

**Resonance**  
Educating for better tomorrow

# JEE (Main) PAPER-1 (B.E./B. TECH.) 2022


## COMPUTER BASED TEST (CBT) Memory Based Questions & Solutions

Date: 26 July, 2022 (SHIFT-1) | TIME : (9.00 a.m. to 12.00 p.m)  
Duration: 3 Hours | Max. Marks: 300

**SUBJECT: PHYSICS**

**Resonance Eduventures Ltd.**  
Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005  
Ph. No.: +91-744-2777777, 2777700 | FAX No.: +91-022-39167222  
To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029  
Toll Free : 1800 258 5555 | 7340010333 | facebook.com/ResonanceEd | twitter.com/ResonanceEd | www.youtube.com/resonance | blog.resonance.ac.in

This solution was download from Resonance JEE (MAIN) 2022 Solution portal

 | JEE MAIN-2022 | DATE : 26-07-2022 (SHIFT-1) | PAPER-1 | MEMORY BASED | PHYSICS

### PART : PHYSICS

1. Two particles are projected simultaneously from a point with angle of projection  $30^\circ$  &  $45^\circ$ . If both reach to their maximum height at same time then ratio of their initial velocity is :

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

Ans. (1)

Sol.  $T_1 = T_2$

$$\frac{u_1 \sin \theta_1}{g} = \frac{u_2 \sin \theta_2}{g}$$

$$\frac{u_1}{u_2} = \frac{\sin \theta_2}{\sin \theta_1} = \frac{\sin 45^\circ}{\sin 30^\circ} = \frac{1}{\sqrt{2}} \times \frac{2}{1} = \sqrt{2}$$

2. In a electromagnetic wave magnetic field is given by  $\vec{B} = (2 \times 10^{-8} \text{ T}) \sin(kx + \omega t) \hat{j}$  the electric field will be

(1)  $\vec{E} = 6\text{N/C} \sin(\omega t + kx) \hat{k}$

(2)  $\vec{E} = -6\text{N/C} \sin(\omega t + kx) \hat{k}$

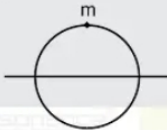
(3)  $\vec{E} = -6\text{N/C} \sin(\omega t + kx) \hat{j}$

(4)  $\vec{E} = 6\text{N/C} \sin(\omega t + kx) \hat{j}$

Ans. (2)

Sol.  $\vec{E} = \vec{B} \times \vec{V}$   
 $= [2 \times 10^{-8} \sin(kx + \omega t) \hat{j}] \times (3 \times 10^8 \hat{i})$   
 $= \vec{E} = -6\text{N/C} \sin(\omega t + kx) \hat{k}$

3. A particle of mass  $m$  is attached at the circumference of a disc of mass  $m$  and radius  $r$ , released from the position as shown in figure. Disc can rotate about a horizontal axis passing through centre and in the plane of disc. Find angular speed of particle when it is at lowest point :



(1)  $\sqrt{\frac{16g}{5R}}$

(2)  $\sqrt{\frac{9g}{5R}}$

(3)  $\sqrt{\frac{6g}{5R}}$

(4)  $\sqrt{\frac{2g}{5R}}$

Ans. (1)

Sol. By energy conservation  $K_i + U_i = K_f + U_f$

$$0 + mgR = \frac{1}{2} I \omega^2 - mgR ; \frac{1}{2} \left( \frac{mR^2}{4} + mR^2 \right) \omega^2 = 2mgR$$

$$\frac{5mR^2}{8} \omega^2 = 2mrR ; \omega = \sqrt{\frac{16g}{5R}}$$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

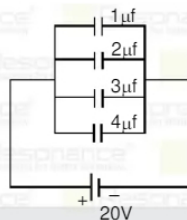
To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029  
 Toll Free : 1800 258 5555 | 7340010333 | facebook.com/ResonanceEdu | twitter.com/ResonanceEdu | www.youtube.com/reswatch | blog.resonance.ac.in

