



## **JEE MAIN-2026**

**Test Date: 22<sup>nd</sup> Jan 2026 (Second Shift)**

**Please read the instructions carefully. You are allotted 5 minutes specifically for this purpose.**

### **IMPORTANT INSTRUCTIONS**

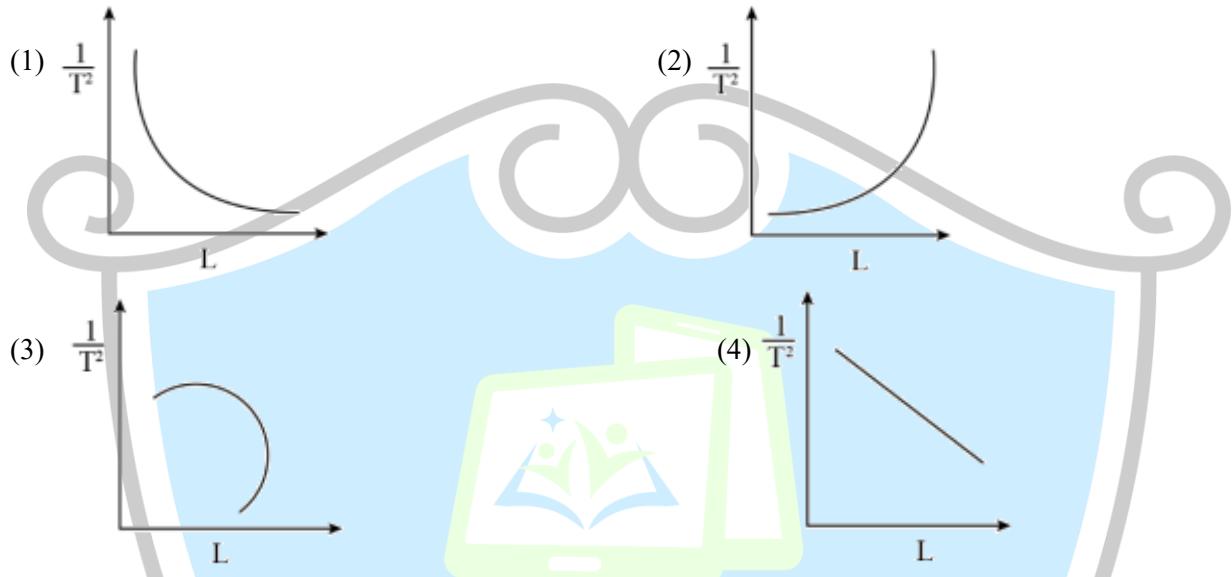
- The test is of **3 hours** duration.
- This test paper consists of 75 questions. Each subject (PCM) has 25 questions. The maximum marks are 300.
- This question paper contains Three Parts. Part-A is Physics, Part-B is Chemistry and Part-C is Mathematics. Each part has only two sections: Section-A and 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.



## Memory Based Questions

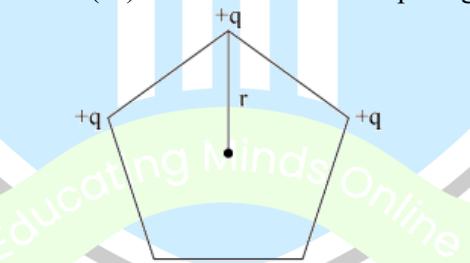
### PHYSICS

1. Using a simple pendulum experiment  $g$  is determined by measuring its time period  $T$ . Which of the following plots represent the correct relation b/w the pendulum length  $l$  & time period  $T$ .



Ans: (1)

2. Five positive charges each having charge  $q$  are placed at the vertices of a pentagon as shown in the figure. The electric potential ( $V$ ) & the electric field ( $\vec{E}$ ) at the center  $O$  of the pentagon due to the 5 positive charges are:-



(1)  $V = 0, E = 0$   
(2)  $V = \frac{5q}{4\pi\epsilon_0 r}, E = \frac{5q}{4\pi\epsilon_0 r^2}$   
(3)  $V = \frac{5q}{4\pi\epsilon_0 r}, \vec{E} = 0$   
(4)  $V = \frac{5q}{4\pi\epsilon_0 r}, E = \frac{5\sqrt{3}q}{8\pi\epsilon_0 r^2} \hat{r}$

