PHYSICS

BOOKS - NTA MOCK TESTS

NTA NEET TEST 101

Physics

1. Find the minimum frequency of light which can ionise a hydrogen atom.

A. $3.28 \times 10^{15} Hz$

B. $5 \times 10^{15} Hz$

C. 91.1 Hz

D. None of these

Answer: A

Watch Video Solution

2. The energy (in eV) required to excite an electron from n = 2 to n = 4 state in hydrogen atom is

A. -0.85

B. $+4.25$

C. -3.4

D. $+2.55$

Answer: D

Watch Video Solution

3. A body of mass 3 kg moving with a velocity $\left(2\hat{i}+3\hat{j}+3\hat{k}\right)$ m/s collides with another body of mass 4 kg moving with a velocity

$\left(3\hat{i}+2\hat{j}-3\hat{k}\right)$ m/s. The two bodies stick together after collision. The velocity of the composite body is

A. $\frac{1}{7}\left(4\hat{i}+6\hat{j}-3\hat{k}\right)$

B. $\frac{1}{7}\left(18\hat{i}+17\hat{j}-3\hat{k}\right)$

C. $\frac{1}{7}\left(6\hat{i}+4\hat{j}-6\hat{k}\right)$

D. $\frac{1}{7}\left(9\hat{i}+8\hat{j}-6\hat{k}\right)$

Answer: B

Watch Video Solution

4. A coil has $L = 0.04H$ and $R = 12\Omega$. When it is connected to $220V, 50Hz$ supply the current flowing through the coil, in ampere is

A. 12.7 A

B. 14.7 A

C. 11.7 A

D. 10.7 A

Answer: A

Watch Video Solution

5. A 2 kg stone tied at the end of a string of l m len"gt"h, is whirled along a vertical circle at a constant speed of $4ms^{-1}$. The tension in the string has a value of 52 N when the stone is

A. At the top of the circle

B. Half way down

C. At the bottom of the circle

D. Half way up

Answer: C

Watch Video Solution

6. A pendulum of length L carries a negative charge - q on the bob. A positive charge +q is held at the point of support . Then, the time period of the bob is

A. Greater than $2\pi\sqrt{\frac{L}{g}}$

B. Less than $2\pi\sqrt{\frac{L}{g}}$

C. equal to $2\pi\sqrt{\frac{L}{g}}$

D. Equal to $2\pi\sqrt{\frac{2L}{g}}$

Answer: C

Watch Video Solution

7. A battery is charged at potential of 15 V for 8 h by means of a current of 10A. While discharging it supplies a current 5A for 15h at a potential difference of 14 V. Calculate the watt-hour efficiency of the battery.

A. $80\ \%$

B. $90\ \%$

C. $87.5\ \%$

D. $82.5\ \%$

Answer: C

Watch Video Solution

8. An ideal battery of emf 2 V and a series resistance R are connected in the primary circuit of a potentiometer of length 1 m and resistance 5Ω The value of R, to give a

potential difference of 5 m V across 10 cm of potentiometer wire is

A. 180Ω

B. 190Ω

C. 195Ω

D. 200Ω

Answer: C

 Watch Video Solution

9. The current through the solenoid is changing in such way that flux through it is given by $\phi = \varepsilon$ t .The solenoid is surrounded by a loop having resistance R_1 and R_2 as shown.Then the reading of the two voltmeters V_1 and V_2 differ by :

A. Zero

B. ε

C. $\left|\frac{\varepsilon(R_1 - R_2)}{R_1 + R_2}\right|$

D. $\left|\frac{\varepsilon R_1 R_2}{R_1 + R_2}\right|$

Answer: C

Watch Video Solution

10. A circular current carrying coil has a radius R. The distance from the centre of the coil on the axis where the magnetic induction will be $(1/8)^{th}$ of its value at the centre of the coil is,

A. $\frac{R}{\sqrt{3}}$

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

C. $2\sqrt{3}R$

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

Answer: B

Watch Video Solution

11. Two long concentric cylindrical conductors of radii a and b $(b < a)$ are maintained at a potential difference V and carry equal opposite current I. Show that an electron with a particular velocity u parallel to the axis may

travel undeviated in the evacuated region between the conductors.

