



PHYSICS

BOOKS - NTA MOCK TESTS

NTA NEET SET 104

Physics

1. When an electron in hydrogen atom revolves in stationary orbit, it

A. does not radiate light though its velocity changes.

B. does not radiate light and velocity remains unchanged

C. radiates light but its velocity is unchanged

D. radiates light with the change of energy

Answer: A



Watch Video Solution

2. When the momentum of a photon is changed by an amount p' . The corresponding change in the de-Broglie wavelength is found to be 0.2% . Then, the original momentum of the photon was

A. $300 p'$

B. $500 p'$

C. $400 p'$

D. $100 p'$

Answer: B



Watch Video Solution

3. Two blocks of masses m_1 and m_2 are connected by a massless spring and placed on smooth surface. The spring initially stretched and released. Then :

A. the momentum of each particle remains constant separately

B. the magnitude of momentum of both bodies are same to each other

C. The mechanical energy of system
remains constant

D. Both (b) and (c) are correct

Answer: D



Watch Video Solution

4. A particle of mass ' m ' is moving with speed ' $2v$ ' and collides with a mass ' $2m$ ' moving with speed ' v ' in the same direction. After collision, the first mass is stopped completely while the

second one splits into two particles each of mass 'm', which move at angle 45° with respect to the original direction. The speed of each of the moving particle will be:

A. $\sqrt{2}v$

B. $\frac{v}{\sqrt{2}}$

C. $2\sqrt{2}v$

D. $\frac{v}{(2\sqrt{2})}$

Answer: C



Watch Video Solution

5. If a_r and a_t represent radial and tangential accelerations, the motion of a particle will be uniformly circular if

A. $a_r = 0, a_t = 0$

B. $a_r \neq 0, a_t \neq 0$

C. $a_r \neq 0, a_t = 0$

D. $a_r = 0, a_t \neq 0$

Answer: C



Watch Video Solution

6. Soft iron is preferred as the core of a transformer in the form of sheets due to its

A. Low retentivity, low coercivity and low hysteresis loss

B. High retentivity, high coercivity and low hysteresis loss

C. Low retentivity, low coercivity and high hysteresis loss

D. Low retentivity, high coercivity and high hysteresis loss

Answer: A



Watch Video Solution

7. In a hydrogen tube it is observed that through a given cross-section 3.13×10^{15} electrons per sec, moving from right to left and 3.12×10^{15} protons per sec are moving

from left to right. The electric current in the discharge tube and its direction is

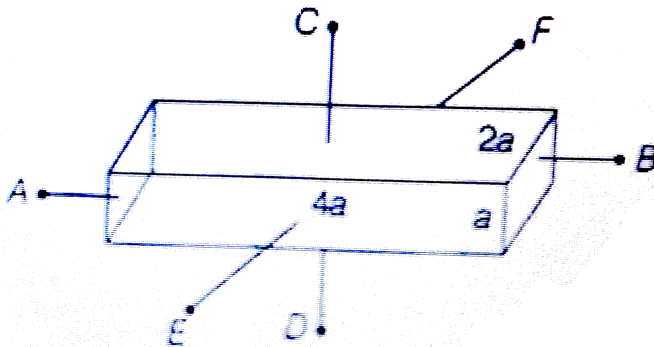
- A. 1 mA, towards left
- B. 2 mA , towards right
- C. 1 mA, towards right
- D. 2 mA, towards left

Answer: C



Watch Video Solution

8. A conductor with rectangular cross section has dimensions $(a \times 2a \times 4a)$ as shown in figure. Resistance across AB is x , across CD is y and across EF is z . Then



