



PHYSICS

BOOKS - NTA MOCK TESTS

NTA NEET SET 73

Physics

1. The ratio between total acceleration of the electron in singly ionized helium atom and hydrogen atom (both in ground state) is

A. 1

B. 8

C. 4

D. 16

Answer: B



Watch Video Solution

2. In Mosley's equation , $\sqrt{\nu} = a(Z - b)$ which was derived from the observations made during the bombardment of the metal target with X - rays

A. a is independent but b depends on the metal

B. Both a and b are independent of the metal

C. Both a and b depends on the metal

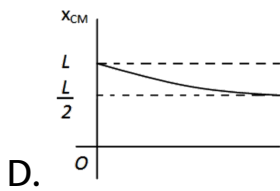
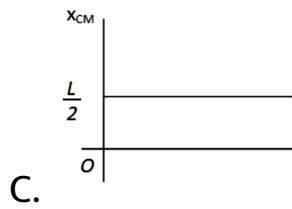
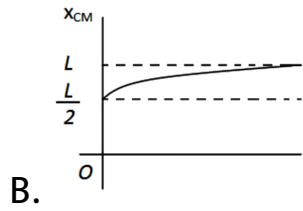
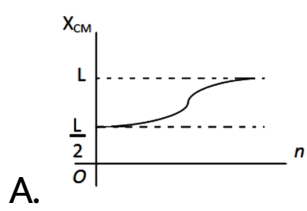
D. b is independent but a depends on the metal

Answer: B



Watch Video Solution

3. A thin rod of length L is lying along the x -axis with its ends at $x = 0$ and $x = L$. Its linear density (mass/length) varies with x as $k\left(\frac{x}{L}\right)^n$ where n can be zero or any positive number. If the position X_{CM} of the centre of mass of the rod is plotted against n , which of the following graphs best approximates the dependence of X_{CM} on n ?



Answer: B



Watch Video Solution

4. Statement-1: Two particles of mass 1 kg and 3 kg move towards each other under their mutual force of attraction. No other force acts on them. When the relative velocity of approach of the two particles is $2m/s$, their centre of mass has a velocity of $0.5m/s$.
When the relative velocity of approach becomes $3m/s$ the velocity of the centre of mass is $0.75m/s$.

Statement-2: The total kinetic energy as seen from ground is $\frac{1}{2}\mu v_{rel}^2 + \frac{1}{2}mv_c^2$ and in absence of external force, total energy remains conserved.

A. $0.75ms^{-1}$

B. $0.5ms^{-1}$

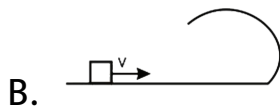
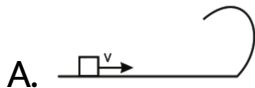
C. $10ms^{-1}$

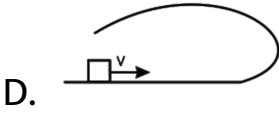
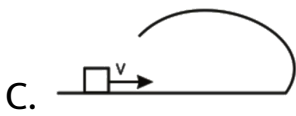
D. 1.25m.s^{-1}

Answer: B

 [Watch Video Solution](#)

5. A small block is shot into each of the four tracks as shown below. Each of the tracks rises to the same height. The speed with which the block enters the track is the same in all cases. At the highest point of the track, the normal reaction is maximum in





Answer: A



Watch Video Solution

6. The ratio of angular speeds of minute hand and hour hand of a watch is

A. 1 : 12

B. 12 : 1

C. 6 : 1

D. 1:6

Answer: B



Watch Video Solution

7. An immersion heater with electrical resistance 7Ω is immersed in 0.1 kg of water at $20^\circ C$ for 3 min. If the flow of current is 4 A , what is the final temperature of the water assuming whole of heat produced is consumed in water. (Specific heat capacity of water = $4.2 \times 10^3 Jkg^{-1}K^{-1}$)

