



PHYSICS

BOOKS - NTA MOCK TESTS

NTA NEET SET 30

Physics

1. If alpha, beta and gamma rays carry same momentum, which has the longest wavelength?
?

A. Alpha rays

B. Beta rays

C. Gamma rays

D. None, all have the same wavelength

Answer: D



Watch Video Solution

2. The voltage applied to the Coolidge X-ray tube is increased by 25%. As a result the short wave limit of continuous X-ray spectrum shifts

by $\Delta\lambda$. The initial voltage applied to the tube is

A. $\frac{hc}{4e\Delta\lambda}$

B. $\frac{hc}{5e\Delta\lambda}$

C. $\frac{4hc}{5e\Delta\lambda}$

D. $\frac{5hc}{4e\Delta\lambda}$

Answer: B



Watch Video Solution

3. A non-uniform thin rod of length L is placed along x -axis as such its one of ends at the origin. The linear mass density of rod is $\lambda = \lambda_0 x$. The distance of centre of mass of rod from the origin is :

A. $\frac{L}{2}$

B. $\frac{2L}{3}$

C. $\frac{L}{4}$

D. $\frac{L}{5}$

Answer: B



Watch Video Solution

4. The distance of the centre of mass of a hemispherical shell of radius R from its centre is

A. $\frac{R}{2}$

B. $\frac{R}{3}$

C. $\frac{2R}{2}$

D. $\frac{2R}{3}$

Answer: A



Watch Video Solution

5. A stone of mass 0.3kg attached to a 1.5m long string is whirled around in a horizontal circle at a speed of 6 m/s . The tension in the string is

A. 10 N

B. 20 N

C. 7.2 N

D. none of these

Answer: C



Watch Video Solution

6. Ferromagnetic materials owe their properties to

A. Filled inner subshells

B. Vacant inner subshells

C. Partially filled inner subshells

D. all the subshells are equally filled

Answer: C



Watch Video Solution

7. For a cell terminal potential difference is 2.2 V when circuit is open and reduces to 1.8V when cell is connected to a resistance of $R=5\Omega$ then determine internal resistance of cell is:-

A. $\frac{10}{9}\Omega$

B. $\frac{9}{10}\Omega$

C. $\frac{11}{9}\Omega$

D. $\frac{5}{9}\Omega$

Answer: A



Watch Video Solution

8. If the length of potentiometer wire is increased, then the accuracy in the determination of null point

A. decrease

B. increase

C. remains unaffected

D. none of these

Answer: B



Watch Video Solution

9. The capacitive reactance in an A.C. circuit is

A. effective resistance due to capacitor

B. effective wattage

C. effective voltage

D. none of the above

Answer: A



Watch Video Solution

10. A solid metal cube of edge length 2 cm is moving in a positive y-direction at a constant speed of 6 m/s. There is a uniform magnetic field of 0.1 T in the positive z-direction. The potential difference between the two faces of the cube perpendicular to the x-axis, is :

A. 12 mV

B. 1 mV

C. 2 mV

D. 6 mV

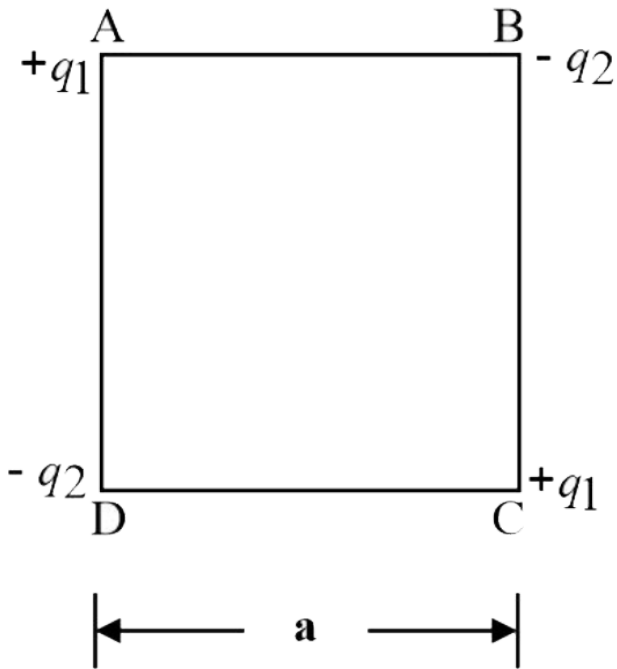
Answer: A



Watch Video Solution

11. Charges are placed at the corners of a square of side a as shown in the following figure. The charged particle placed at A is in