A. $x = y = z$

B. $x > y > z$

C. $y > z > x$

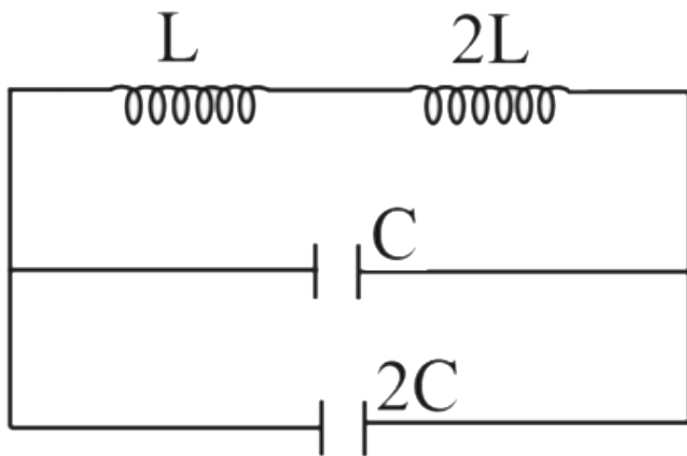
$$D. x > z > y$$

Answer: D



Watch Video Solution

9. The frequency of oscillation of current in the inductor is-

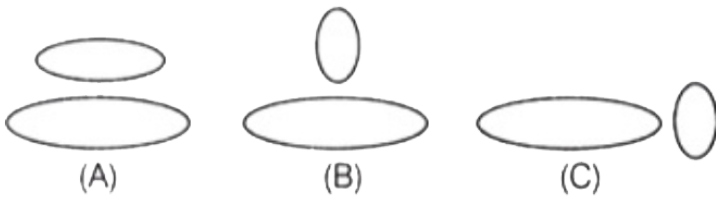


- A. $\frac{1}{3\sqrt{LC}}$
- B. $\frac{1}{6\pi\sqrt{LC}}$
- C. $\frac{1}{\sqrt{LC}}$
- D. $\frac{1}{2\pi\sqrt{LC}}$

Answer: B



10. Two circular coils can be arranged in any of the three following situations as shown in the figure. Their mutual inductance will be



A. Maximum (B)

B. Maximum (A)

C. Maximum (C)

D. Same in all conditions

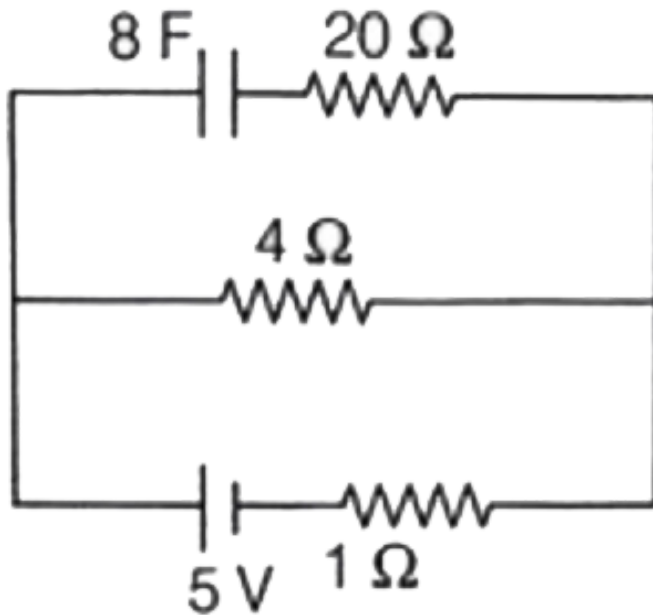
Answer: B



Watch Video Solution

11. A capacitor of 8 F is connected as shown in the figure. At steady state Charge on the

plates of the capacitor



A. 32 C

B. 40 C

C. 0 C

D. 80 C

Answer: A



Watch Video Solution

12. 4×10^{10} electrons are removed from a neutral metal sphere of diameter 20 cm placed in air. The magnitude of the electric field (in NC^{-1}) at a distance of 20 cm from its centre is

A. 640

B. 5760

C. zero

D. 1440

Answer: D



Watch Video Solution

13. If g is the acceleration due to gravity on the surface of the earth , its value at a height equal to double the radius of the earth is

A. g

B. $\frac{g}{2}$

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

D. $\frac{g}{9}$

Answer: D



Watch Video Solution

14. Mass of moon is 7.3×10^{22} kg and its radius is 1.74×10^6 m. Find the value of the acceleration due to gravity on the moon.

A. $1.45Nkg^{-1}$

B. $1.55Nkg^{-1}$

C. $1.75Nkg^{-1}$

D. $1.62Nkg^{-1}$

Answer: D



Watch Video Solution

15. A long silver teaspoon is placed in a cup filled with hot tea. After some time, the exposed end (the end which is not dipped in

tea) of the spoon becomes hot even without direct contact with the tea. This phenomenon can be explained mainly by