This solution was download from Resonance JEE (MAIN) 2022 Solution portal

PAGE # 1

Resonance® Educating for better tomorrow | JEE MAIN-2022 | DATE : 26-07-2022 (SHIFT-1) | PAPER-1 | MEMORY BASED | PHYSICS

4. In the given combination find total charge provided by battery :



(1)  $50 \mu\text{C}$

(2)  $100 \mu\text{C}$

(3)  $200 \mu\text{C}$

(4)  $400 \mu\text{C}$

Ans. (3)

Sol.  $C = C_1 + C_2 + C_3 + C_4$

$$= 1 + 2 + 3 + 4 = 10 \mu\text{f}$$

$$Q = CV = (10)(20) = 200 \mu\text{C}$$

5. A particle is performing simple harmonic motion along a straight line. Then the graph of velocity of particle as of displacement from mean position is given by :

(1) Circle

(2) ellipse

(3) straight line

(4) parabola

Ans. (2)

Sol.  $v = \omega \sqrt{A^2 - x^2}$

$$\frac{v^2}{\omega^2} = A^2 - x^2; \frac{v^2}{\omega^2} + x^2 = A^2; \frac{v^2}{(\omega^2)} + \frac{x^2}{A^2} = 1$$

6. 7 moles of monoatomic gas undergoes temperature change of 40 K. Find  $\Delta U$  :

- (1) 3500 J                      (2) 3000 J                      (3) 4000 J                      (4) 4500 J

Ans. (1)

Sol.  $\Delta U = \frac{f}{2} \times R \Delta T$

$$\Delta U = \frac{3}{2} \times 7 \left( \frac{25}{3} \right) (40) = 7 \times 25 \times 20 = 175 \times 20 = 3500 \text{ J.}$$

7. A drop of liquid (Surface Tension = 75 dyne/cm) of radius 1 cm disintegrate into 729 identical drops find  $\Delta U$  in the process

- (1)  $4.5 \times 10^{-10}$  J                      (2)  $7.5 \times 10^{-10}$  J                      (3)  $3.5 \times 10^{-8}$  J                      (4)  $4.5 \times 5 \times 10^{-8}$  J

Ans. (2)

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005


Ph. No.: +91-744-2777777, 2777700 | FAX No.: +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555     7340010333     ResonanceEdu     www.youtube.com/resonance     blog.resonance.ac.in

This solution was download from Resonance JEE (MAIN) 2022 Solution portal

PAGE # 2

 **Resonance**  
Educating for better tomorrow | JEE MAIN-2022 | DATE : 26-07-2022 (SHIFT-1) | PAPER-1 | MEMORY BASED | PHYSICS

Sol. Given surface tension

$$T = 75 \text{ dyne/cm}$$

$$\text{Here, } \frac{4}{3} \pi R^3 = \frac{4}{3} \pi r^3 \cdot 729$$

$$R = 9r$$

$$\Delta U = 729 \cdot T \cdot 4\pi r^2 - T \cdot 4\pi R^2$$

$$= T \cdot 4\pi R^2 (9 - 1)$$

$$= 8 \cdot T \cdot 4\pi R^2 = 8 \times 75 \times 10^{-3} \times 4\pi \times 10^{-4} = 7536 \times 10^{-7}$$

8. A monoatomic gas having pressure 'P' and Volume 'V'. Now the gas is compressed suddenly by 1/8 of its Volume. Find the new pressure

- (1) 16 P                      (2) 32 P                      (3) 48 P                      (4) 249 P

Ans. (2)

