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JEE (MAIN) 2026

MEMORY BASED QUESTIONS & TEXT SOLUTION

SHIFT-1

DATE & DAY: 28th January 2026 & Wednesday

PAPER-1

Duration: 3 Hrs.
Time: 09:00 – 12:00 IST

SUBJECT: PHYSICS

PART : PHYSICS

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

3A   1A   2A

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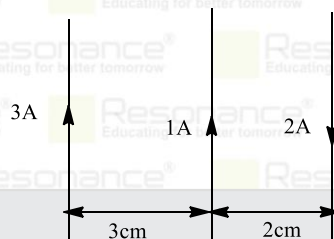
   (1) 5μN   (2) 7μN   (3) 6μN   (4) 1μN

Ans. (3)

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

   (1) $\dfrac{5}{3}$ (2) 2   (3) 4/3   (4) $\dfrac{3}{2}$
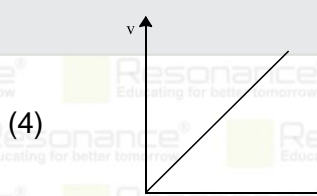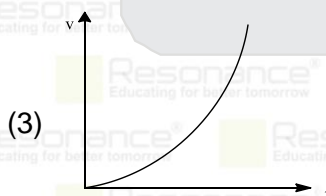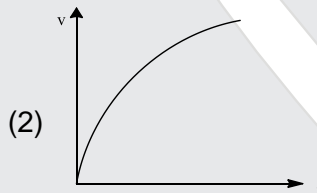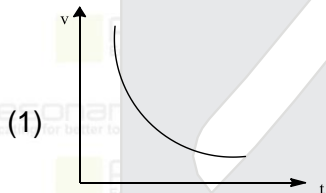
Ans. (4)

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

   (1) $\dfrac{1}{4}\mu$T   (2) 2μT   (3) 4μT   (4) $\dfrac{1}{2}\mu$T

Ans. (2)

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

(1)

(2)

(3)

(4)

Ans. (2)

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

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

Ans. (2)

6. A tap is at a height of 5 m from ground. Water drops are falling from it at regular interval. When 1st drop hits the ground 6th droplet is just about to fall. Find the height of 4th droplet from ground when 1st droplet hits the ground.

(1) 4 m   (2) 4.2 m   (3) 3 m   (4) 3.2 m

Ans. (2)

7. Find equivalent resistance of the given circuit.
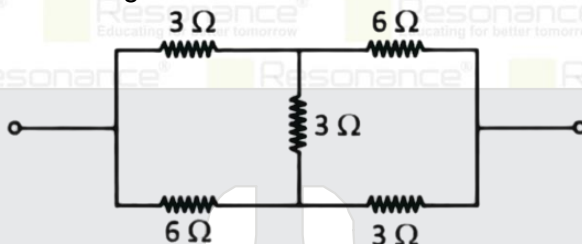
(1) 7.1Ω   (2) 6.4Ω   (3) 3.5Ω   (4) 4.2Ω

Ans. (4)

8. Position of a particle executing SHM is given by $x = A\sin(\omega t)$. Potential energy is minimum at $t = \frac{T}{2\beta}$, where T is time period. Find maximum value of positive β.

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

Ans. (3)

9. If 10 kg of ice at $-10°C$ is mixed with 100 kg of water at $25°C$, then equilibrium temperature of the mixture is? ($S_1 = \frac{1}{2}$ cal/gm − $°$C, $S_w = 1$ cal/gm − $°$C, $L_f = 80$ cal/gm)

(1) 15°C   (2) 0°C   (3) 5°C   (4) 12.5°C

Ans. (4)

10. Bi-convex lens of refractive index 1.5 and planoconcave lens of refractive index 1.7 have same magnitude of power. If 2nd radius of curvature of convex lens is equal to radius of curvature of planoconcave lens. Find ratio of 1st radius of curvature to 2nd radius of curvature of bi-convex lens.

