
YOUR
FUTURE
DEPENDS ON
WHAT YOU DO
TODAY
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Memory Based Questions and Answers

JEE MAIN 2026

SESSION 1

Test Date: 28th 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 – 28th January – 2026 (Shift-1)

[Memory-Based Questions]

PHYSICS

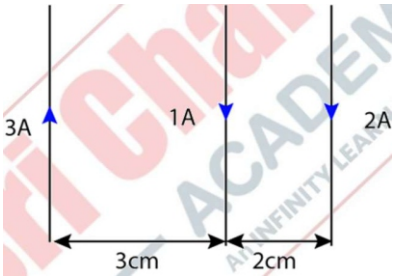
1. Lens of focal length f = 18cm has refractive index 3/2. It is immersed in water of refractive index 4/3. Change in the focal length is α x f, value of α is____

   Ans: (3)

2. A body of mass 5kg is placed on a rough inclined plane of angle 30° and coefficient of friction $\sqrt{}$3/2. Find the force required to push the body down at constant velocity.

   Ans: (12.5)

3. There are three long parallel wires in a plane as shown. Find force on 15 cm of length of the middle wire.



   (1) 5μ N (2) 7μ N (3) 6μ N (4) μN

   Ans: (3)

4. Solid sphere with radius 10 cm is rotating about axis which is at 15 cm from the COM of the sphere. Radius of gyration is $\sqrt{n}$ cm. The value of n is.

   Ans: (265)

5. Equation of an EMW in a medium is given by $E = 2\sin(2 \times 10^{15}t - 10^{7}x)$. Find the refractive index of the medium.

   (1) 3/2 (2) 2 (3) 5/3 (4) 4/3

   Ans: (1)

6. For a circular coil of radius R, the magnetic field at the center of the coil is $B_0 = 16\mu$ T. What will be the magnetic field on the axis at a distance $x = \sqrt{3}R$ from center?

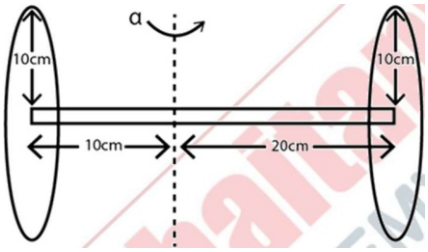
(1) $\frac{1}{4}\mu$ T (2) $\frac{1}{2}\mu$ T (3) $4\mu T$ (4) 2μ T

Ans: (4)

7. From a pipe which is 5 m from the ground level, water is leaking at a regular rate. When the 6th water drop falls from the tap, the first drop reaches the ground. Find the distance travelled by the 4th drop at that instant.

Ans: (0.8)

8. If the mass of a disc and the mass of a rod are 600 g each. If the value of torque about the given axis is 43×10^5 dyne cm, then the value of angular acceleration α is



Ans: (10.6 rad/s^2)

9. An atom ${}^{8}_{3}X$ is bombarded with a range of fundamental particles for 10 sec . The atom absorbed 10 electrons, 10 protons and 9 neutrons. Find the ratio of initial and final surface area of the nucleus.

Ans: (4:9)

10. Two batteries with emf E and internal resistance r are connected to a 6Ω resistor in both series and parallel combination. The current is same in both the combinations. Find the internal resistance.

Ans: (6)

11 Electric current in a circuit is given by $i = i_0\left(\frac{t}{T}\right)$, find the rms current for period $t = 0$ to $t = T$.

(1) $\frac{i_0}{\sqrt{5}}$ (2) $\frac{i_0}{\sqrt{2}}$ (3) $\frac{i_0}{2}$ (4) $\frac{i_0}{\sqrt{3}}$

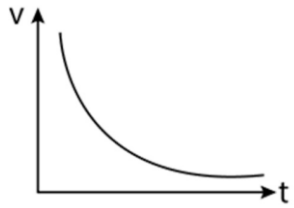
Ans: (4)

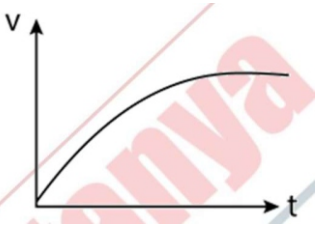
12. The position of a particle is given by $x = A\sin(\omega t)$. The potential energy is minimum at $t = \frac{T}{2\beta}$, where T is time period. Find the minimum value of positive β.