Sol.  $PV^\gamma = \text{constant}$  where  $\gamma = 1 + \frac{2}{f} = 1 + \frac{2}{3} = \frac{5}{3}$

$$\text{Now } PV^{\frac{5}{3}} = P' \left( \frac{V}{8} \right)^{\frac{5}{3}}$$

$$P = \frac{P'}{32} \Rightarrow P' = 32 P$$

9. A charged particle is moving in uniform magnetic field.  $\vec{B} = (2\hat{i} - 3\hat{j})$  T such that the acceleration is

$$\vec{a} = (\alpha\hat{i} - 4\hat{j}) \text{ m/s}^2. \text{ Then the value of } \alpha$$

- (1) 6                      (2) 12                      (3) -6                      (4) -8

Ans. (3)

Sol.  $\vec{B} \cdot \vec{a} = 0$

$$(2\hat{i} - 3\hat{j}) \cdot (\alpha\hat{i} - 4\hat{j}) = 0$$

$$2\alpha + 12 = 0$$

$$\alpha = -6$$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No.: +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

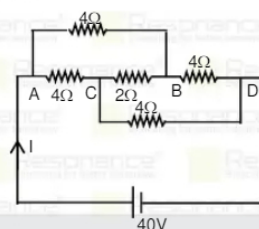
Toll Free : 1800 258 5555 | WhatsApp : 7340010333 | Facebook : ResonanceEdu | Twitter : ResonanceEdu | YouTube : ResoWatch | Blog : resonance.ac.in

This solution was download from Resonance JEE (MAIN) 2022 Solution portal

PAGE # 3

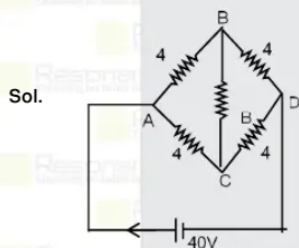
Resonance Educating for better tomorrow | JEE MAIN-2022 | DATE : 26-07-2022 (SHIFT-1) | PAPER-1 | MEMORY BASED | PHYSICS

10. Find current in the circuit shown above



- (1) 20 A                      (2) 10 A                      (3) 5 A                      (4) 30 A

Ans. (2)



Sol.

$$I = \frac{40}{4} = 10A$$

11. In an amplitude modulated wave upper and lower side band frequencies are 10MHz and 6MHz respectively find band width of signal

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

Ans. (3)

Sol. Band width = upper frequency – lower frequency = 10 – 6 = 4MHz

12. In a YDSE the fringe width is found 12 mm in air. Now setup is shifted in liquid of refractive index,  $\mu = 4/3$ , what will be the new fringe width.

- (1) 3 mm                      (2) 6 mm                      (3) 9 mm                      (4) 9 mm

Ans. (1)

Sol.  $B = \frac{D\lambda}{d}$

$$B \propto \lambda \propto \frac{1}{\mu}$$

$$\frac{B}{B'} = \frac{\mu}{\mu'} = \frac{1}{4/3} = \frac{3}{4}$$

$$B' = \frac{3}{4} (B) = \frac{3}{4} \times 12 = 9 \text{ mm}$$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No.: +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | WhatsApp : 7340010333 | Facebook : ResonanceEdu | Twitter : ResonanceEdu | YouTube : ResoWatch | Blog : resonance.ac.in

This solution was download from Resonance JEE (MAIN) 2022 Solution portal

PAGE # 4

13. The graph between  $1/u$  and  $1/v$  for an equi-convex lens for a real image of a real object is as shown in the figure. The refractive index of the material of the lens is  $\mu = 1.5$ , find the radius of curvature of each surface :



- (1) 10 m                      (2) 20 m                      (3) 30 m                      (4) 40 m

Ans. (1)

Sol.  $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$

$$1 - 0 = \frac{1}{f}$$

$$\frac{1}{f} = 0.1$$

$$\frac{1}{f} = (\mu - 1) \left( \frac{2}{R} \right) = 0.10$$

$$\frac{1}{2} \times \frac{2}{R} = 0.1 \Rightarrow R = 10 \text{ m}$$

14. When a car is approaching the observer, the frequency observed is 100 Hz. While the car is separating, the observed frequency is 50 Hz. If the observer runs with the car, then the observed frequency is  $x/3$  Hz. The value of  $x$  will be :