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

Ans. (4)

11. The threshold voltage for the diodes is 0.7 volt. Then current through diodes (from left to right) in given circuit is
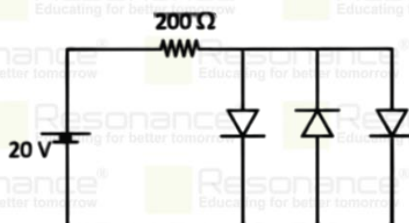
(1) 37.23 mA, 37.23 mA, 37.23 mA   (2) Zero, Zero, Zero
(3) 50.2 mA , Zero, 50.2 mA   (4) 48.25 mA , Zero, 48.25 mA

Ans. (4)

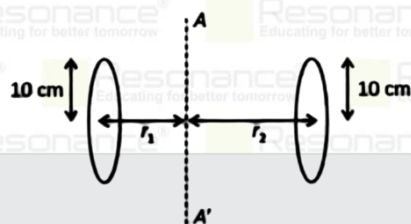**12.** For the given situation shown in figure two disks each of mass $m = 600$ grams are rotating about a fixed axis AA'. Radius of each disk is $r_0 = 10$ cm and they are at distance $r_1 = 10$ cm and $r_2 = 20$ cm from the axis AA'. Torque acting about the axis is 45×10^2 dyne-cm. Find angular acceleration in $\mathrm{rad/sec^2}$.

(1) $\frac{3.4}{11}\mathrm{rad/sec^2}$ (2) $\frac{3.5}{11}\mathrm{rad/sec^2}$ (3) $\frac{2.6}{11}\mathrm{rad/sec^2}$ (4) $\frac{1.5}{11}\mathrm{rad/sec^2}$
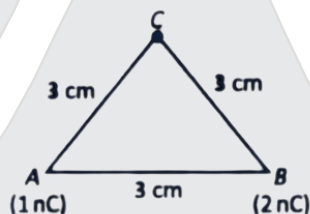
Ans. (4)

13. Find the ratio of de-Broglie wavelength associated with deuteron with kinetic energy of K and α particle with kinetic energy of $2K$.

(1) $\sqrt{2} : 1$ (2) $2 : 1$ (3) $2\sqrt{2} : 1$ (4) $1 : \sqrt{2}$
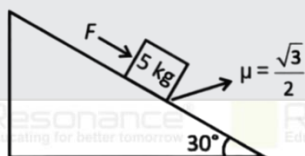
Ans. (2)

14. Find the work done by external agent in moving a 3 nC charge from a large separation to point C.

(1) $9\mu J$ (2) $8.1\mu J$ (3) $12\mu J$ (4) 2.7μ J

Ans. (4)

15. A block of mass 5 kg is placed on wedge of inclination $30°$. Find force applied to move the block downwards with constant speed.

(1) 12.5 N   (2) $(\sqrt{3} - 1)\frac{25}{2}$ (3) 25 N   (4) Zero

Ans. (1)

16. Process ABC represents a parabolic section given by $(V-2)^2 = 4(P-1)$ in given cyclic process then work done by gas in process is
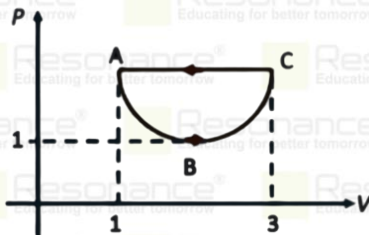
(1) $-\frac{1}{2}$ units   (2) $-\frac{1}{3}$ units   (3) $-\frac{1}{6}$ units   (4) $-\frac{2}{3}$ units

Ans. (2)

17. **Statement-I:** When a planar wavefront passes through a prism then its wavefront doesn't change, but when planar wavefront passes through a smaller slit wavefront becomes cylindrical.
Statement-II: If distance between slits is decreased and distance between slit- screen is increased then fringe width increases.
(1) S-I & S-II are both correct   (2) S-I & S-II are both incorrect
(3) S-I is correct & S-II is incorrect   (4) S-I is incorrect & S-II is correct

Ans. (1)

18. In a vernier callipers when nothing is placed between the jaws zero of vernier scale is ahead of zero of main scale and 4th division consider with one of the main scale. Now when a thin cylindrical wire is kept in the gaps then main scale reading is 15 and 5th vernier division matches with one of the main scale marking. Find the diameter of wire. (Main scale marking = 1 mm & LC = 0.1 mm)
(1) 15.8 mm   (2) 15.9 mm   (3) 15.1 mm   (4) 14.9 mm

Ans. (3)

19. Two identical cells with same emf E and internal resistance r respectively are given. When cells are connected in series and when they are in parallel in both cases they drive equal current I in external resistance of 6Ω. Find the value of internal resistance r.

Ans. (6)

20. In a potentiometer, when a battery is connected with ext. resistance $R_1 = 4\Omega$, the balancing length is found to be 120 cm . Now when R_1 is removed and another ext. resistance $R_2 = 12\Omega$ is connected then the balancing length is found to be 180cm. Find internal resistance (in Ω) of the battery.

Ans. (4)