Ans: (3)

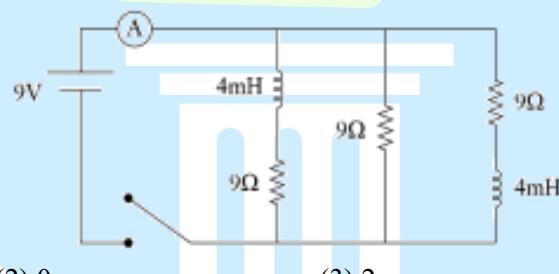
**Ans: (1)**

4. 3 small identical bubbles of water having same charge on each coalesce to form bigger bubbles, Then the ratio of the potentials on one initial bubble & that on the resultant bigger bubble is:

**Ans: (1)**

**Ans: (1)**

6. Fig shows a circuit that contains 3 resistances ( $9\Omega$  each) & two inductors ( $4\text{ mH}$ ). The reading of ammeter when switch K is turned ON, is      A.



**Ans: (4)**

7. For the given logic gate find output function.



(1)  $\bar{A} \cdot \bar{B} + C + D$       (2)  $\bar{A} + \bar{B} + \bar{C} \cdot \bar{D}$       (3)  $AB + CD$       (4)  $AB + \bar{C} \cdot \bar{D}$

Ans: (4)

**Ans: (1)**

9. The smallest wavelength of Lyman series is 91nm. The difference between the largest wavelength of Paschen and Balmer series is nearly.

**Ans:** (1217 nm)

10. A cylindrical conductor of Length 2 m and Area of cross section  $0.2 \text{ mm}^2$  carries an electric current of  $1.6 \text{ A}$  when its ends are connected to  $2 \text{ V}$  battery. Mobility of electrons in the conductor is  $\alpha \times 10^{-3} \text{ m}^2/\text{V}\cdot\text{s}$ . The value of  $\alpha$  is [Electron concentration =  $5 \times 10^{28}/\text{m}^3$  and Electron charge =  $1.6 \times 10^{-19} \text{ C}$ ].

**Ans: (1)**

11. An insulated cylinder of volume  $60\text{cm}^3$  is filled with a gas at  $27^\circ\text{C}$  and 2 atmospheric pressure. Then the gas is compressed making the final volume as  $20\text{ cm}^3$  while allowing the temperature to rise to  $77^\circ\text{C}$ . The final pressure is \_\_\_\_ atm.

Ans: (7)

12. A conducting circular loop is rotated about its diameter at a constant angular speed of 100 rad/s in a magnetic field of 0.5T that is perpendicular to the axis of rotation. When the loop is rotated by  $30^\circ$  from the horizontal position the induced EMF is 15.4 mV. The radius of the loop is \_\_\_\_\_ mm

**Ans:** (14)

13. Two masses  $m$  and  $2m$  are connected by a light string going over a pulley (disc) of mass  $30m$  with radius  $r = 0.1$  m. The Pulley is mounted in a vertical plane and it is free to rotate about its axis. Final speed of  $2m$  when it descends by a distance of  $3.6$  metre. [Assume string does not slip and  $g = 10$  m/s $^2$ ]

**Ans:** (2m/s)

14. The wavelength of light when it is passing through water is 540nm. The refractive index of water is  $4/3$ . The wavelength of the same light when it is passing through a transparent medium having refractive index of  $3/2$  is.

(1) 840 nm      (2) 480 nm      (3) 400 nm      (4) 356 nm

**Ans: (2)**

15. When a part of straight capillary tube is placed vertically in liquid, the liquid rises up to certain height  $h$ . If the inner radius of capillary tube, density of the liquid and the surface tension of the liquid decreases by 1% each, then the height of liquid in the tube will change by  $\dots$  %

thick t

(2) +3      (3) -1

- 70.

(4) + 1

Ans. (4)

16. **S-I:** For a mechanical system of many particles, total kinetic energy is the sum of kinetic energies of all the particles

**S-II:** The total kinetic energy can be the sum of kinetic energy of the centre of mass with respect to origin and the kinetic energy of all the particles w.r.t. the centre of mass as reference.