- (1) 125 Hz                      (2) 150 Hz                      (3) 175 Hz                      (4) 400 Hz

Ans. (1)

Sol.  $\left( \frac{v}{v - v_s} \right) f = 100$  .....(1)

$$\left( \frac{v}{v + v_s} \right) f = 50$$
 .....(2)

$$\frac{v + v_s}{v - v_s} = 2, \quad v_s = \frac{v}{3}$$

from (1)

$$\frac{3v}{2} = 100$$

$$f = \frac{200}{3} \text{ Hz} = \frac{x}{3} \quad \therefore x = 200 \text{ Hz}$$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No.: +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | 7340010333 | Facebook.com/ResonanceEdu | Twitter.com/ResonanceEdu | www.youtube.com/resowatch | Blog.resonance.ac.in

This solution was downloaded from Resonance JEE (MAIN) 2022 Solution portal

PAGE # 5

15. Light of wavelength 900 nm and intensity 100 W/m<sup>2</sup> falling on a plate. Find the no. of photons falling on 1 cm<sup>2</sup> area of plate in one sec :

- (1)  $45 \times 10^{15}$                       (2)  $20 \times 10^{15}$                       (3)  $35 \times 10^{13}$                       (4)  $45 \times 10^{13}$

Ans. (1)

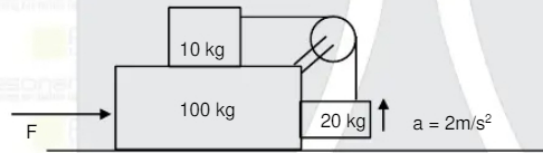
Sol.  $I = \frac{N hc}{A \lambda}$

$$100 = \frac{N \times 6.6 \times 10^{-34} \times 3 \times 10^8}{10^{-4} \times 900 \times 10^{-9}}$$

$$N = \frac{100 \times 10^{-4} \times 900 \times 10^{-9}}{6.6 \times 10^{-34} \times 3 \times 10^8} = \frac{900}{19.8} \times 10^{15}$$

$$N = 45 \times 10^{15}$$

16.



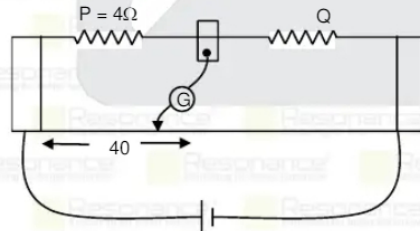
All surfaces are smooth. Find F in Newton

- (1) 3000                      (2) 3360                      (3) 4460                      (4) 5000

Ans. (2)

Sol.  $F = 100A + 20A + 10(A-2)$   
 $T - 200 = 20 \times 2 \Rightarrow T = 240N = 10(A-2)$   
 $A = 26$   
 $F = 2600 + 520 + 240 = 3360$

17.



In the given diagram of meter bridge balancing length is 40 cm, if an extra resistance is connected in series with P, the balancing length is found at 80 cm. Find this extra resistance :

- (1)  $20\Omega$                       (2)  $40\Omega$                       (3)  $60\Omega$                       (4)  $80\Omega$

Ans. (1)

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No.: +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | 7340010333 | Facebook.com/ResonanceEdu | Twitter.com/ResonanceEdu | www.youtube.com/resowatch | blog.resonance.ac.in

This solution was download from Resonance JEE (MAIN) 2022 Solution portal

PAGE # 6

Resonance® | JEE MAIN-2022 | DATE : 26-07-2022 (SHIFT-1) | PAPER-1 | MEMORY BASED | PHYSICS

Sol.  $\frac{P}{Q} = \frac{40}{60} \Rightarrow P = \frac{2}{3}Q$

$$\frac{P+x}{Q} = \frac{80}{20}$$

$$\frac{P+x}{P} = \frac{80}{20} \times \frac{60}{40}$$

$$\frac{P+x}{P} = 4 \times \frac{3}{2}$$

$$P+x = 6P$$

$$x = 5P = 20\Omega$$

18. An electron and neutron are moving such that their De-broglie wavelength are equal and velocity of electron is x times of velocity of neutron. Find the value of x. Given  $m_n = 1.6 \times 10^{-27}$  and  $m_e = 9.1 \times 10^{-31}$

