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JEE (MAIN) 2026

MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-1

DATE & DAY: 22nd January 2026 & Thursday

PAPER-1

Duration: 3 Hrs.

Time: 09:00 – 12:00 IST

SUBJECT: PHYSICS

Selections in JEE (Advanced)/
IIT-JEE Since 2002

52979

Classroom: 35901 | Distance: 17078

Selections in JEE (Main)/
AIEEE Since 2009

262693

Classroom: 194471 | Distance: 68222

Selections in NEET (UG)/
AIPMT/AIIMS Since 2012

22733

Classroom: 15409 | Distance: 7324

Admission Open for 2026-27

Target: JEE (Advanced) | JEE (Main) | NEET (UG) | PCCP (Class V to X)

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PART : PHYSICS

1. Two disc having same moment of inertia about their axis. Thickness is t_1 and t_2 and they have same density. If $R_1/R_2 = 1/2$, then find t_1/t_2 .

(1) $1/16$ (2) 16 (3) $1/4$ (4) 4

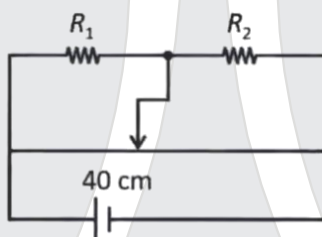
Ans. (2)

2. In series R-L circuit, voltage of battery is 10 V. Resistance and inductance are 10Ω and 10 mH respectively. Find energy stored in the inductor when current reaches $\frac{1}{e}$ times of maximum value

(1) 0.67 mJ (2) 1.33 mJ (3) 0.33 mJ (4) 0.50 mJ

Ans. (1)

3. In a potentiometer null point for two resistance R_1 and R_2 is at 40 cm as shown. If 16Ω is connected in parallel to R_2 then null point is at 50 cm then R_1 and R_2 are respectively.



(1) $16\Omega, 48\Omega$ (2) $32\Omega, 32/3\Omega$ (3) $16/3\Omega, 8\Omega$ (4) $32/3\Omega, 32\Omega$

Ans. (3)

4. A projectile is thrown upward at an angle 60° with the horizontal. The speed of the projectile is 20 m/s when its direction of motion is 45° with the horizontal. The initial speed of the particle is

Ans. $20\sqrt{2}$ m/s

5. Match the Following:-

LIST-1	LIST-2
a) Spring constant	i) $ML^2 T^{-2} K^{-1}$
b) Thermal conductivity	ii) $ML^2 T^{-2}$
c) Boltzmann constant	iii) $ML^2 T^{-2} A^{-2}$
d) Inductance	iv) $MLT^{-3} K^{-1}$

Ans. [a-(ii), b-(iv), c-(i), d-(iii)]

6. Two thin circular rings are lying in the same plane and are touching each other at a single point. The first ring has mass 5 kg and radius 10 cm, while the second ring has mass 10 kg and radius 20 cm. Find the moment of inertia of the combined system about a straight line passing through the point of contact and lying in the plane of the rings.(tangent)

(1) $\frac{24}{40}$ kg m² (2) $\frac{27}{50}$ kg m² (3) $\frac{17}{12}$ kg m² (4) $\frac{27}{40}$ kg m²

Ans. (4)

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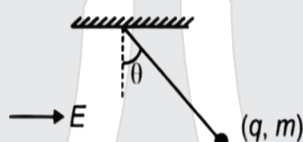
7. In the given situation force at center on 1 kg mass is F_1 . Now if $4m$ and $3m$ is interchanged the force is F_2 .
Given : $\frac{F_1}{F_2} = \frac{2}{\sqrt{\alpha}}$. Find α .