A. $28^\circ C$

B. $48^\circ C$

C. $52^{\circ}C$

D. $68^{\circ}C$

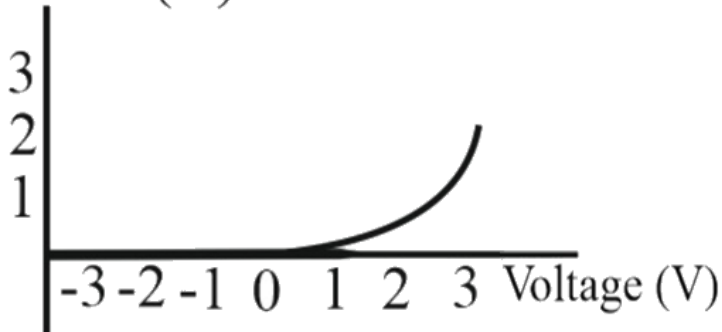
Answer: D



Watch Video Solution

8. Shown below is a graph of current versus applied voltage for a diode . Approximately , what is the resistance of the diode for an applied voltage of -1 V ?

Current (A)



A. 2Ω

B. ∞

C. Zero

D. 1Ω

Answer: B



Watch Video Solution

9. Can moving coil galvanometer be used to detect an a.c. in a circuit? Give reason.

A. The coil bends easily

B. The coil heats up too much

C. Sparks can be produced

D. The net magnetic field produced is zero

Answer: D



Watch Video Solution

10. Which particle will have minimum frequency of revolution when projected with the same velocity perpendicular to a magnetic field ?

A. Li^+

B. Electron

C. Proton

D. He^+

Answer: A



Watch Video Solution

11. If a charged spherical conductor of radius 10cm has potential V at a point distant 5cm from its centre, then the potential at a point distant 15cm from the centre will be

A. $\frac{1}{3}V$

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

C. $\frac{3}{2}V$

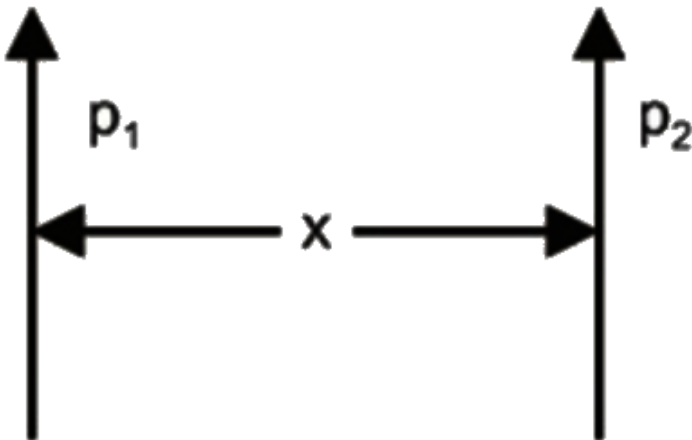
D. $3V$

Answer: B



Watch Video Solution

12. Find the force of interaction of two dipoles , if the two dipole moments are parallel to each other and placed at a distance x apart



A. $\frac{3p_1p_2}{4\pi\epsilon_0x^4}$

B. $\frac{p_1p_2}{2\pi\epsilon_0x^4}$

C. $\frac{p_1p_2}{4\pi\epsilon_0x^4}$

D. $\frac{p_1p_2}{3\pi\epsilon_0x^4}$

Answer: A



Watch Video Solution

13. The acceleration due to gravity on the moon is one-sixth that on earth. If the average density of moon is three-fifth that of earth, the moon's radius in terms of earth's radius R_e is -

A. $0.16R_e$

B. $0.27R_e$

C. $0.32R_e$

D. $0.36R_e$

Answer: B



Watch Video Solution

14. A space station is at a height equal to the radius of the Earth. If V_E is the escape velocity on the surface of the Earth, the same on the space station is ___ times V_E ,

