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JEE (MAIN) 2026

MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-2

DATE & DAY: 23rd January 2026 & Friday

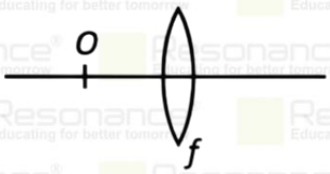
PAPER-1

Duration: 3 Hrs.
Time: 03:00 PM – 06:00 PM

SUBJECT: PHYSICS

PART : PHYSICS

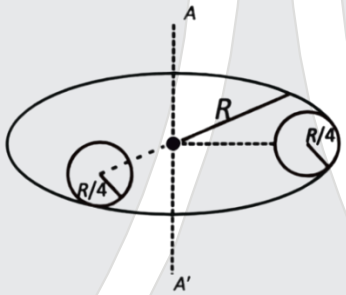
1. When an object is kept at distance 8 cm and 24 cm from a convex lens magnitude of magnification is same in both cases. Find focal length of the lens.



(1) 32 cm (2) 8 cm (3) 24 cm (4) 16 cm

Ans. (4)

2. From a uniform disc of radius R and mass M two small discs of radius $R/4$ is being cut as shown in figure. Find the moment of inertia of the system about axis AA'.



(1) $\frac{79}{128}MR^2$ (2) $\frac{79}{256}MR^2$ (3) $\frac{109}{256}MR^2$ (4) $\frac{109}{128}MR^2$

Ans. (3)

3. When an unpolarized light falls at a particular angle on a glass plate (placed in air). It is observed that reflected beam is completely polarized the angle of refracted beam with respect to the normal is ___$tan^{-1}(1.52) = 57 \cdot 3°$; "refractive index of air and glass 1.00 and 1.52

Ans. (32.7°)

4. A parallel plate capacitor with plate separation 5 mm is Charged by a battery. On introducing a mica sheet of 2 mm and maintaining the connections of the plates with the terminals of the battery, it is found that it draws 25% more charge from the battery. The dielectric constant of mica is ___

(1) 1.0 (2) 2.0 (3) 1.5 (4) 2.5

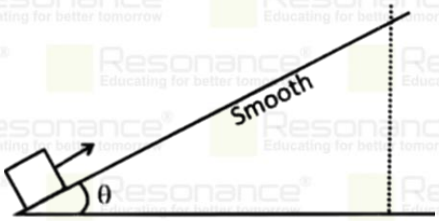
Ans. (2)

5. A metallic sphere of diameter 2 mm and density $10.5\ \text{g/cm}^3$ is dropped in glycerine having viscosity 10 poise and density $1.5\ \text{g/cm}^3$ The terminal velocity attained by the sphere is ___ cm/s $\pi = \frac{22}{7}, g = 10\ \text{m/s}^2$

(1) 2.0 (2) 1.0 (3) 1.5 (4) 3.0

Ans. (1)

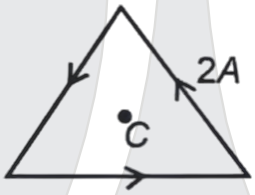
6. A body is projected up the smooth incline plane having angle of inclination θ with the horizontal as shown in the figure. Find the distance covered before stopping.



(1) $\frac{u^2}{2g\cos\theta}$ (2) $\frac{u^2}{2g}$ (3) $\frac{u^2}{2g\sin\theta}$ (4) $\frac{u^2}{2g\tan\theta}$

Ans. (3)

7. In equilateral triangular frame, there is current of $2A$. The side of frame is $4\sqrt{3}$ cm. Find the magnetic field at center C is



(1) $10\sqrt{3}\mu T$ (2) $30\sqrt{3}\mu T$ (3) $3\sqrt{10}\mu T$ (4) $10\sqrt{10}\mu T$

Ans. (2)

8. A prism of angle $75°$ and refractive index $\sqrt{3}$ is coated with thin film of refractive index 1.5 only at the back exit surface. To get total internal reflection (TIR) at the back exit surface, the incident angle must be ___ $(\sin 15° = 0.25, \sin 25° = 0.43)$

(1) $< 25°$ (2) $15°$ (3) $> 25°$ (4) b/w $15°$ and $20°$

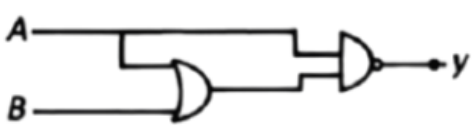
Ans. (1)

9. One mole of diatomic gas is expanding isothermally from V to $2V$ at $27°C$. If the magnitude of work done by the gas in this case is same as the work done in adiabatic process whose initial temperature is $27°C$ and final temperature is $T°C$. Find the value of T.