A. Conduction

B. Reflection

C. Radiation

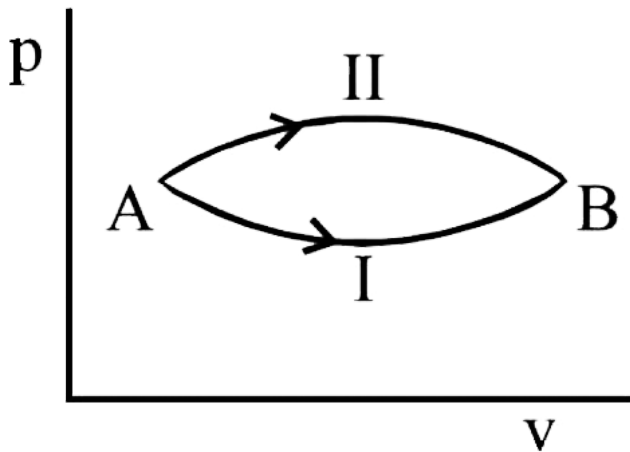
D. Thermal expansion

Answer: A



Watch Video Solution

16. A system goes from A and B via two processes. I and II as shown in figure. If ΔU_1 and ΔU_2 are the changes in internal energies in the processes I and II respectively, then



A. $\Delta U_1 = \Delta U_2$

B. Relation between ΔU_1 and ΔU_2 cannot be determined

C. $\Delta U_2 > \Delta U_1$

D. $\Delta U_2 < \Delta U_1$

Answer: A



Watch Video Solution

17. In a cyclic process, work done by the system is

A. Zero

B. More than the heat given to the system

C. Equal to heat given to the system

D. Independent of heat given to the system

Answer: C



Watch Video Solution

18. An electron, a proton, a deuteron and an alpha particle, each having the same speed are in a region of constant magnetic field

perpendicular to the direction of the velocities of the particles. The radius of the circular orbits of these particles are respectively R_e , R_p , R_d and R_α It follows that

A. $R_e = R_p$

B. $R_p = R_d$

C. $R_d = R_\alpha$

D. $R_p = R_\alpha$

Answer: C



Watch Video Solution

19. A proton is projected with a uniform velocity ' v ' along the axis of a current carrying solenoid, then

A. The proton will be accelerated along the axis

B. The proton path will be circular about the axis

C. The proton move along helical path

D. The proton will continue to move with velocity v along the axis

Answer: D



Watch Video Solution

20. A man takes twice as long to row a distance against the stream as to row the same distance in favour of the stream. The ratio of the speed of the boat (in still water) and the stream is :

A. 2: 1

B. 3: 1

C. 3: 2

D. 4: 3

Answer: B



Watch Video Solution

21. A man standing on the roof of a house of height h throws one particle vertically downwards and another particle horizontally

with the same velocity u . The ratio of their velocities when they reach the earth's surface will be

A. $\sqrt{2gh + u^2} : u$

B. $1 : 2$

C. $1 : 1$

D. $\sqrt{2gh + u^2} : \sqrt{2gh}$

Answer: C



Watch Video Solution

22. A student unable to answer a question on Newton's laws of motion attempts to pull himself up by tugging on her hair. He will not succeed.

A. As the force exerted is small

B. the frictional force while gripping, is small

C. Newton's law of inertia is not applicable to living beings.

D. As the force applied is internal to the system

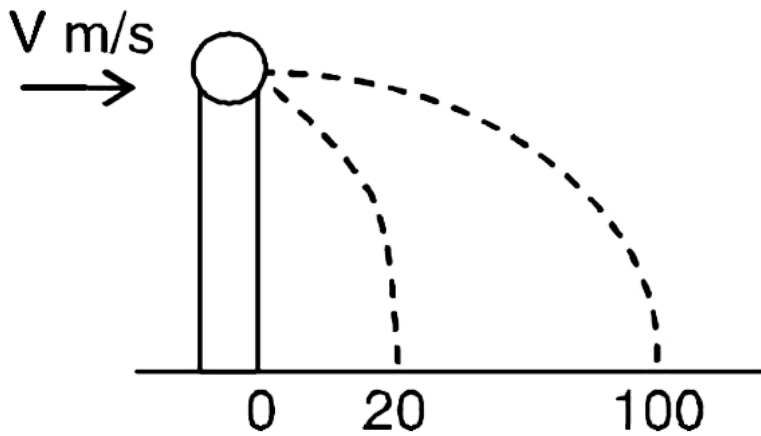
Answer: D



Watch Video Solution

23. A ball of mass 0.2 kg rests on a vertical post of height 5 m. A bullet of mass 0.01 kg, travelling with a velocity $V \text{ m/s}$ in a horizontal direction, hits the centre of the ball. After the collision, the ball and bullet travel

independently. The ball hits the ground at a distance of 20 m and the bullet at a distance of 100 m from the foot of the post. The velocity V of the bullet is