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

B. $\frac{1}{4}$

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

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

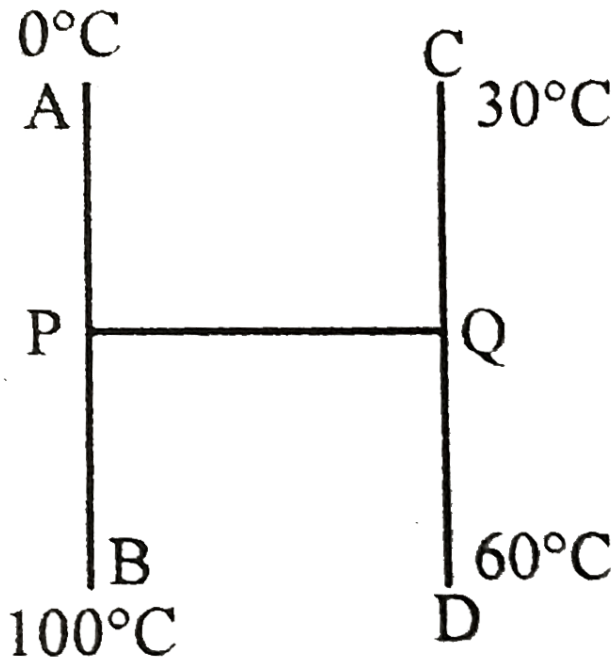
Answer: C



Watch Video Solution

15. Three identical rods AB , CD and PQ are joined as shown. P and Q are mid points of AB and CD respectively. Ends A , B , C and D are maintained at $0^\circ C$, $100^\circ C$, $30^\circ C$ and $60^\circ C$ respectively. The direction of

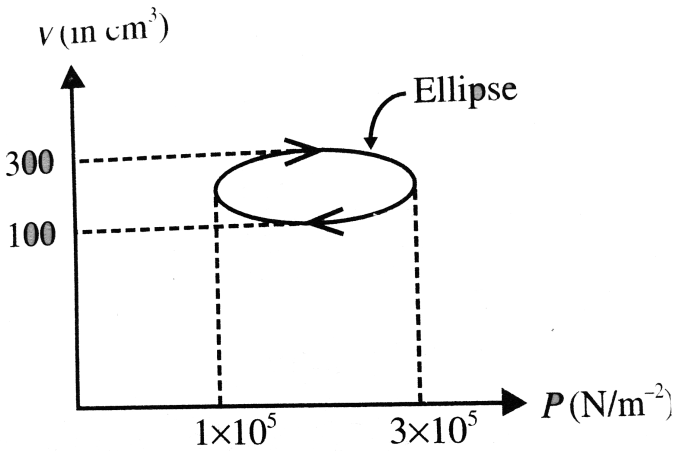
heat flow in PQ is



- A. From P to Q
- B. From Q to P
- C. Heat does not flow in PQ
- D. Data not sufficient

Answer: A

16. Calculate the heat absorbed by a system in going through the cyclic process show in Fig.



A. 31.7 J

B. 31.4 J

C. 41.7 J

D. 44.3 J

Answer: B



Watch Video Solution

17. In a thermodynamic process, pressure of a fixed mass of a gas is changed in such a manner that the gas release $20J$ of heat and $8J$ of work is done on the gas. If initial internal energy of the gas was $30J$, what will be the final internal energy?