A. $\frac{4\pi V}{\mu_0 I \ \ln\left(\frac{b}{a}\right)}$

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

C. $\frac{2\pi V}{\mu_0 I \ \ln\left(\frac{b}{a}\right)}$

D. $\frac{8\pi V}{\mu_0 I \ \ln\left(\frac{a}{b}\right)}$

Answer: B

Watch Video Solution

12. A circuit has a self inductance of 1H and carries a current of 2A. To prevent sparking when the circuit is switched off, a capacitor which can withstand 400V is used. The least capacitance of the capacitor connected across the switch must be equal to

A. $50\mu F$

B. $25\mu F$

C. $100\mu F$

D. $12.5\mu F$

Answer: B

Watch Video Solution

13. The ratio of acceleration due to gravity at a height 3 R above earth's surface to the acceleration due to gravity on the surface of earth is

(R = radius of earth)

A. $\frac{1}{9}$

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

C. $\frac{1}{16}$

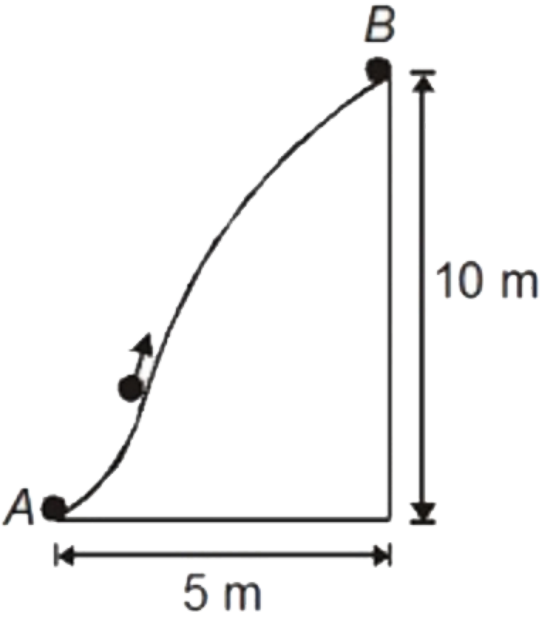
D. $\frac{1}{3}$

Answer: C

Watch Video Solution

14. A particle is pulled along a curved surface very slowly. The coefficient of kinetic friction between the particle and surface is 0.4 . The heat generated during the pulling of the particle from the lowest point A to the

topmost point B equals (The mass of the particle is 5 g)



A. 100 J

B. 0.1 J

C. 50 J

D. 23 J

Answer: B

Watch Video Solution

15. A metallic sphere cools from $50^\circ C$ to $40^\circ C$ in 300 seconds. If the room temperature is $20^\circ C$ then its temperature in next 5 minutes will be -

A. $38^\circ C$

B. $33.3^\circ C$

C. $30^\circ C$

D. $36^\circ C$

Answer: B

Watch Video Solution

16. Two moles of an ideal gas at temperature $T_0 = 300K$ was cooled isochorically so that the pressure was reduced to half. Then, in an isobaric process, the gas expanded till its

temperature got back to the initial value. Find the total amount of heat absorbed by the gas in the processs

A. 2000 J

B. 2500 J

C. 3000 J

D. 4000 J

Answer: B

Watch Video Solution

17. A gas does 4.5 J of external work during adiabatic expansion. If its temperature falls by 2 K, then its internal energy will be

A. Increased by 4.5 J

B. Decreased by 4.5 J

C. Decreased by 2.25 J

D. Increased by 9.0 J

Answer: B

 Watch Video Solution

18. Two short bar magnets with magnetic moments $400ab\text{– A cm}^2$ and $800ab\text{– }Acm^2$ are placed with their axis in the same straight line with similar poles facing each other and with their centres at 20 cm from each other. Then the force of repulsion is

A. 12 dyne

B. 6 dyne

C. 800 dyne

D. 150 dyne

Answer: A

Watch Video Solution

19. A particle of mass M and charge Q moving with velocity v describes a circular path of radius R when subjected to a uniform transverse magnetic field of induction B. The work done by the field when the particle completes one full circle is :

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

B. Zero

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

D. Mv^2R

Answer: B

Watch Video Solution

20. A boat covers 24 km upstream and 36 km downstream in 6 hours while it covers 36 km upstream and 24 km downstream in $6\frac{1}{2}$ hours.