Ans. (2)



## CHEMISTRY

1. Which of the following mixture gives a buffer solution with  $\text{pH} = 9.5$  ?

Given  $\text{pK}_b(\text{NH}_4\text{OH}) = 4.75$

- (1) 0.2 M  $\text{NH}_4\text{OH}$ (0.4L) + 0.1M  $\text{HCl}$ (1L)
- (2) 0.4 M  $\text{NH}_4\text{OH}$ (1L) + 0.1 M  $\text{HCl}$ (1L)
- (3) 0.5 M  $\text{NH}_4\text{OH}$ (0.2L) + 0.2M  $\text{HCl}$ (0.5L)
- (4) 0.2 M  $\text{NH}_4\text{OH}$ (0.5L) + 0.1 M  $\text{HCl}$ (0.5L)

**Ans:** (4)

2. The energy of first (lowest) Balmer line of H atom is  $x$  J. The energy (in J) of second Balmer line of H atom is.

- (1)  $\frac{x}{1.35}$
- (2)  $x^2$
- (3)  $2x$
- (4)  $1.35x$

**Ans:** (4)

3. Given below are two statements.

**Statement I:**  $\text{C} < \text{O} < \text{N} < \text{F}$  is the correct order in terms of first ionization enthalpy values.

**Statement II:**  $\text{S} > \text{Se} > \text{Te} > \text{Po} > \text{O}$  is the correct order in terms of the magnitude of electron gain enthalpy values. 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.

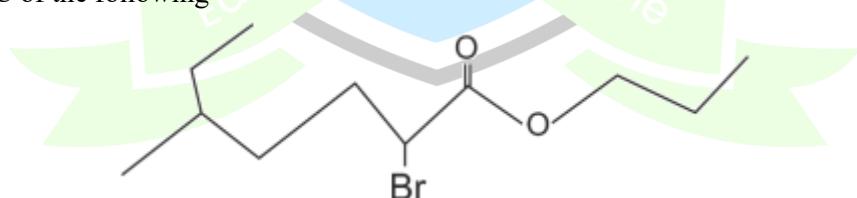
**Ans:** (1)

4. When 1g of compound (X) is subjected to Kjeldahl's method for estimation of Nitrogen, 15 mL, 1M  $\text{H}_2\text{SO}_4$  was neutralized by Ammonia evolved. The percentage of nitrogen in compound (X) is

- (1) 21
- (2) 0.21
- (3) 42
- (4) 0.42

**Ans:** (3)

5. Name of IUPAC of the following

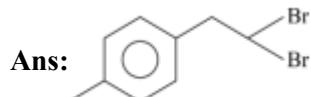


- (1) 2-Bromo-5-methyl propanoate
- (2) n-propyl-1-bromo-4-methyl hexanoate
- (3) 2-Bromo-5-methyl hexyl propanoate
- (4) n-propyl-2-bromo-5-methyl heptanoate

**Ans:** (4)

**Ans: (2)**

7. The dibromo compound [P] of molecular formula ( $C_9H_{10}Br_2$ ) when heated with excess sodamide followed by treatment with dilute HCl gives [Q]. On warming [Q] with Mercuric sulphate and dilute sulphuric acid yield (R). Which gives positive iodoform test but negative Tollen's test. The compound [P] is



8. Which of the following is a mixed oxide?  
(1)  $\text{Fe}_2\text{O}_3$       (2)  $\text{PbO}_2$       (3)  $\text{Pb}_3\text{O}_4$

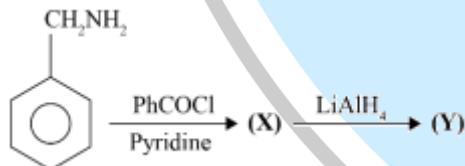
**Ans: (3)**

9. Correct order of ionization enthalpy is

- (1)  $\text{F} > \text{Cl} > \text{Cl}^- > \text{F}^-$
- (2)  $\text{F}^- > \text{Cl}^- > \text{F} > \text{Cl}$
- (3)  $\text{Cl} > \text{F} > \text{Cl}^- > \text{F}^-$
- (4)  $\text{F} > \text{Cl} > \text{F}^- > \text{Cl}^-$

**Ans:** (1)

10. Consider the following reaction,



The correct structure of Y is

(1)  $\text{PhCH}_2\text{NHCOPh}$       (2)  $\text{Ph-CH}_2\text{NHCH}_2\text{Ph}$   
(3)  $\text{PhNH}_2\text{CH}_2\text{Ph}$       (4)  $\text{PhCH}_3$