equilibrium. The ratio $\frac{q_1}{q_2}$ is



A. 1

B. $2\sqrt{2}$

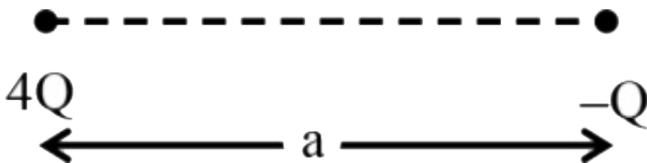
C. $\frac{1}{\sqrt{2}}$

D. $\frac{3}{\sqrt{2}}$

Answer: B

 [Watch Video Solution](#)

12. The position of the point where the net electric field will be zero is



A. $2a$ from $4Q$

B. $a/2$ from $-Q$

C. $2a$ from $-Q$

D. neutral point is not possible

Answer: A



Watch Video Solution

13. Acceleration due to gravity is ' g ' on the surface of the earth. The value of acceleration due to gravity at a height of 32 km above

earth's surface is (Radius of the earth = 6400 km)

A. 0.99 g

B. 0.8g

C. 1.01 g

D. 0.9 g

Answer: A



Watch Video Solution

14. The ratio of the radii of the planets P_1 and P_2 is k . the ratio of the acceleration due to gravity is r . the ratio of the escape velocities from them will be

A. ab

B. \sqrt{ab}

C. ab^2

D. a^2b

Answer: B



Watch Video Solution

15. Two cylinders P and Q have the same length and diameter and are made of different materials having thermal conductivities in the ratio 2 : 3. These two cylinders are combined to make a cylinder. One end of P is kept at $100^{\circ}C$ and another end of Q at $0^{\circ}C$. The temperature at the interface of P and Q is

A. $40^{\circ}C$

B. $50^{\circ}C$

C. $60^{\circ}C$

D. $70^{\circ}C$

Answer: A



Watch Video Solution

16. One mole of an ideal monoatomic gas at $27^{\circ}C$ is subjected to a reversible isentropic compression until the temperature reached to $327^{\circ}C$. If the initial pressure was 1.0atm , then

find the value of in P_2

(Given : $\ln 2 = 0.7$)

A. 1.75

B. 0.176

C. 1.0395

D. 2.0

Answer: A



Watch Video Solution

17. A carnot engine has the same efficiency between (i) 100 K and 500 K and (ii) T and 900 K. Find T.

A. 180 K

B. 90 K

C. 270 K

D. 360 K

Answer: A



Watch Video Solution

18. The temperature of 5mol of gas which was held at constant volume was change from 100°C to 120°C . The change in internal energy was found to be 80J . The total heat capacity of the gas at constant volume will be equal to

A. 8

B. 4

C. 0.8

D. 0.4

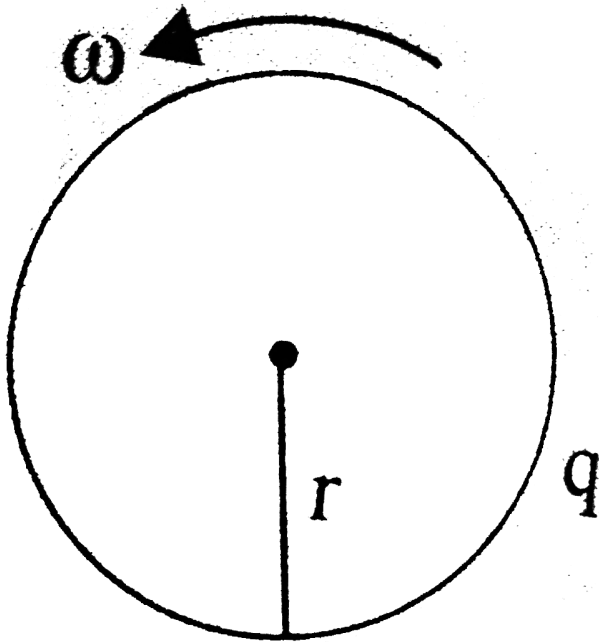
Answer: B



Watch Video Solution

19. A conducting ring of radius r having charge q is rotating with angular velocity ω about its axes. Find the magnetic field at the centre of

the ring.