- (1) 1550.23                      (2) 1758.24                      (3) 1958.22                      (4) 1960.24

Ans. (2)

Sol.  $\lambda_e = \frac{h}{m_e v_e}$                        $\lambda_n = \frac{h}{m_n v_n}$

$$\lambda_e = \lambda_n$$

$$\frac{h}{m_e v_e} = \frac{h}{m_n v_n} ; v_e = \left(\frac{m_n}{m_e}\right) v_n$$

$$V_e = X(V_n)$$

$$x = \frac{m_p}{m_e} = 1758.24$$

19. A radioactive sample is decaying at rate of 4250 disint/min. After 10 minutes it is found to decay at rate of 2250 dis/min then decay constant of sample is.

(1)  $\frac{1}{30} \ln(1.8) \text{ min}^{-1}$     (2)  $\frac{1}{15} \ln(1.8) \text{ min}^{-1}$     (3)  $\frac{1}{10} \ln(1.6) \text{ min}^{-1}$     (4)  $\frac{1}{10} \ln(1.8) \text{ min}^{-1}$

Ans. (4)

Sol.  $A = A_0 e^{-\lambda t}$

$$2250 = 4250 e^{-\lambda t}$$

$$e^{-\lambda t} = \frac{1}{1.8}$$

$$\lambda t = \ln(1.8)$$

$$\lambda = \frac{1}{10} \ln(1.8) \text{ min}^{-1}$$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No.: +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029  
Toll Free : 1800 258 5555 | 7340010333 | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/resowatch](https://www.youtube.com/resowatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)

This solution was download from Resonance JEE (MAIN) 2022 Solution portal

PAGE # 7

**Resonance** | JEE MAIN-2022 | DATE : 26-07-2022 (SHIFT-1) | PAPER-1 | MEMORY BASED | PHYSICS

20. A rocket went up to height of 32 km from earth surface. What will be the percentage loss in weight? Radius of earth is 6400 km.

(1) 0.5 %    (2) 1 %    (3) 2 %    (4) 4 %

Ans. (2)

Sol.  $w_1 = mg = \frac{mGM}{R^2}$

$$w_2 = mg' = mg \left( 1 - \frac{2h}{r} \right)$$

$$\frac{w_2 - w_1}{w_1} = \frac{mg' - mg}{mg} = \frac{mg \left[ 1 - \frac{2h}{r} - 1 \right]}{mg}$$

$$= -\frac{2h}{R} = \frac{-2 \times 32}{6400} = -\frac{1}{100}$$

$$\% \text{ loss} = 1\%$$

21. In hydrogen spectrum wave length of 1<sup>st</sup> line of Lyman series is  $\lambda$ , Then the difference between the wave length of 3<sup>rd</sup> line of paschen series and 2<sup>nd</sup> line of Balmer series is  $a\lambda$ , what is the value of a :

(1) 2    (2) 3    (3) 4    (4) 5

Ans. (4)

Sol. In hydrogen atom ( $\tau = 1$ )

$$\frac{1}{\lambda} = R_H \times Z^2 \left[ \frac{1}{n_1^2} - \frac{1}{n_2^2} \right]$$