A. 42 J

B. 18 J

C. 12 J

D. 60 J

Answer: B



Watch Video Solution

18. A long solenoid of length L has a mean diameter D . It has n layers of windings of N turns each. If it carries a current ' i ' the magnetic field at its centre will be

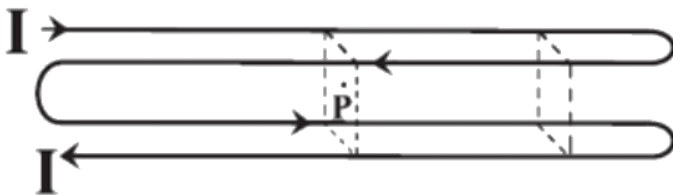
- A. Proportional to D
- B. Inversely proportional to D
- C. Independent of D
- D. Proportional to L

Answer: C



Watch Video Solution

19. Four very long wires are arranged as shown in the figure, so that their cross - section forms a square, with connections at the ends so that current I flow through all four wires. Length of each side of the formed such square is b . The magnetic field at the central point P (centre of the square) is



A. $\frac{\mu_0 I}{\pi b}$

B. $\frac{2\mu_0 I}{\pi b}$

C. 0

D. $\frac{\mu_0 I}{\sqrt{2}\pi b}$

Answer: B



Watch Video Solution

20. The ratio of magnetisation I to the magnetic field intensity H is

A. Permeability

B. Magnetic intensity

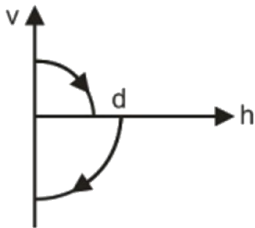
C. Diamagnetics

D. Magnetic susceptibility

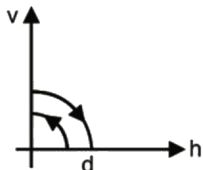
Answer: D

 Watch Video Solution

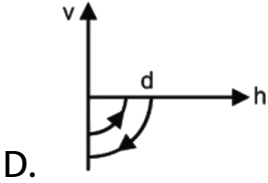
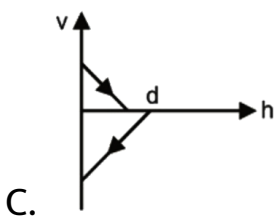
21. v34



A.



B.



Answer: A



Watch Video Solution

22. The angle of which the velocity vector of a projectile thrown with a velocity u at an angle θ to the horizontal will take with the horizontal after time t of its being thrown up is

A. θ

B. $\tan^{-1}\left(\frac{\theta}{t}\right)$

C. $\tan^{-1}\left(\frac{v \cos \theta}{v \sin \theta - gt}\right)$

D. $\tan^{-1}\left(\frac{v \sin \theta - gt}{v \cos \theta}\right)$

Answer: D



Watch Video Solution

23. A bob of pendulum of mass 50 g is suspended by string with the roof of an elevator. If the lift is flying with a uniform acceleration of $5ms^{-2}$ the tension in the string is ($g = 10ms^{-2}$)

A. 0.5 N

B. 0.225 N

C. 0.75 N

D. 0.025 N

Answer: C



Watch Video Solution

24. The acceleration due to gravity on the planet A is 9 times the acceleration due to gravity on planet B . A man jumps to a height of $2m$ on the surface of A . What is the height of jump by the same person on the planet B ?

A. 6 m

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

C. $\frac{2}{9}$ m

D. 18 m

Answer: D



Watch Video Solution

25. The half-life of a radioactive substance is 30 minutes, The time (in minutes) taken between 40 % decay and 85 % decay of the same radioactive substance is.

A. 15

B. 30

C. 45

D. 60

Answer: D



Watch Video Solution

26. The difference between the mass of a nucleus and the combined mass of its nucleons is

A. Greater than mass of nucleus

B. Equal to mass of nucleus

C. Same as mass of nucleus

D. None of these

Answer: A



Watch Video Solution

27. Two SHW are represented by the equations

$$x_1 = 20 \sin \left[5\pi t + \frac{\pi}{4} \right] \text{ and } x_2 = 10(\sin 5\pi t + \sqrt{3} \cos 5\pi t)$$

. The ratio of the amplitudes of the two motions is

A. 0.5

B. 1

C. 0.25

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

Answer: B



Watch Video Solution

28. A simple pendulum is taken to 64 km above the earth's surface. Its new time period will

A. Increases by 1%

B. Decrease by 1%

C. Increases by 2%

D. Decrease by 2%

Answer: A



Watch Video Solution

29. The threshold frequency for a certain metal is 3.3×10^{14} Hz. If light of frequency 8.2×10^{14} Hz is incident on the metal, predict the cut-off voltage for the photoelectric emission.