A. $\frac{\mu_0 q \omega}{2\pi R}$

B. $\frac{\mu_0 q \omega}{\pi R}$

C. $\frac{\mu_0 q \omega}{4\pi R}$

D. zero

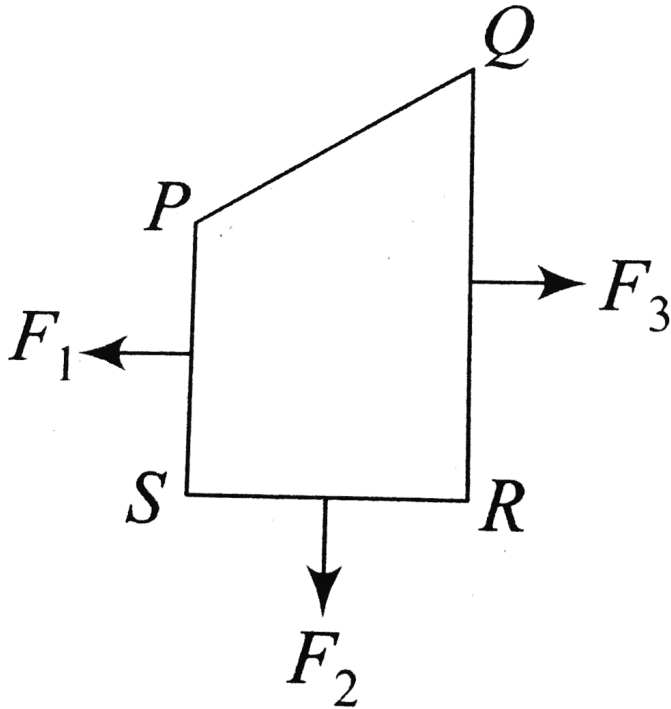
Answer: C



Watch Video Solution

20. A closed loop $PQRS$ carrying a current is placed in a uniform magnetic field. Forces on segments PS , SR and RQ are F_1 , F_2 and F_3 respectively and are in the plane of the paper and along the directions shown, the force on

the segment QP is



A. $\sqrt{(F_3 - F_1)^2 - F_2^2}$

B. $F_3 - F_1 + F_2$

C. $F_3 - F_1 - F_2$

D. $\sqrt{(F_3 - F_1)^2 + F_2^2}$

Answer: D



Watch Video Solution

21. A body moves speed V_1 for distance L and then with speed V_2 for distance $2L$. The average speed for the motion is

A. $\frac{V_1 + V_2}{2}$

B. $\frac{3V_1V_2}{V_1 + 2V_2}$

C. $\frac{3V_1V_2}{2V_1 + V_2}$

D. $\frac{3V_1V_2}{V_1 + V_2}$

Answer: C



Watch Video Solution

22. A ball is suspended by a thread from the ceiling of a tram car. The brakes are applied and the speed of the car changes uniformly from $36kmh^{-1}$ to zero in 5s. The angle by which the ball deviates from the vertical is $(g = 10ms^{-2})$.