- (1) $\alpha = 1$ (2) $\alpha = 3$ (3) $\alpha = 7$ (4) $\alpha = 5$

Ans. (4)

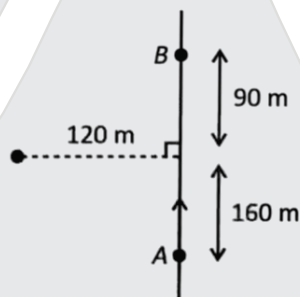
8. A simple pendulum with bob (mass m & charge q) is in equilibrium in presence of horizontal electric field E then tension in thread is



- (1) $\sqrt{m^2 g^2 + q^2 E^2}$ (2) $mg + qE$ (3) $mg + qE \tan \theta$ (4) $\sqrt{mg + qE}$

Ans. (1)

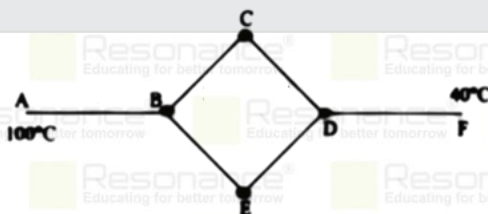
9. Detector D moves from A to B and observe the frequencies are differing by 10 Hz. Source is emitting frequency f_0 as shown: Speed of detector is 35 times less than speed of sound. Then f_0 is



- (1) 150 Hz (2) 250 Hz (3) 350 Hz (4) 400 Hz

Ans. (2)

10. Six identical Metal rods are arranged as shown, find the temperatures at junction at B & D.



Ans. (80, 60)

11. In adiabatic process the temperature reduces to $\frac{1}{4}$ th and volume increases to 8 times. Find adiabatic constant of the gas.

- (1) $\frac{3}{4}$ (2) $\frac{5}{7}$ (3) $\frac{5}{3}$ (4) $\frac{8}{5}$

Ans. (3)

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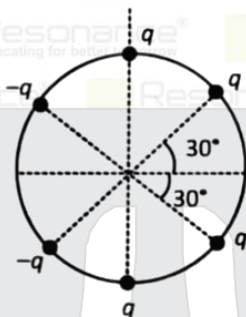
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12. An α -particle with KE 7.9 MeV is projected towards a stationary target nucleus of $Z = 79$. Find the distance of closest approach.

(1) 1.44×10^{-14} (2) 2.88×10^{-14} (3) 1.44×10^{-15} (4) 2.88×10^{-15}

Ans. (2)

13. Six charges ($4 + q, 2 - q$) are present at circle of radius r and centred at origin as shown. Electric field at origin is



(1) $\frac{\sqrt{3}q}{4\pi\epsilon_0 r^2} \hat{i}$ (2) $\frac{\sqrt{3}q}{4\pi\epsilon_0 r^2} (-\hat{i})$ (3) $\frac{\sqrt{3}q}{2\pi\epsilon_0 r^2} (-\hat{i})$ (4) $\frac{\sqrt{3}q}{\pi\epsilon_0 r^2} (\hat{i})$

Ans. (3)

14. A ray of light is incident at an angle i on an equilateral prism. If the ray emerges grazing the second face, find angle of refraction at first surface. Refractive index of prism $\sqrt{2}$.

(1) 10° (2) 15° (3) 30° (4) 45°

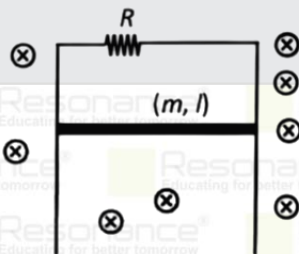
Ans. (2)

15. A planet 'A' having density ρ and radius R has escape velocity = 10 km/sec. Find the escape velocity (in m/s) of a planet B having density and radius both 10% that of planet A.

(1) $100\sqrt{10}$ (2) $100\sqrt{20}$ (3) $\sqrt{3000}$ (4) $\sqrt{900}$

Ans. (1)

16. A conducting rod of mass m and length l is moving on a infinite pair of conducting rails as shown. Conducting rails are connected to a resistance R at one end. Motion is in vertical plane and horizontal magnetic field in the region B. Find terminal speed of rod.