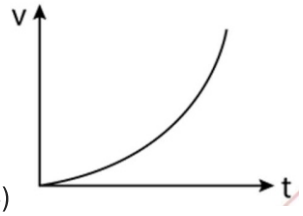
(1) ½ (2) 1 (3) 1/3 (4) 1/6

Ans: (1)

13. An object is being dropped from height h above the ground. Apart from force of gravity an additional drag force $F = -kv$ acts on the object. Find the graph of v versus t.

(1) 

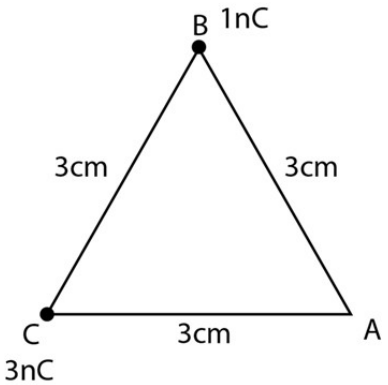
(2) 

(3) 

(4) 

Ans: (2)

14. Two point charges 1nC & 3nC are placed at the two corners of an equatorial triangle of side 3 cm. The work done in bringing a charge of 3nC from infinity to the third corner of the triangle is



Ans: (3.6×10^{-6} J)

15. In the potentiometer when the cell in the secondary circuit is shunted with 4Ω resistance, the balance is obtained at a length 120cm of wire. Now when the same cell is shunted with 12Ω resistance the balance is shifted to a length of 180cm. The internal resistance of the cell is___Ω

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

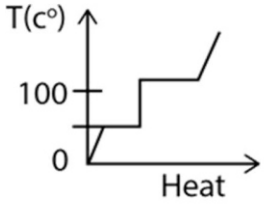
Ans: (3)

16. If 10 kg of ice at $-10^{\circ}\mathrm{C}$ is mixed with 100 kg of water at $25^{\circ}\mathrm{C}$, then the resultant temperature in equilibrium for the mixture shall be ($S_i = \frac{1}{2}\mathrm{cal/gm\ ^{\circ}C}, S_w = 1\mathrm{cal/gm\ ^{\circ}C}, L_f = 80\mathrm{cal/gm}$)

Ans: (15°C)

17. Heat is supplied to water at a constant rate. The best representation of temperature versus heat supplied graph for water in the range $-20^{\circ}\mathrm{C}$ to $120^{\circ}\mathrm{C}$.

(1)



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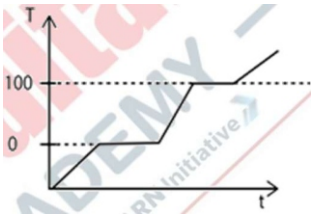

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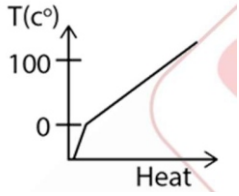

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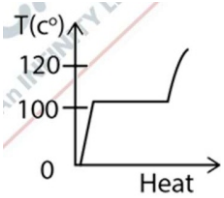


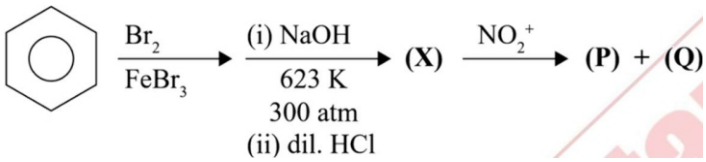
Ans: (2)

CHEMISTRY

1. In Carius method of estimation of ' Br ', 1.53 g of an organic compound gave 1 g of AgBr . The percentage of Br in organic compound is ___
(Atomic mass of Ag & Br is 108 & 80 u respectively)

(1) 35.23 (2) 43.53 (3) 27.81 (4) 22.71

Ans: (3)

2. 