A. 250 m s^{-1}

B. 350 m s^{-1}

C. 400 m s^{-1}

D. 500m.s^{-1}

Answer: D



Watch Video Solution

24. A nucleus is bombarded with a high-speed neutron so that resulting nucleus is a radioactive one. This phenomenon is called

A. Artificial radioactivity

B. Fusion

C. Fission

D. Radioactivity

Answer: C



Watch Video Solution

25. If M_o is the mass of an oxygen isotope ${}_{8}O^{17}$, M_p and M_N are the masses of a proton and neutron respectively, the nuclear binding energy of the isotope is:

A. $(M_O - 17M_N)c^2$

B. $(M_O - 8M_P)c^2$

C. $(8M_P + 9M_n - M_O)c^2$

D. M_Oc^2

Answer: C

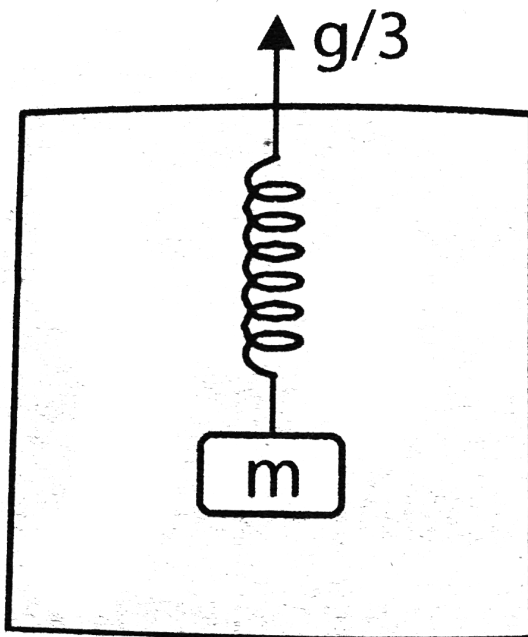


Watch Video Solution

26. A spring of spring constant $200N/m$ has a block of mass $1kg$ hanging at its one end and from the other and the spring is attached to a

ceiling of an elevator. The elevator rises upwards with an acceleration of $g/3$.

When acceleration is suddenly ceased, then what should be the angular frequency and elongation during the time when the elevator is accelerating?



A. $14.14\text{rads}^{-1}, 0.07\text{m}$

B. $13\text{rads}^{-1}, 0.1\text{m}$

C. $14\text{rads}^{-1}, 0.05\text{m}$

D. $10\text{rads}^{-1}, 0.07\text{m}$

Answer: A



Watch Video Solution

27. The maximum velocity of a simple harmonic motion represented by $y = 3 \sin\left(100t + \frac{\pi}{6}\right)$ is given by

A. $300ms^{-1}$

B. $\frac{3\pi}{6}ms^{-1}$

C. $100ms^{-1}$

D. $\frac{\pi}{6}ms^{-1}$

Answer: A



Watch Video Solution

28. In the photoelectric effect the velocity of the ejected electrons depends upon the nature of the target and

- A. The frequency of the incident light
- B. The polarisation of the incident light
- C. The time for which the light has been
incident
- D. the intensity of the incident light

Answer: A



Watch Video Solution

29. An electron, a neutron and an alpha particle have same kinetic energy and their de-Broglie wavelength are λ_e , λ_n and λ_α respectively. Which statement is correct about their de-Broglie wavelengths?

A. $\lambda_e > \lambda_n > \lambda_\alpha$

B. $\lambda_e < \lambda_n > \lambda_\alpha$

C. $\lambda_e < \lambda_n < \lambda_\alpha$

D. $\lambda_e > \lambda_n < \lambda_\alpha$

Answer: A



Watch Video Solution

30. A particular force (F) applied on a wire increases its length by 2×10^{-3} m. To increase the wire's length by 4×10^{-3} m, the applied force will be

A. $4F$

B. $3F$

C. $2F$

D. F

Answer: C



Watch Video Solution

31. If the excess pressure inside a soap bubble is balanced by oil column of height 2 mm, then the surface tension of soap solution will be