**Ans: (2)**

11. Which of following is basic buffer?

- (1)  $\text{NaOH} + \text{CH}_3\text{COONa}$
- (2)  $\text{NaOH} + \text{Na}_2\text{SO}_4$
- (3)  $\text{K}_2\text{SO}_4 + \text{H}_2\text{SO}_4$
- (4)  $\text{NH}_4\text{OH} + \text{NH}_4\text{Cl}$

Ans: (4)

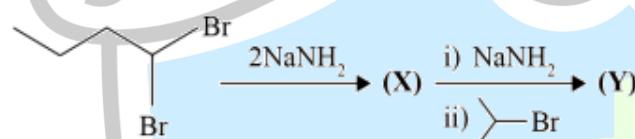
12. Match the following List-I with List-II and choose the correct option.

List-I (Reaction with Glucose)	List-II (Product)
(a) Hydroxyl Amine	(i) Gluconic Acid
(b) Br <sub>2</sub> Water	(ii) Glucose penta-acetate
(c) Excess acetic anhydride	(iii) Saccharic Acid
(d) Conc. HNO <sub>3</sub>	(iv) Glucose-oxime

(1) a(i), b(ii), c(iii), d(iv)  
 (2) a(iv), b(i), c(ii), d(iii)  
 (3) a(iv), b(ii), c(iii), d(i)  
 (4) a(i), b(ii), c(iv), d(iii)

**Ans: (2)**

13.

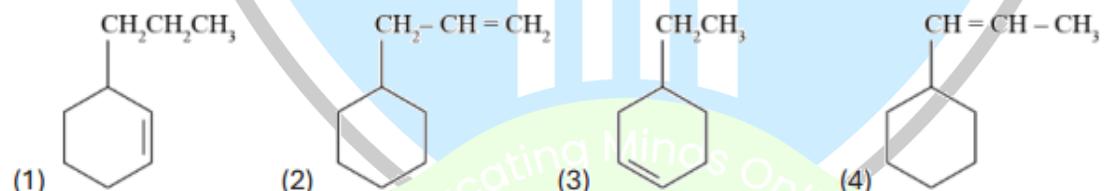


What is the IUPAC name of compound 'Y'?

(1) Isopropyl but-1-yne  
 (2) 2-Methyl hex-2-yne  
 (3) 5-Methyl hex-2-yne  
 (4) 2-Methyl hex-3-yne

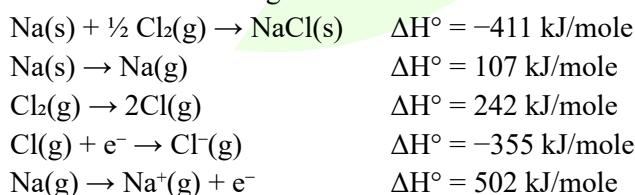
**Ans: (4)**

14. An alkene on reductive ozonolysis gives methanal as one of the products. Its structure is



**Ans: (2)**

15. Consider the following data :

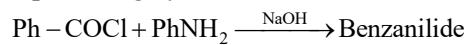


Find out lattice energy of NaCl(s).

(1) -786 kJ mol<sup>-1</sup>  
 (2) -628 kJ mol<sup>-1</sup>  
 (3) -428 kJ mol<sup>-1</sup>  
 (4) -393 kJ mole<sup>-1</sup>

**Ans: (1)**

16. 5.8 g Aniline is converted into benzanilide with some reaction sequences. Calculate mass of benzanilide formed, if percentage yield of reaction is 82%.



**Ans:** (10.1 g)





10. Let  $C_r$  denote the coefficient of  $x^r$  in the binomial expansion of  $(1+x)^n$ ,  $n \in \mathbb{N}$ ,  $0 \leq r \leq n$ . If  $P_n = C_0 - C_1 + \frac{2^2}{3}C_2 - \frac{2^3}{4}C_3 + \dots + \frac{(-2)^n}{n+1}C_n$  then the value of  $\sum_{n=1}^{25} \frac{1}{P_{2n}}$  equals