The velocity of the current is $1\ km/hr$ b. $1.5\ km/hr$ c. $2\ km/hr$ d. $2.\ km/hr$

A. 1Km hr^{-1}

B. 1.5Km hr^{-1}

C. 2Km hr^{-1}

D. 2.5Km hr^{-1}

Answer: C

Watch Video Solution

21. From the ground, a projectile is fired at an angle of 60 degree to the horizontal with a speed of $20\ \mathrm{m\,s^{-1}}$ The horizontal range of the projectile is

A. $10\sqrt{3}$

B. 20 m

C. $20\sqrt{3}m$

D. $40\sqrt{3}$

Answer: C

Watch Video Solution

Watch video solution

22. A ball of mass 150 g starts moving with an acceleration of $20m/s^2$. When hit by a force, which acts on it for 0.1 sec. The impulsive force is

A. 0.5 N s

B. 0.1 N s

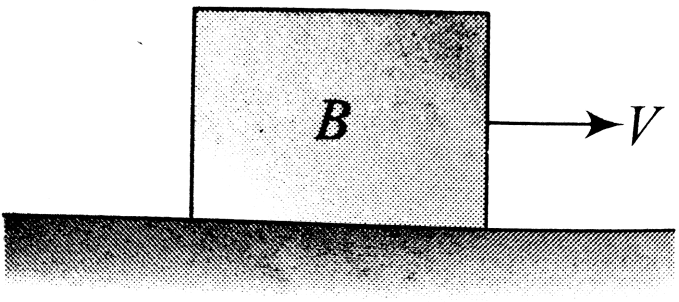
C. 0.3 N s

D. 1.2 N s

Answer: C

Watch Video Solution

23. A block B is pushed momentarily along a horizontal surface with an initial velocity v . If mu is the coefficient of sliding friction between B and the surface, block B will come to rest after a time:



A. $\frac{v}{9\mu}$

B. $\frac{g\mu}{v}$

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

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

Answer: A

Watch Video Solution

24. A nucleus ${}_{n}^{m}X$ emits one α particle and two β^{-} particles .The resulting nucleus is

A. ${}_{n-4}^{m-6}Z$

B. ${}_{n}^{m-6}Z$

C. ${}_{n}^{m-4}X$

D. ${}_{n-2}^{m-4}Y$

Answer: C

Watch Video Solution

25. Amongst the three isotopes of Neon - ${}_{10}^{20}Ne$, ${}_{10}^{21}Ne$ and ${}_{10}^{22}Ne$ the nucleus with the lowest n/p ratio is

A. ${}^{22}_{10}\mathrm{Ne}$

B. ${}^{21}_{10}\mathrm{Ne}$

C. ${}^{20}_{10}\mathrm{Ne}$

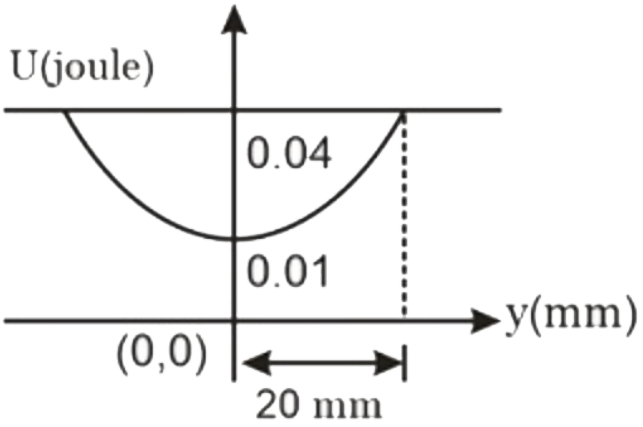
D. All of these

Answer: C

Watch Video Solution

26. The variation of the potential energy of harmonic oscillator is as shown in the figure.

The spring constant is



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

B. $150 Nm^{-1}$

C. $66.7 Nm^{-1}$

D. $3 \times 10^2 Nm^{-1}$

Answer: B

Watch Video Solution

27. The path length of oscillation of simple pendulum of length 1 m is 16 cm. Its maximum velocity is (take, $g = \pi^2 m / s^2$)

A. $2\pi \quad \mathrm{cm\ s^{-1}}$

B. $4\pi \quad \mathrm{cm\ s^{-1}}$

C. $8\pi \quad \mathrm{cm\ s^{-1}}$

D. $16\pi \quad \mathrm{cm\ s^{-1}}$

Answer: C

Watch Video Solution

28. The correctness of velocity of an electron moving with velocity $50ms^{-1}$ is $0.005\,\%$. The accuracy with which its position can be measured will be