A. $\tan^{-1}\left(\frac{1}{3}\right)$

B. $\sin^{-1}\left(\frac{1}{5}\right)$

C. $\tan^{-1}\left(\frac{1}{5}\right)$

D. $\cot^{-1}\left(\frac{1}{3}\right)$

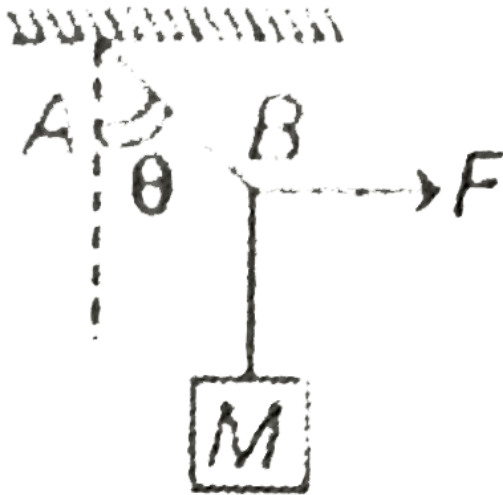
Answer: C



Watch Video Solution

23. A mass M is suspended by a rope from a rigid support at A as shown in figure. Another rope is tied at the end B , and it is pulled horizontally with a force. If the rope AB makes

an angle θ with the vertical in equilibrium then
the tension in the string AB is



A. $F \sin \theta$

B. $\frac{F}{\sin \theta}$

C. $F \cos \theta$

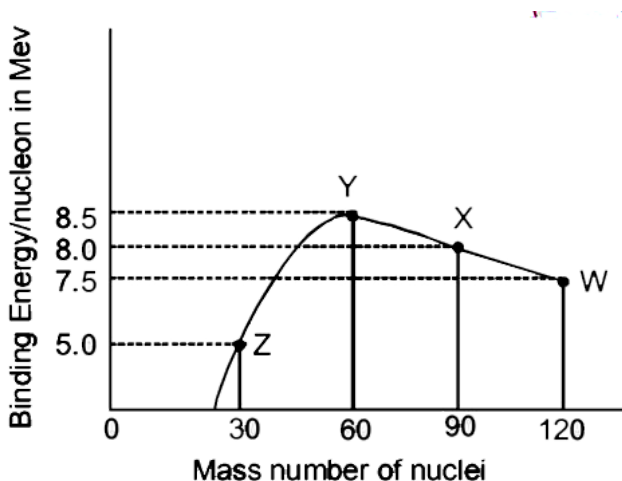
D. $\frac{F}{\cos \theta}$

Answer: B



Watch Video Solution

24. Binding energy per nucleons vs mass curve for nucleus is shown in the figure W , X , Y and Z are four nuclei indicated on the curve . The process that would release energy is



A. $Y \rightarrow 2z$

B. $W \rightarrow X + Z$

C. $W \rightarrow 2Y$

D. $X \rightarrow Y + Z$

Answer: C



Watch Video Solution

25. An isotope decays to $1/16^{th}$ of its mass in 1h. What is the half-life period of the isotope?

A. 15 min

B. 30 min

C. 12 min

D. 10 min

Answer: A



Watch Video Solution

26. Two bodies P and Q of equal masses are suspended from two separate massless springs of force constants k_1 and k_2

respectively. If the two bodies oscillate vertically such that their maximum velocities are equal. The ratio of the amplitude of P to that of Q is

A. $\sqrt{\frac{k_1}{k_2}}$

B. $\sqrt{\frac{k_2}{k_1}}$

C. $\frac{k_1}{k_2}$

D. $\frac{k_2}{k_1}$

Answer: B



Watch Video Solution

27. Two simple harmonic are represented by the equation

$$y_1 = 0.1 \sin\left(100\pi + \frac{\pi}{3}\right) \text{ and } y_2 = 0.1 \cos \pi t$$

The phase difference of the velocity of particle 1 with respect to the velocity of particle 2 is.

A. $\frac{-\pi}{3}$

B. $\frac{\pi}{6}$

C. $\frac{-\pi}{6}$

D. $\frac{\pi}{3}$

Answer: C



Watch Video Solution

28. When a metallic surface is illuminated with monochromatic light of wavelength λ , the stopping potential is $5V_0$. When the same surface is illuminated with light of wavelength 3λ , the stopping potential is V_0 . Then the work function of the metallic surface is:

A. $\frac{hc}{6\lambda}$

B. $\frac{hc}{5\lambda}$

C. $\frac{hc}{3\lambda}$

D. $\frac{hc}{4\lambda}$

Answer: A



Watch Video Solution

29. The work function of a surface of a photosensitive material is $6.2eV$. The wavelength of the incident radiation for which the stopping potential is $5V$ lies in the

A. ultraviolet region

B. visible region

C. infrared region

D. x-rays region

Answer: A



Watch Video Solution

30. Water rises in a vertical capillary tube up to a height of 2.0 cm. If the tube is inclined at

an angle of 60° with the vertical, then up to what length the water will rise in the tube ?