($r = 1$ cm and density

$$d = 0.8 \text{ g cm}^{-3} = 0.8 \text{ g cc}^{-1}).$$

A. 4 Nm^{-1}

B. $4 \times 10 \text{ Nm}^{-1}$

C. $4 \times 10^{-2} Nm^{-1}$

D. $4 \times 10^{-3} Nm^{-1}$

Answer: C



Watch Video Solution

32. A point object is placed at a distance of 30 cm from a convex mirror of focal length 30 cm.

The image will form at

A. Infinity

B. Pole

C. 15 cm behind the mirror

D. No image will be formed

Answer: A



Watch Video Solution

33. A plano convex lens has focal length $f = 20\text{cm}$. If its plane surface is silvered, then new focal length will be

A. 20 cm

B. 40 cm

C. 30 cm

D. 10 cm

Answer: C



Watch Video Solution

34. A mass m is moving with a constant velocity along a line parallel to the x -axis, away

from the origin. Its angular momentum with respect to the origin.

- A. is zero
- B. Remains constant
- C. Goes on increasing
- D. Goes on decreasing

Answer: B



Watch Video Solution

35. A homogeneous cylinder of mass M and radius r is pulled on a horizontal plane by a horizontal force F acting through its centre of mass. Assuming rolling without slipping, find the angular acceleration of the cylinder,

A. $\frac{F}{3mR}$

B. $\frac{3F}{2mR}$

C. $\frac{2F}{3mR}$

D. $\frac{F}{2mR}$

Answer: C



Watch Video Solution

36. The reverse voltage at which the current increases enormously, in a p-n junction, is called

- A. knee voltage
- B. Breakdown voltage
- C. Biasing voltage
- D. acceleration voltage

Answer: B



Watch Video Solution

37. if a, b, c, d are inputs to a gate and x is its output, then as per the following time graph, the gate is :



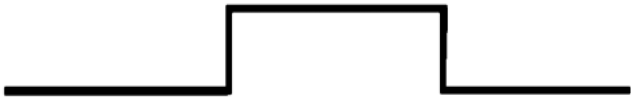
d

c



c

b



b

a

a



x

x



A. OR

B. NAND

C. NOT

D. AND

Answer: A



Watch Video Solution

38. 10 grams of ice at $-20^{\circ}C$ is added to 10 grams of water at $50^{\circ}C$. The amount of ice and water that are present at equilibrium respectively

A. 2g

B. 3 g

C. 4g

D. 5g

Answer: D



Watch Video Solution

39. In the density measurement of a cube, the mass and edge length are measured as $(10.00 \pm 0.10)\text{kg}$ and $(0.10 \pm 0.01)\text{m}$,

respectively. The relative error in the measurement of density is:

A. 0.31

B. 0.10

C. 0.07

D. 0.01

Answer: A



Watch Video Solution

40. On decreasing the wavelength of incident light from 8000 \AA to 4000 \AA . The intensity of the scattered light in Rayleigh scattering will become _____ time the initial scattered intensity.

A. 2

B. 4

C. 16

D. 8

Answer: C



Watch Video Solution

41. In Young's double slit experiment, if the distance between two slits is equal to the wavelength of used light. Then the maximum number of bright fringes obtained on the screen will be

A. Infinite

B. 3

C. 7

D. 5

Answer: B



Watch Video Solution

42. When source of sound moves towards a stationary observer, the wavelength of sound received by him

A. decreases while frequency increases.

B. remains the same whereas frequency increases.

C. increases and frequency also increases

D. decreases while frequency remains the same

Answer: A



Watch Video Solution

43. A transverse wave propagating along x-axis

is represented by:

$$y(x, t) = 8.0 \sin\left(0.5\pi x - 4\pi t - \frac{\pi}{4}\right) \quad \text{Where}$$

x is in metres and t is in seconds. The speed of

the wave is:

A. $8ms^{-1}$

B. $4\pi ms^{-1}$

C. $0.5\pi ms^{-1}$

D. $\pi / 4ms^{-1}$

Answer: A



Watch Video Solution

44. A particle moves from a point $(-2\hat{i} + 5\hat{j})$ to $(4\hat{i} + 3\hat{j})$ when a force of $(4\hat{i} + 3\hat{j})$ N is applied. How much work has been done by the force?

A. 8 J

B. 11 J

C. 5 J

D. 2 J

Answer: C



Watch Video Solution

45. From a waterfall, water is falling down at the rate of 100kg / s on the blades of turbine. If the height of the fall is 100 m , then the power delivered to the turbine is approximately equal to

A. 100 kW

B. 10 kW

C. 1 kW

D. 1000 kW

Answer: A



Watch Video Solution