. (Given $C = 5 \text{ cal/g}^\circ\text{C}$ & $1 \text{ cal} = 4.2 \text{ J}$)

Ans: (0.0089°C)



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15. Four identical solid cylinders having mass (M), radius (R), length (L) ($R < L$) arranged in a square loop.

Find the moment of inertia along the axis passing through two opposite Sides.

(1) $\frac{3}{4}MR^2 + \frac{7}{12}ML^2$

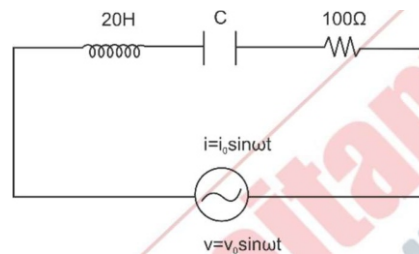
(2) $\frac{3}{8}MR^2 + \frac{7}{12}ML^2$

(3) $\frac{3}{2}MR^2 + 2/3ML^2$

(4) $3/8MR^2 + 1/6ML^2$

Ans: (3)

16. If $\omega_0 = 100$ rad/s, find the resonant frequency ω_r and the capacitance C



Ans: ($\omega_r = 100$ rad/s; $C = 5\mu\text{F}$)



CHEMISTRY

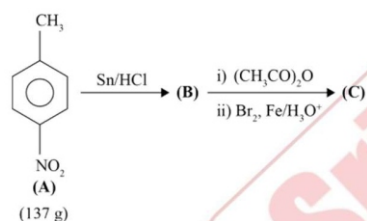
1. The correct order of ionisation energy of Cl, S, P, Al, Si is
- (1) $\text{Cl} > \text{P} > \text{S} > \text{Si} > \text{Al}$ (2) $\text{P} > \text{Cl} > \text{S} > \text{Al} > \text{Si}$
(3) $\text{Cl} > \text{S} > \text{P} > \text{Si} > \text{Al}$ (4) $\text{Cl} > \text{Al} > \text{Si} > \text{P} > \text{S}$

Ans: (1)

2. Given below are two statements
S-I : $[\text{CoBr}_4]^{2-}$ absorbs less energy than $[\text{CoCl}_4]^{2-}$
S-II : $[\text{CoCl}_4]^{2-}$ has higher crystal field splitting energy than $[\text{CoBr}_4]^{2-}$
- (1) Both S-I and S-II are correct (2) Both S-I and S-II are incorrect
(3) S-I is correct and S-II are incorrect (4) S-I is incorrect and S-II are correct

Ans: (1)

3. In the reaction sequence, what is the mass (in grams) of product (C) formed?

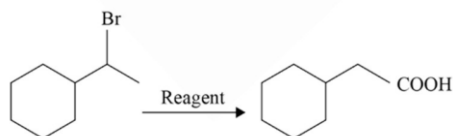


Ans: (186)

4. Which of the following undergo nitration at fastest rate ?
- (1) $\text{C}_6\text{H}_5\text{NO}_2$ (2) $\text{C}_6\text{H}_5\text{CH}_3$ (3) $\text{C}_6\text{H}_5\text{COOH}$ (4) $\text{C}_6\text{H}_5\text{Br}$

Ans: (2)

5. Correct Sequence of reagent for given



- (1) $(\text{CH}_3)_3\text{CO}^-$, Hydro Boration Oxidation, $\text{CrO}_3/\text{H}_2\text{SO}_4$
(2) $(\text{CH}_3)_3\text{CO}^-$, Oxymercuration-Demercuration, $\text{CrO}_3/\text{H}_2\text{SO}_4$



(3) EtO, Hydro Boration Oxidation, PCC

(4) EtO^- , $\text{H}^+/\text{H}_2\text{O}$, KMnO_4

Ans: (1)

6. For the following change, $\text{H}_2\text{O}(\ell) \rightarrow \text{H}_2\text{O}(\text{g}) + 100^\circ\text{C}$
_{5°C}

Select the correct answer:

(1) $q = +ve$, $w = +ve$, $\Delta H = +ve$

(2) $q = -ve$, $w = -ve$, $\Delta H = +ve$

(3) $q = +ve$, $w = -ve$, $\Delta H = +ve$

(4) $q = -ve$, $w = -ve$, $\Delta H = -ve$

Ans: (3)

7. A) Ionic radii of trivalent cations of Group 13 elements decrease down the group.
B) Electronegativity of Group 13 elements decreases down the group.
C) Among the Group 13 elements, boron has the highest first ionisation enthalpy.
D) The trichlorides and triiodides of Group 13 elements are covalent in nature.

Choose the correct answer from the options given below:

(1) B and D only

(2) A and D only

(3) C and D only

(4) A and C only

Ans: (3)

8. Given below are two statements.

Statement I : Sublimation is used for the separation and purification of compounds with low melting point.