- A. 2.0 cm
- B. 4.0 cm
- C. 6.0 cm
- D. 8.0 cm

Answer: B



Watch Video Solution

31. The speed of a ball of radius 2 cm in a viscous liquid is 20 cm/s. Then the speed of ball of radius 1 cm in the same liquid is

A. 5cm s^{-1}

B. 10cm s^{-1}

C. 40cm s^{-1}

D. 80cm s^{-1}

Answer: A



Watch Video Solution

32. Two plane mirrors are placed at some angle. There are five images formed when an object is placed symmetrically between them . Find the angle between the mirrors.

A. 60°

B. 45°

C. 30°

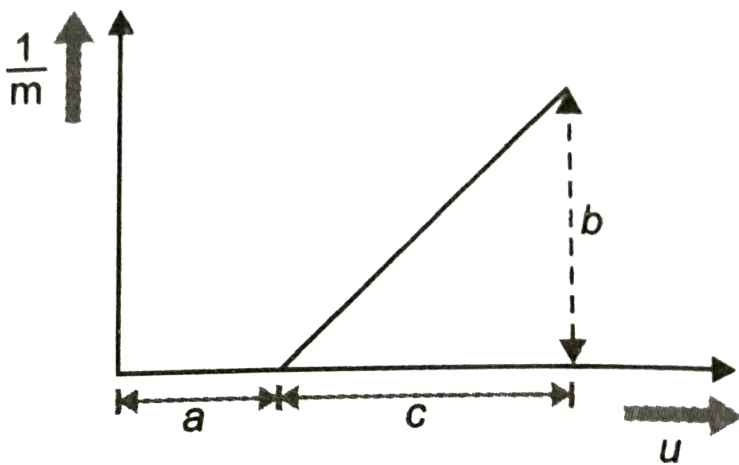
D. 90°

Answer: A



Watch Video Solution

33. The graph in Fig. shows how the inverse of magnification $1/m$ produced by a convex thin lens varies with object distance u . What was the focal length of the lens used ?



A. $\frac{b}{ca}$

B. $\frac{bc}{a}$

C. $\frac{c}{b}$

D. $\frac{b}{c}$

Answer: C



Watch Video Solution

34. A bullet of mass m hits a block of mass M .

The transfer of energy is maximum when

A. $M' = M$

B. $M' = 2 M$

C. $M' = \frac{1}{2} M$

D. $M' = \frac{1}{4} M$

Answer: A



Watch Video Solution

35. A thin uniform circular disc of mass M and radius R is rotating in a horizontal plane about an axis passing through its centre and perpendicular to its plane with an angular

velocity ω . Another disc of same dimensions but of mass $\frac{1}{4} M$ is placed gently on the first disc co-axially. The angular velocity of the system is

A. $\sqrt{2}\omega$

B. $\frac{4}{5}\omega$

C. $\frac{3}{4}\omega$

D. $\frac{1}{3}\omega$

Answer: B



Watch Video Solution

36. A silicon diode has a threshold voltage of 0.7 V. If an input voltage given by $2 \sin(\pi t)$ is supplied to a half wave rectifier circuit using this diode, the rectified output has a peak value of