(1) 650      (2) 675      (3) 580      (4) 525

**Ans: (2)**

11. Let  $f(x) = [x]^2 - [x+3] - 3$ ,  $x \in \mathbb{R}$  where  $[.]$  is the greatest integer function. Then

- (1)  $\int_0^2 f(x) dx = -6$
- (2)  $f(x) = 0$  for finitely many values of  $x$
- (3)  $f(x) > 0$  only for  $x \in [4, \infty)$
- (4)  $f(x) < 0$  only for  $x \in [-1, 3)$

Ans: (4)

12. Suppose  $a, b, c$  are in A.P and  $a^2, 2b^2, c^2$  are in GP. If  $a < b < c$  and  $a + b + c = 1$  then  $9(a^2 + b^2 + c^2)$  is \_\_\_\_\_

**Ans: (9)**

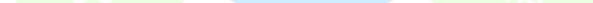
13.  $AX = B$  where  $\text{Adj}A = \begin{pmatrix} 4 & 2 & 2 \\ -5 & 0 & 5 \\ 1 & -2 & 3 \end{pmatrix}$ . If  $X = \begin{bmatrix} x \\ y \\ z \end{bmatrix}$  is a Solution of Systems of equations where  $B = \begin{bmatrix} 4 \\ 0 \\ 2 \end{bmatrix}$  then

$|x + y + z|$  is equal to

**Ans: (2)**

14. Let  $f$  and  $g$  be the functions satisfying  $f(x+y) = f(x)f(y)$ ,  $f(1) = 7$  and  $g(x+y) = g(x)g(y)$ ,  $g(1) = 1$  for all  $x, y \in \mathbb{N}$  if  $\sum_{x=1}^n \left(\frac{f(x)}{g(x)}\right) = 19607$ ,  $n = ?$

(1) 6

Ans: (4) The logo for Educational Online features the text "Educational Online" in a stylized, overlapping font. The word "Educational" is in a green, rounded font, and "Online" is in a blue, rounded font. The two words overlap each other, with "Educational" appearing behind "Online".

**Ans:** (4)

15. Let  $L$  be line  $\frac{x+1}{2} = \frac{y+1}{3} = \frac{z+3}{6}$  and let  $S$  be the set of all points  $(a, b, c)$  on  $L$ , whose distance from line  $\frac{x+1}{2} = \frac{y+1}{3} = \frac{z-9}{0}$  along the line  $L$  is 7. Then  $\sum_{(a,b,c) \in S} (a+b+c)$  is equal to:

**Ans:** (1)

16. Among the statements  
**S<sub>1</sub>:** If  $A(5, -1)$  and  $B(-2, 3)$  are two vertices of a triangle, whose orthocenter is  $(0, 0)$ , then its third vertex is  $(-4, -7)$   
**S<sub>2</sub>:** If positive numbers  $2a, b, c$  are three consecutive, in terms of an A.P., then the lines  $ax + by + c = 0$  are concurrent at  $(2, -2)$

- (1) both are correct
- (2) only  $S_1$  is correct
- (3) both are incorrect
- (4) only  $S_2$  is correct

**Ans:** (4)

17. Let  $n$  be the number obtained on rolling a fair die. If the Probability that the system  $x - ny + z = 6, x + (n-2)y + (n+1)z = 8, (n-1)y + z = 1$  has a unique solution is  $\frac{k}{6}$  then the sum of  $k$  and

Possible values of  $n$  is

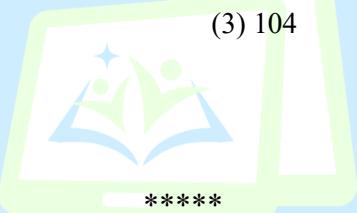
- (1) 21
- (2) 20
- (3) 24
- (4) 22

**Ans:** (4)

18. Let  $\vec{a} = 2\hat{i} - \hat{j} + \hat{k}$  and  $\vec{b} = \lambda\hat{j} + 2\hat{k}, \lambda \in \mathbb{Z}$  be two vectors, let  $\vec{c} = \vec{a} \times \vec{b}$  and  $\vec{d}$  be a vector of magnitude 2 in  $yz$ -plane. If  $|\vec{c}| = \sqrt{53}$ , then the maximum Possible value of  $(\vec{c} \cdot \vec{d})^2$  is equal to

- (1) 208
- (2) 52
- (3) 104
- (4) 26

**Ans:** (1)



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