- A. 3 V
- B. 4 V
- C. 2 V
- D. 2.5 V

Answer: C



Watch Video Solution

30. If K_1 and K_2 are maximum kinetic energies of photoelectrons emitted when light of wavelength λ_1 and λ_2 respectively are incident on a metallic surface. If $\lambda_1 = 3\lambda_2$ then

A. $K_1 > \left(\frac{K_2}{3}\right)$

B. $K_1 < \left(\frac{K_2}{3}\right)$

C. $K_1 = 3K_2$

D. $K_2 = 3K_1$

Answer: B



Watch Video Solution

31. Let a steel bar of length 'l', breadth 'b' and depth 'd' be loaded at the centre by a load 'W'. Then the sag of bending of beam is (Y = Young's modulus of material of steel)

A. $\frac{Wl^3}{2bd^3Y}$

B. $\frac{Wl^3}{4bd^3Y}$

C. $\frac{Wl^3}{2db^3Y}$

D. $\frac{Wl^3}{4db^3Y}$

Answer: B



Watch Video Solution

32. The pressure at the bottom of a tank of liquid is not proportional to

A. Acceleration due to gravity

B. Density of the liquid

C. Height of the liquid

D. Area of the liquid surface

Answer: D

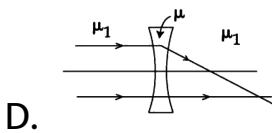
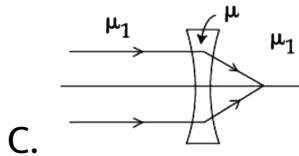
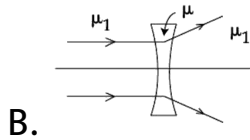
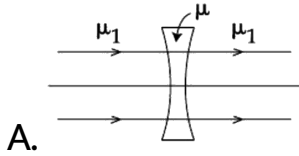


Watch Video Solution

33. The refractive index of the material of a concave lens is n . It is immersed in a medium of refractive index n_1 . A

parallel beam of light is incident on the lens. Trace the path of emerged rays in each of the following cases :

(a) $n_1 > n$ (b) $n_1 < n$ (c) $n_1 = n$.



Answer: C



Watch Video Solution

34. Two convex lenses of power 2 D and 5 D are separated by a distance $\frac{1}{3}m$ The power of the optical system formed is

A. $+2D$

B. $-2D$

C. $-3D$

D. $+3D$

Answer: D



Watch Video Solution

35. Four similar point masses (m each) are symmetrically placed on the circumference of a disc of mass M and radius R . Moment of inertia of the system about an axis passing through centre O and perpendicular to the plane of the disc will be