These can be separated by

(1) Simple distillation (2) Fractional distillation

(3) Steam distillation (4) Sublimation

Ans: (3)

3. In period 4 of the periodic table which elements have the highest and lowest atomic radii respectively

(1) K and Br (2) Na and Cl (3) K and Se (4) Rb and Br

Ans: (1)

4. Consider the following nickel complexes:

$A = \left[Ni(CN)_4\right]^{2-}$

$B = \left[Ni(CO)_4\right]$

$C = \left[NiCl_4\right]^{2-}$

Which of the following options correctly describes the magnetic behaviour (paramagnetic/diamagnetic) of these complexes?

(1) A, B are diamagnetic; C is paramagnetic

(2) A, B are paramagnetic; C is diamagnetic

(3) A, C are diamagnetic; B is paramagnetic

(4) A, C are paramagnetic; B is diamagnetic

Ans: (1)

5. Consider Following ions

$I.CH_3 - CH_2^-$

$II.CH_2 = CH^-$

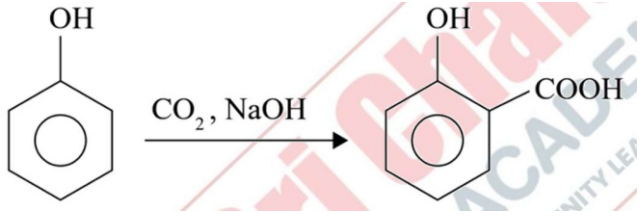
$III.HC \equiv C^-$

Stability of ions is in the order

(1) $III > II > I$ (2) $II > III > I$ (3) $I > II > III$ (4) $I > III > II$

Ans: (1)

6.



Which of the following statements is incorrect? Options:

(1) P is more acidic than Q (2) Q is more acidic than P

(3) Q is soluble in $NaHCO_3$ (4) P and Q both are soluble in NaOH

Ans: (1)

7. An organic compound is given. It undergoes 1^{st} order decomposition. It decomposes to 1/8 and 1/10 in time $t(1/8)$ and $t(1/10)$ respectively. Find out $\frac{t_{1/8}}{t_{1/10}} \times 10 = \_\_\_$.

Ans: (12.67)

8. Given below are two statements.

Statement I : Given the molecules XeF_4, SiF_4, SeF_4 and BF_4^-, all the compounds have two different E-F bond lengths, where E is the central atom.

Statement II : Among the species O_2^+, O_2, O_2^- and F_2, the species O_2^- has the highest bond order.

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

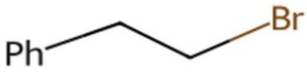
(3) Statement-I is correct and statement-II is incorrect

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

Ans: (2)

9. $$Ph - CH = CH_2 \xrightarrow[(PhCOO)_2]{HBr} Product$$

Correct statement(s) regarding product:

(a) 

is minor product

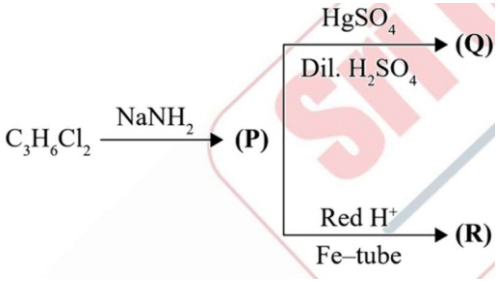
(b) Benzene also forms a bi product

(c) Reaction follow free radical mechanism

(d) In absence of peroxide carbocation mechanism is followed

(1) b,c (2) a,c,d (3) c,d (4) a,c,d

Ans: (3)

10. 

Ratio of hydrocarbon in ' R ' & ' Q '

(1) 3: 1 (2) 2: 3 (3) 2: 1 (4) 3: 2

Ans: (1)

11. For equivalence point Xml of 0.02 M HCl is treated with 5 mL of 0.02 M of a weak base. The pK_b of weak base is 5.69 and the pH of the resulting solution is Y at half of the equivalence point. The value of $(x + y)$ is:

(1) 15 (2) 8.81 (3) 13.31 (4) 3.81

Ans: (3)

12. Choose the correct statements in respect of hydrides of Group-15.

A. Reducing power increasing down the group.

B. Basic nature increases down the group.

C. Stability decreases the group.

D. Boiling point decreases regularly down the group.

(1) A, B and C only (2) A, B and D only (3) A and C only (4) B, C and D only

Ans: (3)