A. $4634 \times 10^{-3}m$

B. $4634 \times 10^{-5}m$

C. $4634 \times 10^{-6}m$

D. $4634 \times 10^{-8}m$

Answer: B

Watch Video Solution

29. The sun radiates electromagnetic energy at the rate of $3.9 \times 10^{26} W$. Its radius is $6.96 \times 10^{8} m$. The intensity of sun light at the solar surface will be (in W / m^{2})

A. 1.4×10^{4}

B. 2.8×10^{5}

C. 4.2×10^{6}

D. 6.4×10^7

Answer: D

Watch Video Solution

30. A capillary tube of radius r is immersed in a liquid. The liquid rises to a height h. The corresponding mass is m. What mass of water shall rise in the capillary if the radius of the tube is doubled?

A. 2m

B. 5m

C. 3m

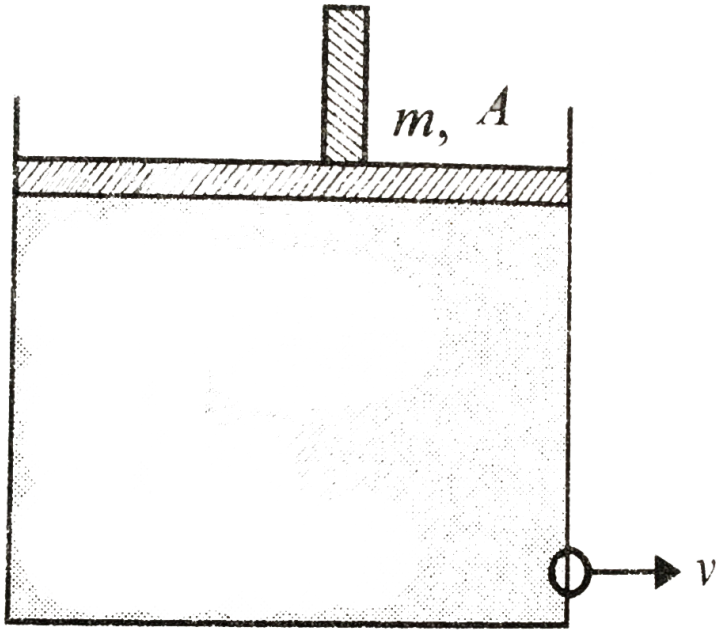
D. 4m

Answer: A

Watch Video Solution

31. A cylindrical vessel contains a liquid of density ρ up to height h. The liquid is closed by a piston of mass m and area of cross section A. There is a small hole at the bottom

of the vessel. The speed v with which the liquid comes out of the hole is



A. $\sqrt{2gh}$

B. $\sqrt{2\left(gh+\frac{mg}{\rho A}\right)}$

C. $\sqrt{2\left(gh+\frac{mg}{A}\right)}$

D. $\sqrt{2gh + \frac{mg}{A}}$

Answer: B

 Watch Video Solution

32. If a ray of light in a denser medium strikes a rarer medium at an angle of incidence i, the angles of reflection and refraction are respectively, r and r' If the reflected and refraction rays are at right angles to each

other, the critical angle for the given pair of media is

A. $\sin^{-1}(\tan r')$

B. $\sin^{-1}(\tan r)$

C. $\tan^{-1}(\sin i)$

D. $\cot^{-1}(\tan i)$

Answer: B

Watch Video Solution

33. Two point white dots are 1mm apart on a black paper. They are viewed by eye of pupil diameter 3mm. Approximately, what is the maximum distance at which these dits can be resolved by the eye? [Take wavelength of light =500nm]

A. 5 m

B. 1 m

C. 6 m

D. 3 m

Answer: A

Watch Video Solution

34. A particle of mass m=5 units is moving with uniform speed $V = 3\sqrt{2}$ units in the XY plane along the line Y = X + 4. The magnitude of the angular momentum about origin is,

A. Zero

B. 60 units

C. 7.5 unis

D. 40 units

Answer: B

Watch Video Solution

35. A mass is whirled in a circular path with a constant angular velocity and its angular momentum is L. If the string is now halved keeping the angular velocity same, the angular momentum is

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

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

C. L

D. 2L

Answer: A

Watch Video Solution

36. The band gap of an insulator, conductor and semiconductor are respectively E_{g1} and E_{g2} and E_{g3}. The relationship between them is given as_____.