A. $MR^2 + 4mR^2$

B. $MR^2 + \frac{8}{5}mR^2$

C. $mR^2 + 4MR^2$

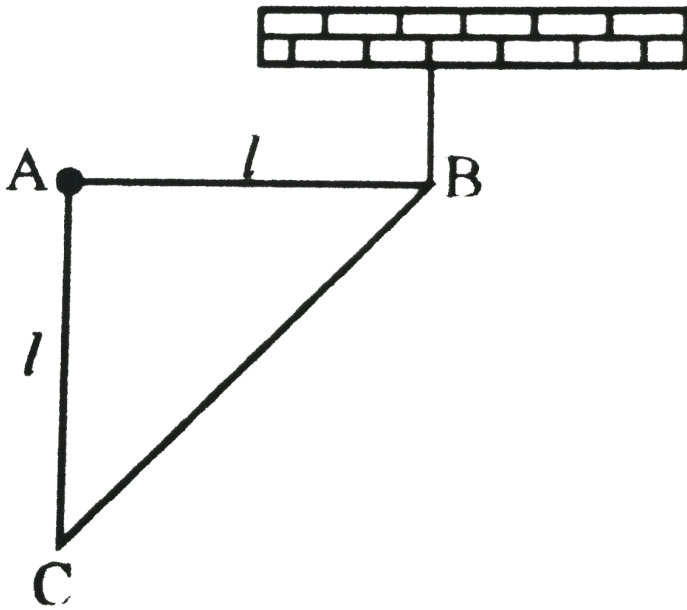
D. $\frac{MR^2}{2} + 4mR^2$

Answer: D



Watch Video Solution

36. A right triangular plate ABC of mass m is free to rotate in the vertical plane about a fixed horizontal axis through A . It is supported by a string such that the side AB is horizontal. The reaction at the support A is :



A. $\frac{mg}{3}$

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

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

D. mg

Answer: B



Watch Video Solution

37. In a common emitter transistor amplifier the audio signal voltage across the collector is $3V$. The resistance of collector is $3k\Omega$. If current gain is 100 and the base resistance is $2k\Omega$, the voltage and power gain of the amplifier is :

A. 200 and 1000

B. 15 and 200

C. 150 and 15000

D. 20 and 2000

Answer: C



Watch Video Solution

38. If $A = 1$ and $B = 0$, then in terms of Boolean algebra ,

$$A + \bar{B} = .$$

A. B

B. $\bar{B} \cdot B$

C. A

D. \bar{A}

Answer: C



Watch Video Solution

39. The coefficient of volume expansion of glycerine is $49 \times 10^{-5} / ^\circ C$. What is the fractional change in its density (approx.) for $30^\circ C$ rise in temperature?

A. 1.45×10^{-2}

B. 2×10^{-4}

C. 3.5×10^{-4}

D. 2.5×10^{-2}

Answer: A



Watch Video Solution

40. The internal and external diameters of a hollow cylinder are measured with the help of a Vernier callipers . Their values are $4.23 \pm 0.01\text{cm}$ and $3.87 \pm 0.01\text{cm}$, respectively . The thickness of the wall of the cylinder is

A. $0.36 \pm 0.02\text{cm}$

B. $0.18 \pm 0.02\text{cm}$

C. $0.36 \pm 0.01\text{cm}$

D. $0.18 \pm 0.01\text{cm}$

Answer: B



Watch Video Solution

41. In the ideal double-slit experiment, when a glass-plate (refractive index 1.5) of thickness t is introduced in the path of one of the interfering beams (wave-length λ), the intensity at the position where the central maximum occurred previously remains unchanged. The minimum thickness of the glass-plate is

A. 2λ

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

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

D. λ

Answer: A



42. In a Young's double slit experiment, the fringe width is found to be 0.4mm . If the whole apparatus is immersed in water of refractive index $4/3$ without disturbing the geometrical arrangement, the new fringe width will be

A. 0.30 mm

B. 0.40 mm

C. 0.53 mm

D. 450 microns

Answer: A



43. A transverse wave is represented by $y = A \sin(\omega t - kx)$. For what value of the wavelength is the wave velocity equal to the maximum particle velocity?

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

B. πA

C. $2\pi A$

D. A

Answer: C



44. The tension in a wire is decreased by 19 % The percentage decrease in frequency will be

A. 19 %

B. 10 %

C. 0.19 %

D. None of these

Answer: B



Watch Video Solution

45. A wind - powered generator converts wind energy into electrical energy . Assume that the generator converts a fixed fraction of the wind energy intercepted by the blades into electrical energy for wind speed V , the electrical power output will be proportional to

A. v

B. v^2

C. v^3

D. v^4

Answer: C



Watch Video Solution