1<sup>st</sup> line of Lyman series [ $n_1 = 1$  and  $n_2 = 2$ ]

$$\frac{1}{\lambda} = R_H \left[ \frac{1}{1} - \frac{1}{(2)^2} \right]$$

$$\frac{1}{\lambda} = R_H \left[ \frac{3}{4} \right]$$

$$\lambda = \frac{4}{3R_H} \Rightarrow \frac{1}{R_H} = \frac{3\lambda}{4}$$

3<sup>rd</sup> line of paschen series [ $n_1 = 3$   $n_2 = 6$ ]

$$\frac{1}{\lambda} = R_H \left[ \frac{1}{9} - \frac{1}{36} \right] = R_H \left[ \frac{4-1}{36} \right] \Rightarrow \frac{R_H}{12}$$

2<sup>nd</sup> line of Bolmer series [ $n_1 = 2$  and  $n_2 = 4$ ]

$$\frac{1}{\lambda_3} = R_H \left[ \frac{1}{4} - \frac{1}{16} \right] = \lambda_3 = \frac{16}{3RH}$$

$$\frac{16}{3RH} = \frac{3\lambda}{4} \Rightarrow \lambda = \frac{64}{9RH} = \frac{4}{3} \lambda_3$$

$$(\lambda_2 - \lambda_3) = \frac{1}{R_H} - \frac{1}{3R_H} = \left[ \frac{2}{3R_H} \right] = \frac{2\lambda}{3R_H}$$

$$(\lambda_2 - \lambda_3) = \left( \frac{20}{3} \times \frac{3}{4} \right) \lambda = 5\lambda$$

$$a = 5$$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | 7340010333 | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/reswatch](https://www.youtube.com/reswatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)

This solution was download from Resonance JEE (MAIN) 2022 Solution portal

PAGE # 8

**Resonance**  
Educating for better tomorrow | JEE MAIN-2022 | DATE : 26-07-2022 (SHIFT-1) | PAPER-1 | MEMORY BASED | PHYSICS

22.



- (1) Tension is 700 N when moves upward with constant velocity  
 (2) Tension is 350 N when moves downward with constant velocity  
 (3) Rope breaks when moves downward with acceleration 4 m/s<sup>2</sup>  
 (4) Rope breaks when moves upward with acceleration 5 m/s<sup>2</sup>

Ans. (4)

Sol.  $T_{up} = m(g + a) = 50(10 + 5) = 750 \text{ N}$   
 $T_{down} = m(g - a) = 50(10 - 4) = 300 \text{ N}$

23. Two coils of radius 20 cm having 400 & 200 turn respectively then ratio of magnetic field at centres if current in both coils is same, will be

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

Ans. (1)

Sol.  $B_1 = \frac{\mu_0 N_1 i}{2R_1}$   
 $B_2 = \frac{\mu_0 N_2 i}{2R_2}$   
 $\frac{B_1}{B_2} = \frac{N_1}{N_2} = \frac{400}{200} = 2$

24. Diameter of a wire of length 6.8 cm is measured by screw gauge of pitch 0.5 mm with 50 division on circular scale. If main scale reading is 1.5 mm and main scale coincides with 7<sup>th</sup> division of circular scale then area of curved surface of wire will be :

- (1) 3.35 cm<sup>2</sup>                      (2) 3.54 cm<sup>2</sup>                      (3) 3.75 cm<sup>2</sup>                      (4) 3.95 cm<sup>2</sup>

Ans. (1)

Sol. Diameter of wire = 1.5 mm +  $\frac{(0.5)}{50} \times 7 \text{ mm}$

$$= 1.5 \text{ mm} + \frac{1}{100} \times 7 \text{ mm}$$

$$= 1.57 \text{ mm}$$

$$A = 2\pi rl$$

$$= \pi dl$$

$$= 3.14 \times 1.57 \times 6.8 \times 10^{-1} \text{ cm}^2$$

$$= 3.35 \text{ cm}^2$$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No. : +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

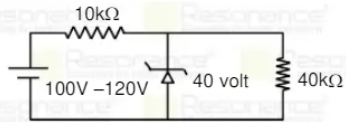
Toll Free : 1800 258 5555 | 7340010333 | [facebook.com/ResonanceEdu](https://www.facebook.com/ResonanceEdu) | [twitter.com/ResonanceEdu](https://twitter.com/ResonanceEdu) | [www.youtube.com/reswatch](https://www.youtube.com/reswatch) | [blog.resonance.ac.in](https://blog.resonance.ac.in)

This solution was download from Resonance JEE (MAIN) 2022 Solution portal

PAGE # 9



25.