Statement II: The boiling point of a liquid increases as the external pressure is reduced.

In the light of the above statements, which is the correct option.

(1) Both statement-I and statement-II are correct

(2) Both statement-I and statement-II are incorrect

(3) Statement-I is correct and statement-II is incorrect

(4) Statement-I is incorrect and statement-II is correct

Ans: (2)

9. Given,

(A) $n = 5$, $m_l = -1$

(B) $n = 3$, $l = 2$, $m_l = -1$, $m_s = +1/2$



The maximum number of electrons in an atom that can have the given quantum numbers in (A) and (B) respectively are:

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

Ans: (3)

10. Correct order of +3 ionic radius among B, Al, Ga, In, Tl.

- (1) $B^{3+} < Al^{3+} < Ga^{3+} < In^{3+} < Tl^{3+}$ (2) $B^{3+} < Al^{3+} < Ga^{3+} < Tl^{3+} < In^{3+}$
(3) $B^{3+} < Ga^{3+} < Al^{3+} < Tl^{3+} < In^{3+}$ (4) $Al^{3+} < B^{3+} < Ga^{3+} < In^{3+} < Tl^{3+}$

Ans: (1)

11. Which of the following is correct?

- (1) $+2.18 \times 10^{-18}$ J is the energy of the second orbit of He^+
(2) -1.09×10^{-18} J is the energy of the second orbit of H
(3) -2.18×10^{-18} J is the energy of the third orbit of Li^{2+}
(4) $+8.72 \times 10^{-18}$ J is the energy of the first orbit of He

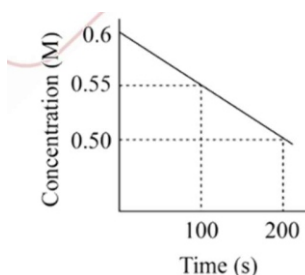
Ans: (3)

13. An element from the first transition series and another element from the third transition series belonging to the same group do not liberate H_2 gas from dilute acids like HCl. Both form halides. The hybridisation state of the metal ion halides, respectively, are:

- (1) Both sp^3 (2) Both dsp^2 (3) sp^3 and dsp^2 (4) dsp^2 and sp^3

Ans: (3)

14. Consider the following graph of concentration vs time.



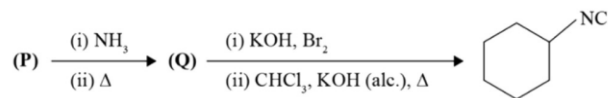
Find half-life of reaction.

- (1) 600 s (2) 200 s (3) 300 s (4) 100 s

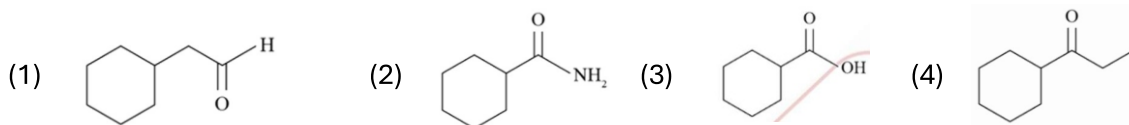
Ans: (1)



15. Compound 'P' undergoes the following sequence of reactions are :-



'P' is ?



Ans: (3)

16. Regarding the complex $[\text{Ni}(\text{CN})_4]^{2-}$, the incorrect statements are:

A) It is a red colored solid

B) Number of unpaired electrons are 2

C) It will contain two five-membered rings

(1) A, B

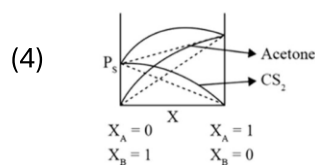
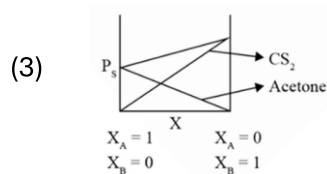
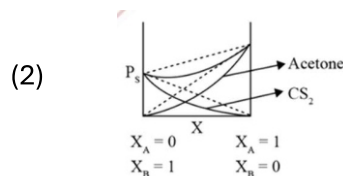
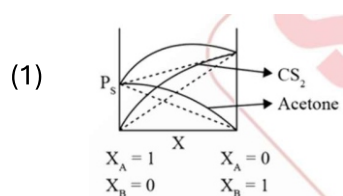
(2) B, C

(3) A, C

(4) A, B, C

Ans: (4)

17. A binary solution is formed by mixing Acetone (A) and CS_2 (B). The variation of vapor pressure Vs mole fraction will be



Ans: (1)