(1) $V_0 = \frac{3mgR}{2B^2 l^2}$ (2) $V_0 = \frac{mgR}{2B^2 l^2}$ (3) $V_0 = \frac{mgR}{B^2 l^2}$ (4) $V_0 = \frac{2mgR}{B^2 l^2}$

Ans. (3)

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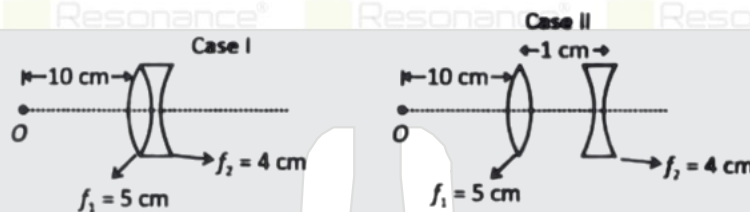
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17. A sinusoidal EMW is given by $\vec{E} = 20\sin\left(\frac{2}{300}x - 10^6t\right)$ propagating in a non-magnetic material. Dielectric constant of material is

(1) 9×10^4 (2) 3×10^2 (3) 4 (4) 2

Ans. (3)

18. Combination of lenses are arranged in case I and case II as shown in figure. Magnification in two cases are m_1 and m_2 . Find $\left|\frac{m_1}{m_2}\right|$.



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

Ans. (1)

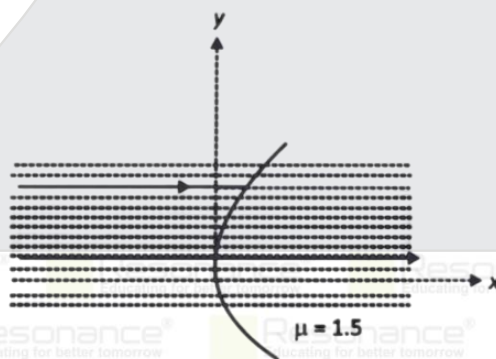
19. **Statement-I:** Fluid exerts pressure on the surface of a solid in contact with it.

Statement-II : The excess potential energy of molecules at the surface of a liquid leads to surface tension.

- (1) Both are true and statement-II B correct explanation of Statement-I
(2) Both are true but statement-II is not correct explanation of Statement-I
(3) Statement-I is true but Statement-II is false
(4) Statement-II is true but statement-I is false

Ans. (2)

20. A ray parallel to x axis (principal axis of curved surface). The x co-ordinate where ray cuts x -axis (in m) is : (The radius of curvature is 50 cm)



(1) 1.5 (2) 0.5 (3) 1 (4) 2

Ans. (1)

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21. Match the column-I with the correct numerical values of energy/heat in Column-II (R is universal gas constant)

	Column-I	Column-II	
(A)	1 mole of monoatomic ideal gas undergoes polytropic process $PV^{-1/2}$ with $\Delta T = 320$ K find ΔU	(P)	650 R
(B)	Find heat supplied to 2 moles of gas having heat capacity as $\frac{5}{2}R$ and $\Delta T = 130$ K	(Q)	575 R
(C)	Find the ΔU for 1 mole diatomic gas for $\Delta T = 230$ K	(R)	480 R

(1) $A \rightarrow R; B \rightarrow P; C \rightarrow Q$

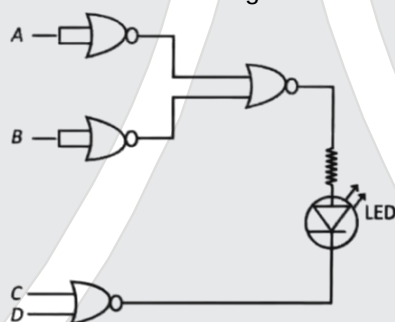
(2) $A \rightarrow P; B \rightarrow R; C \rightarrow Q$

(3) $A \rightarrow R; B \rightarrow Q; C \rightarrow P$

(4) $A \rightarrow Q; B \rightarrow P; C \rightarrow R$

Ans. (1)

22. In the given logic circuit shown in the figure, inputs A, B, C, and D are applied as shown. An LED is connected at the output. In which of the following combinations will the LED glow.



(1) $A = 1, B = 1, C = 0, D = 0$

(2) $A = 1, B = 0, C = 0, D = 0$

(3) $A = 0, B = 1, C = 1, D = 0$

(4) $A = 1, B = 1, C = 1, D = 1$

Ans. (4)

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