13. The wave number of three spectral lines of H -atom are given. Identify the correct set of spectral lines belonging to Balmer series

(1) $\frac{5R}{36}, \frac{3R}{16}, \frac{21R}{100}$ (2) $\frac{3R}{4}, \frac{3R}{16}, \frac{7R}{144}$ (3) $\frac{7R}{144}, \frac{3R}{16}, \frac{16R}{255}$ (4) $\frac{5R}{36}, \frac{3R}{16}, \frac{21R}{24}$

Ans: (1)

14. Calculate pH of 10 mM weak acid (HA) dissociated in water.
Assume α to be negligible.
Given: $pK_a = 4$

Ans: (3)

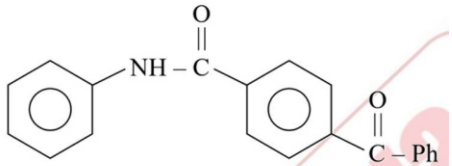
15. $500ml, 1.2M$ KI is completely reacted with $0.2M, 500ml KMnO_4$ solution in basic medium. $I^-$is oxidised to I_2. The liberated I_2 react with $0.1M Na_2S_2O_3$ solution. Then find volume (in L) of $Na_2S_2O_3$ solution required to react with liberated I_2.

Ans: (3L)

16. Select correct reaction

(1) $Ph-\overset{\overset{O}{\|}}{C}-NH_2 \xrightarrow{KOBr} Ph-NH_2$

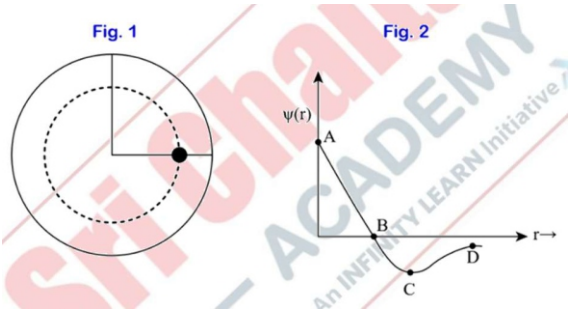
(2) $Ph-\overset{\overset{O}{\|}}{C}-NH_2 \xrightarrow{LiAlH_4} Ph-NH_2$

(3) $Ph-NH-\overset{\overset{O}{\|}}{C}-Ph \xrightarrow[AlCl_3]{Ph-\overset{\overset{O}{\|}}{C}-Cl}$ 

(4) $Ph-CN \xrightarrow[Na+EtOH]{} Ph-NH_2$

Ans: (1)

17. Spherical node shown in Fig-1 is best represented by which point in Fig-2?



(1) A (2) B (3) C (4) D

Ans: (2)

18. Among the following coloured ion is/are

(1) Ti^{3+} and V^{3+} (2) Ti^{3+} and Sc^{3+} (3) Ti^{4+} and V^{3+} (4) V^{2+} and Sc^{3+}

Ans: (1)

19. Observe the following reaction:

$$C_3H_6Cl_2 \xrightarrow[NaNH_2]{\text{excess}} (X) \xrightarrow[H_2O]{Hg^{2+},H^+} (Y)$$

The product (Y) gives which of the following test?

(1) Tollen's test (2) Lucas test (3) Iodoform test (4) Fehling's test

Ans: (3)

MATHEMATICS

1. Let $f(x)$ be a polynomial function such that $f(x^2+1)=x^4+5x^2+2$. The value of $\int_0^3 f(x)\,dx$

Ans: $(\frac{33}{2})$

2. If α and β $(\alpha<\beta)$ are roots of the equation $\lambda x^2-(\lambda+3)x+3=0$ and $\frac{1}{\alpha}-\frac{1}{\beta}=\frac{1}{3}$, then the sum of all possible values of λ is

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

Ans: (4)

3. If $g(x)=3x^2+2x-3$, $f(0)=-3$, and $4g(f(x))=3x^2-32x+72$. Then the value of $f(g(2))$ is:

(1) $-\frac{25}{6}$ (2) $\frac{25}{6}$ (3) $-\frac{7}{2}$ (4) $\frac{7}{2}$

Ans: (4)