(1) $0°C$ (2) $-37°C$ (3) $-35°C$ (4) $-57°C$

Ans. (4)

10. Find the truth table for the given circuit.



(1)

A	B	Y
0	0	1
0	1	1
1	0	0
1	1	0

(2)

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

(3)

A	B	Y
0	0	1
0	1	0
1	0	1
1	1	0

(4)

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	1

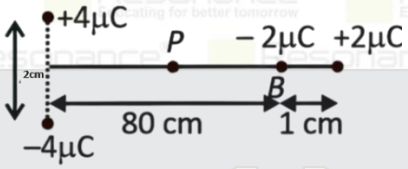
Ans. (1)

11. An air bubble is moving upward from the bottom of lake having temperature $17°C$. At the top the temperature of lake (and bubble) is $27°C$. Assume no significant change in the density of the lake water upto its depth of 5 m find the ratio off volume at top to bottom of the bubble.

(1)1.75 (2)1.25 (3)1.85 (4)1.55

Ans. (4)

12. Four chargers are kept as shown in the figure. Find magnitude of electric field at point P. P is mid-point of line AB.



(1)180kV/m (2) $\frac{45\sqrt{5}}{8}\text{kV/m}$ (3)270kV/m (4) $60\sqrt{3}\text{kV/m}$

Ans. (2)

13. EMF of two cells are measured using potentiometer method. If the balance lengths are 200 cm and 150 cm respectively. If the least count is 1 cm then find % error in calculating $\frac{E_1}{E_2}$.

(1) 1.2% (2)1.16% (3)0.50 % (4)0.75%

Ans. (2)

14. A man jump from a plane, after 2 seconds he open parachute due to which if he retarded with $3\ \text{m/s}^2$. When the man is at 10 m height from ground its speed is $5\ \text{m/s}$. Find height of the plane when he jumped.

(1) 90 m (2) 92.5 m (3) 110 m (4) 85 m

Ans. (2)

15. In a long solenoid of cross-section radius of 2 cm and of $500/\text{cm}$ turns density. A ring moves with constant speed $10\ \text{cm/s}$ with axis coinciding with a axes of solenoid. The radius and resistance of ring is 1 cm and 10Ω. Find heat dissipated in ring while it transverse of distance. The current in solenoid is $I = 10\cos(100\pi t)$

(1)$300\mu\text{J}$ (2)$200\ \mu\text{J}$ (3) $700\mu\text{J}$ (4)$850\ \mu\text{J}$

Ans. (2)

16. A particle of mass 14kg is exploded into three fragments of $2:2:3$ and both equal fragments fly off with speed $18\ \text{m/s}$ in mutually perpendicular direction. Then find the speed of the third fragment after the first explosion.

(1)$6\sqrt{2}$ (2) $12\sqrt{2}$ (3) $10\sqrt{2}$ (4) $8\sqrt{2}$

Ans. (2)

17. Speed of sound in air at $0°C$ is v. Then at what temperature $\left(^\circ\text{C}\right)$ the speed of sound becomes $2v$?

(1) $732°C$ (2) $1092°C$ (3) $975°C$ (4) $819°C$

Ans. (4)

18. There is electric field in space given as $\vec{E} = \frac{A}{r^2}\hat{r}$ (A is constant). Thera are two point charges of $-2\mu C$ and $7\mu C$ present at $(9,0,0)$ and $(-9,0,0)$ respectively. If electric potential energy of system is zero then A in SI units is

$(1) 0.63 \times 10^{+3}$ $(2)\ -0.325$ $(3)\ 1.26 \times 10^{4}$ (4)0.325

Ans. **(3)**

19. Fission of single nucleus of U-235 liberates energy of 96 MeV. Energy released by fission of 47 gm of uranium is ___

$(1)\ 1.84 \times 10^{12}$ J $(2)\ 3.28 \times 10^{9}$ J $(3)\ 1.42 \times 10^{15}$ J $(4)\ 3.21 \times 10^{14} J$

Ans. **(1)**