A. $E_{g1} > E_{g2} < E_{g3}$

B. $E_{g1} > E_{g2} > E_{g3}$

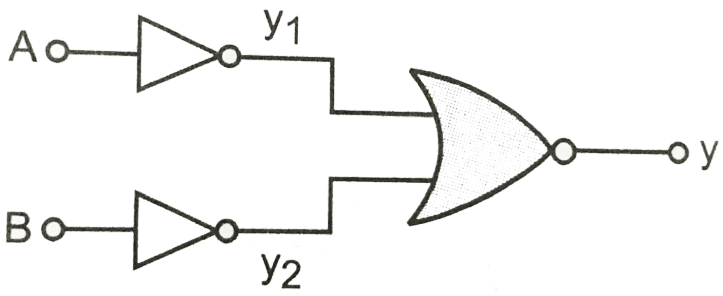
C. $E_{g1} < E_{g2} > E_{g3}$

D. $E_{g1} < E_{g2} < E_{g3}$

Answer: A

Watch Video Solution

37. Which logic gate is represented by the following combination of logic gates



A. OR

B. NAND

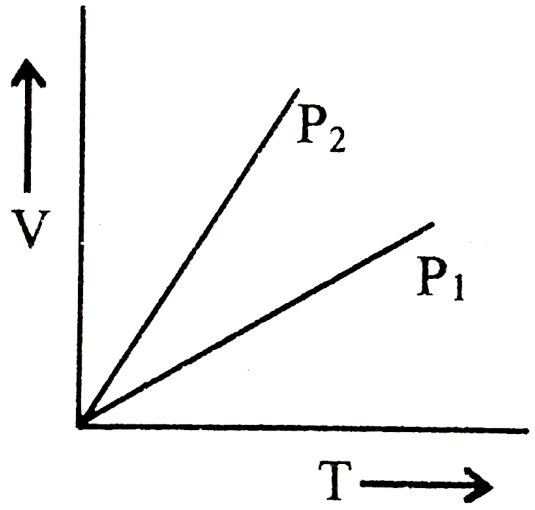
C. AND

D. NOR

Answer: C

Watch Video Solution

38. For V versus T curves at constant pressure P_1 and P_2 for and ideal gas shown in figure-



A. $P_1 > P_2$

B. $P_1 < P_2$

C. $P_1 = P_2$

D. $P_1 \geq P_2$

Answer: A

Watch Video Solution

39. Which of the following pairs does not have similar dimensions ?

A. Tension and surface tension

B. Stress and pressure

C. Planck's constant and angular momentum

D. Angle and strain

Answer: A

 Watch Video Solution

40. When sunlight is scattered by atmospheric atoms and molecules the amount of scattering of light of wavelength 880 nm is A.

Then the , the amount of scattering of light of wavelength 330 nm is approximately

A. $10A$

B. $20A$

C. $40A$

D. $50.5A$

Answer: D

Watch Video Solution

41. A star is moving away from the earth with a velocity of $100 km/s$. If the velocity of light is $3 \times 10^8 m/s$ then the shift of its spectral line of wavelength $5700 A$ due to Doppler effect is

A. $1.90 Å$

B. $3.80 Å$

C. $5.70 Å$

D. None of these

Answer: A

Watch Video Solution

Watch Video Solution

42. Three waves of equal frequency having amplitudes $10\mu m$, $4\mu m$, $7\mu m$ arrive at a given point with successive phase difference of $\pi/2$, the amplitude of the resulting wave in μm is given by

A. 7

B. 6

C. 5

D. 4

Answer: C

Watch Video Solution

43. The equation of a progressive wave can be given by Y = 15 sin $(660\pi t - 0.02\pi x)$ cm. The frequency of the wave is

A. 330 Hz

B. 342 Hz

C. 365 Hz

D. 660 Hz

Answer: A

Watch Video Solution

44. A body of mass 5 kg is thrown vertically up with a kinetic energy of 490 J. What will be height at which the kinetic energy of the body becomes half of the original value ? (Acceleration due to gravity $= 9.8ms^{-2}$)

A. 12.5 m

B. 10 m

C. 2.5 m

D. 5 m

Answer: D

Watch Video Solution

45. A body, constrained to move in the Y-direction is subjected to a force given by $\vec{F} = \left(-2\hat{i} + 15\hat{j} + 6\hat{k} \right) N$. What is the work done by this force in moving the body a distance 10 m along the Y-axis

A. 20 J

B. 150 J

C. 160 J

D. 190 J

Answer: B

 Watch Video Solution