4. Consider the 10 observations: $2,3,5,10,11,13,15,21,a,b$ such that the mean of the observations is 9 and the variance is 34.2. Then, the mean deviation about the median of observations is:

(1) 3 (2) 5 (3) 6 (4) 7

Ans: (2)

5. Let $\vec{a},\vec{b},\vec{c}$ be three unit vectors such that $|\vec{a}-\vec{b}|^2+|\vec{b}-\vec{c}|^2+|\vec{c}-\vec{a}|^2=9$ and $|2\vec{a}+k\vec{b}+k\vec{c}|=3$, then the positive value of k is:

Ans: (5)

6. If $\frac{\tan(A-B)}{\tan A}+\frac{\sin^2 C}{\sin A}=1; A,B,C\in(0,\frac{\pi}{2})$, then

(1) $\tan A, \tan C, \tan B$ are in G.P (2) $\tan A, \tan B, \tan C$ are in G.P

(3) $\tan A, \tan B, \tan C$ are in A.P (4) $\tan A, \tan C, \tan B$ are in A.P

Ans: (2)

7. Let $S = \{x^3 + ax^2 + bx + c; a, b, c \in N \& a, b, c \leq 20\}$ be a set of polynomials. Then the number of polynomials in S , which are divisible by $x^2 + 2$, is

(1) 20 (2) 10 (3) 6 (4) 120

Ans: (2)

8. Let $\tan(\pi/4 + 1/2\cos^{-1} 2/3) + \tan^{-1}(1/2\sin^{-1} 2/3) = \mathrm{k}$. The number of solutions of the equation $\sin^{-1}(kx - 1) = \sin^{-1} x - \cos^{-1} x$ is

Ans: (1)

9. The value of $\sum_{k=1}^{\infty} (-1)^{k+1} \left(\frac{k(k+1)}{k!}\right)$ Is

(1) $e/2$ (2) $2/e$ (3) $\sqrt{e}$ (4) $1/e$

Ans: (4)

10. Let ABC be an equilateral triangle with the orthocenter at the origin and then BC^2

(1) 3 (2) 2 (3) 4 (4) 5

Ans: (1)

11. Let $S = \{1,2,3,4,5,6,7,8,9\}$. Let x be the number of 9-digit numbers formed using the digits of the set S such that, only one digit is repeated and it is repeated exactly twice. Let ' y ' be the number of 9-digit number formed using the digits of the set S such that, only two digits are repeated and each of these is repeated exactly twice. Then,

(1) $56x = 9y$ (2) $9x = 2y$ (3) $21x = 4y$ (4) $45x = 7y$

Ans: (3)

12. $\lim_{x\to 0} \frac{\ln(\sec(ex)\sec(e^2x)\sec(e^3x)\ldots\sec(e^{10}x))}{e^2 - e^{2\cos x}}$

Ans: $\left(\frac{e^{20} - 1}{2\left(e^2 - 1\right)}\right)$

13. The area of region $R = \{(x, y): xy \leq 8, 1 \leq y < x^2, x > 0\}$ is

Ans: $\left(\frac{2}{3}\left(24\ln 2 - 7\right)\right)$

14. Let z be a complex number such that $|z - 6| = 5, |z + 2 - 6i| = 5$, then

$z^3 + 3z^2 - 15z + 141 =$

Ans: (50)

15. Let $A = \{1,2,3, \ldots ,9\}; xRy$ iff $x - y$ is multiple of 3 .
S_1 : Number of elements in R is 36
S_2: R is equivalence relation.
(1) S_1 & S_2 both are correct
(2) S_1 is correct but S_2 is not correct
(3) S_2 is correct but S_1 is not correct
(4) S_1 & S_2 both are incorrect.

Ans: (3)

16. Let S be number of 4 -digit numbers abcd where product of digits is 20 . Let P be number of 5-digit numbers abcde where product of digits is 20 , then $s + p$ is equal to

Ans: (74)

17. A bag containing 10 balls out of which k-red balls and ($10 - k$) are black balls. If 3 balls are drawn from the bag and the three balls are black, then the probability of the balls are 9 black and 1 red is $\frac{p}{q}$ then p + q is

Ans: (69)

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