MATHEMATICS

1. A rectangle is formed by lines $x = 0, y = 0, x = 3, y = 4$. A line perpendicular to $3x + 4y + 6 = 0$ divides the rectangle into two equal parts, then the distance of the line from $(-1, \frac{3}{2})$ is
- (1) 2 (2) $\frac{17}{10}$ (3) $\frac{6}{5}$ (4) $\frac{8}{5}$

Ans: (2)

2. Let $A = \{-2, -1, 0, 1, 2, 3, 4\}$ and R be a relation defined on the set A , such that $R = \{(x, y) : (2x + y) \leq -2, x \in A, y \in A\}$. Let l be the number of elements in R . Let m be the minimum number of elements to be added in R to make it Reflexive. Let n be the number of elements to be added in R to make it symmetric, then the value of $l + m + n$ is:
- (1) 10 (2) 17 (3) 11 (4) 14

Ans: (2)

3. $50.100C_{50} + 52.100C_{52} + \dots + 100.100C_{100} =$

Ans: $(100 \cdot 2^{98})$

4. Number of 4-letter words with or without meaning formed from the letters of the word PQRSSSTUUV is
- (1) 1232 (2) 1400 (3) 1422 (4) 1162

Ans: (3)

5.
$$f(x) = \begin{cases} \frac{ax^2+2ax+3}{4x^2+4x-3} & \text{If } x \neq \frac{-3}{2}, \frac{1}{2} \\ b & \text{If } x = \frac{-3}{2}, \frac{1}{2} \end{cases}$$

$f(x)$ is continuous at $x = \frac{-3}{2}$. $f \circ f(x) = \frac{7}{5}$ then $x =$

- (1) 1.4 (2) 0 (3) 1 (4) 2

Ans: (3)

6.
$$\int_{\frac{\pi}{24}}^{\frac{5\pi}{24}} \frac{dx}{1 + \sqrt[3]{\tan 2x}} =$$



Ans: $(\frac{\pi}{12})$

7. $\int \frac{(2-x^2)e^x}{\sqrt{1+x}(\sqrt{1-x})^3} dx =$

Ans: $(e^x \sqrt{\frac{1+x}{1-x}} + c)$

8. $x^4 dy + (4x^3 y + 2 \sin x) dx = 0, y(\frac{\pi}{2}) = 0$. Find $y(\frac{\pi}{3}) \times \pi^4$

Ans: (81)

9. Consider an ellipse $\frac{x^2}{2} + \frac{y^2}{1} = 1$ and a line L: $y - x = 1$ where L intersects the ellipse at 2 points A and B. Find the angle subtended by points A and B at the centre of the ellipse.

Ans: $(\frac{\pi}{2} + \tan^{-1} \frac{1}{4})$ or $(\pi - \tan^{-1} 4)$

10. Let z be a complex number such that, $3 \leq |2z - (3 + 3i)| \leq 7$. Then the minimum value of $|z + \frac{1}{2}(5 + 3i)|$.

Ans: $(\frac{3}{2})$

11. Area Bounded by curves $\varphi = \max[\sin x, \cos x]$ at $x = 0, x = \frac{3\pi}{2}$ is A then $A + A^2 =$

Ans: (12)

12. For given vectors $\vec{a} = -\hat{i} + \hat{j} + 2\hat{k}$ and $\vec{b} = 2\hat{i} - \hat{j} + \hat{k}$ where $\vec{c} = \vec{a} \times \vec{b}$ and $\vec{d} = \vec{c} \times \vec{b}$. Then the value of $(\vec{a} - \vec{b}) \cdot \vec{d}$

(1) -35

(2) 53

(3) -52

(4) 25

Ans: (1)

13. In set $S = \{1, 2, \dots, 100\}$, select two different numbers m, n such that $n - m \geq 10$ is having a probability a/b . Find $a + b$, where a and b are co-primes.

Ans: (201)



14. Find the number of possible values of n such that the coefficient of x, x^2, x^3 are in A.P. in expansion $(1 + x^2)^2(1 + x)^n$.

- (1) 12 (2) 9 (3) 3 (4) 6

Ans: (3)

15. $f(x)$ is a twice differentiable function such that $(f(x))^2 = 25 + \int_0^x ((f(t))^2 + (f'(t))^2) dt$. then find the mean of $f(\log_e 1), f(\log_e 2), \dots \dots f(\log_e 625)$.

Ans: (1565)

16. The number of solutions of $13\cos 2\theta + 8\cos \theta - 3\sqrt{3} = 0$, if $\theta \in [-3\pi, 2\pi]$

Ans: (5)

17. The mean and variance of the 8 observations $-10, -7, -1, x, y, 16, 2, 9$ are $\frac{7}{2}$ and $\frac{293}{4}$ respectively. Then, the mean of $x, y, x + y + 1, |x - y|$ is

Ans: (11)