A. 2 V

B. 1.4 V

C. 1.3 V

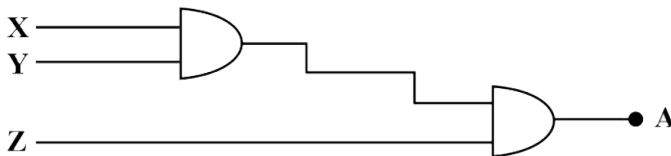
D. 0.7 V

Answer: C



Watch Video Solution

37. The output A when all three inputs are first high and then low respectively, be



A. 0, 1

B. 1, 1

C. 1, 0

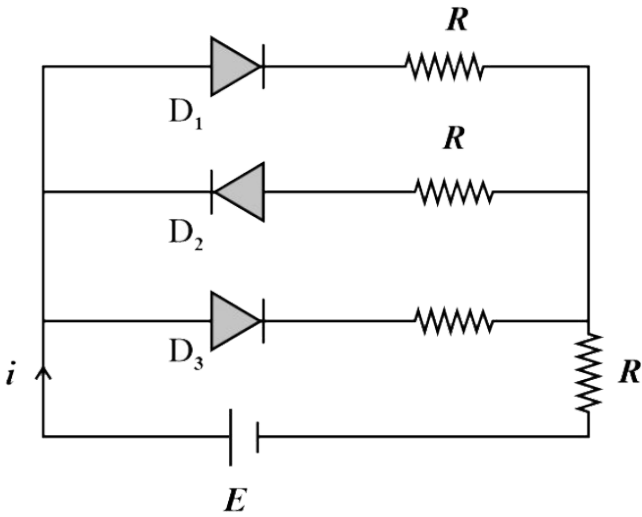
D. 0, 0

Answer: C



Watch Video Solution

38. In the following circuit of PN junction diodes D_1 , D_2 and D_3 are ideal then i is



- A. $\frac{E}{R}$
- B. $\frac{E}{2R}$
- C. $\frac{2E}{3R}$
- D. zero

Answer: C



Watch Video Solution

39. The molecules of a given mass of gas have an rms velocity of 200ms^{-1} at 27°C and pressure 1 atm. When the temperature is 127°C and pressure is 2 atm, the rms velocity in ms^{-1} will be ?

A. $\frac{100\sqrt{2}}{3}$

B. $100\sqrt{2}$

C. $\frac{400}{\sqrt{3}}$

D. None of these

Answer: C



Watch Video Solution

40. Water falls from a height $500m$, what is the rise in temperature of water at bottom if whole energy remains in the water ?
($J = 4.2$)

A. $0.23^{\circ}C$

B. $1.16^{\circ}C$

C. $0.96^{\circ}C$

D. $1.02^\circ C$

Answer: B



Watch Video Solution

41. The frequency f of vibrations of a mass m suspended from a spring of spring constant k is given by $f = Cm^x k^y$, where C is a dimensionless constant. The values of x and y are, respectively,

A. $\frac{1}{2}, -\frac{1}{2}$

B. $-\frac{1}{2}, \frac{1}{2}$

C. $\frac{1}{2}, \frac{1}{2}$

D. $-\frac{1}{2}, -\frac{1}{2}$

Answer: B



Watch Video Solution

42. The I^{st} diffraction minimum due to single slit diffraction is θ , for a light of wave length 5000\AA . If the width of the slit is $1 \times 10^{-4} \text{cm}$ then the value of θ

A. 30°

B. 45°

C. 60°

D. 15°

Answer: A



Watch Video Solution

43. A clear sheet of polaroid is placed on the top of similar sheet so that their axes make an

angle $\sin^{-1}\left(\frac{3}{5}\right)$ with each other. The ratio of intensity of the emergent light to that of unpolarised incident light is

A. 16:25

B. 9:25

C. 4:5

D. 8:25

Answer: D



Watch Video Solution

44. If velocity of a galaxy relative to earth is $1.2 \times 10^6 \text{ms}^{-2}$ then percentage increase in wavelength of light from galaxy as compared to the similar source on earth will be :

A. 0.3 %

B. 0.4 %

C. 0.5 %

D. 0.6 %

Answer: B



Watch Video Solution

45. The displacement x of a body of mass 1 kg on a horizontal smooth surface as a function of time t is given by $x = \frac{t^4}{4}$. The work done in the first second is

A. $\frac{1}{4} J$

B. $\frac{1}{2} J$

C. $\frac{3}{4} J$

D. $\frac{5}{4} J$

Answer: B



Watch Video Solution