Maximum current through Zener diode will be

- (1) 4mA                      (2) 6mA                      (3) 7mA                      (4) 8mA

Ans. (3)

Sol. Voltage across zener diode = 40 volt constant  
 $I(40\text{ k}\Omega) = 40$

Current in 40 kΩ  $I = 1\text{mA}$  constant

Maximum voltage across 10 kΩ =  $120 - 40 = 80$  volt

Maximum current in 10 kΩ =  $\frac{80}{10}\text{mA} = 8\text{mA}$

Maximum current through zener diode =  $8 - 1 = 7\text{mA}$

## Resonance Eduventures Ltd.

Reg. Office & Corp. Office : CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005

Ph. No.: +91-744-2777777, 2777700 | FAX No.: +91-022-39167222

To Know more : sms RESO at 56677 | Website : www.resonance.ac.in | E-mail : contact@resonance.ac.in | CIN : U80302RJ2007PLC024029

Toll Free : 1800 258 5555 | 7340010333 | facebook.com/ResonanceEdu | twitter.com/ResonanceEdu | www.youtube.com/resonance | blog.resonance.ac.in

This solution was download from Resonance JEE (MAIN) 2022 Solution portal

PAGE # 10



**Resonance®**  
Educating for better tomorrow

**JEE (Main) 2022**  
JUNE (SESSION-1) RESULT

लगातार दूसरे वर्ष, कोटा का **श्रेष्ठ परिणाम, रेजोनेंस के नाम**

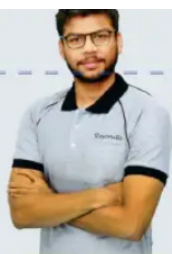
JEE (Main) 2022  
JUNE (Session-1)

OVERALL NTA SCORE\*  
**99.998%ile**

NTA SCORE (%ile)  
**100**  
in CHEMISTRY



VARDAN VERMA  
Classroom Student



CHAITANYA AGGARWAL  
Classroom Student

JEE (Adv.) 2021

AIR  
**8**

**BEST RANK**

from Kota Classroom among  
all Institutes of Kota

Highest Marks (114/120)  
in Chemistry in India

\* वरदान वर्मा का %ile Score कोटा में रहकर JEE की तैयारी करने वाले सभी संस्थानों के सभी क्लासरूम विद्यार्थियों में से **HIGHEST %ile** है

# As per logical information available in Public Domain till 16<sup>th</sup> July

## ADMISSIONS OPEN: 2022-23

— For Class XII Passed Students —

### TARGET

JEE (Main+Advanced) 2023

COURSE

**VIJAY (JR)**



CLASS STARTS  
1<sup>st</sup> & 16<sup>th</sup> Aug

### TARGET

JEE (Main) 2023

COURSE

**AJAY (ER)**



CLASS STARTS  
1<sup>st</sup>, 16<sup>th</sup> & 29<sup>th</sup> Aug

## Scholarship upto 100%

on the basis of JEE (Main) Percentile Score

अपनी **स्कॉलरशिप** जानने के लिए **अपनी जेईई (मेन) परसेंटाइल वाट्सअप करें: 73400-10345**

**Resonance Eduventures Ltd.**

Kota Study Centre & Registered Corporate Office: CG Tower, A-46 & 52, IPIA, Near City Mall, Jhalawar Road, Kota (Raj.) - 324005  
Tel. No.: 0744-2777777, 2777700 | CIN: U80302RJ2007PLC024029 | www.resonance.ac.in | contact@resonance.ac.in