PHYSICS

BOOKS - NTA MOCK TESTS

NTA NEET SET 24

Physics

1. The ratio of minimum to maximum wavelength in Balmer series is

A. $5:9$

B. $5:36$

C. $1:4$

D. $3:4$

Answer: A

 Watch Video Solution

2. Ionization energy of He^+ ion at minimum energy position is

A. 13.6 eV

B. 27.2 eV

C. 54.4 eV

D. 68.0 eV

Answer: C

Watch Video Solution

3. A ball collides impinges directly on a similar ball at rest. The first ball is brought to rest after the impact. If half of the kinetic energy is

lost by impact, the value of coefficient of restitution (e) is

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

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

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

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

Answer: C

Watch Video Solution

4. A man weighing 60 kg is standing on a trolley weighting 240 kg. The trolley is resting on frictionless horizontal rails. If the man starts walking on the trolley with a velocity of 1 m/s, then after 5s, his displacement relative to the ground is

A. 6 m

B. 4.8 m

C. 3.2 m

D. 2.4 m

Answer: C

Watch Video Solution

5. What will be maximum speed of a car on a curved road of radius 30 m , If the coefficient of friction between the tyres and the road is 0.4?

$(g = 9.8m/s^2)$

A. $10.84ms^{-1}$

B. $9.84ms^{-1}$

C. $8.84ms^{-1}$

D. $6.84ms^{-1}$

Answer: A

Watch Video Solution

6. The period of oscillations of a magnet is 2 sec. When it is remagnetised so that the pole strength is 4 times its period will be

A. 4 s

B. 1 s

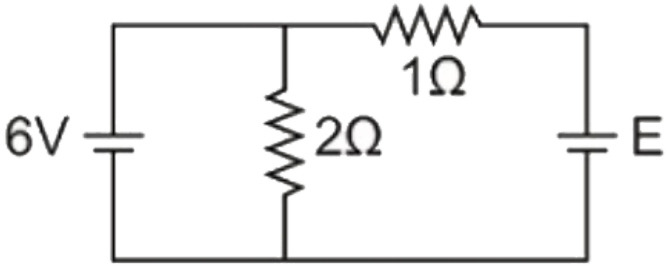
C. 2 s

D. $\frac{1}{2}s$

Answer: B

Watch Video Solution

7. Current passing through 1Ω resistance is zero. The the emf E is



A. 8 V

B. 6 V

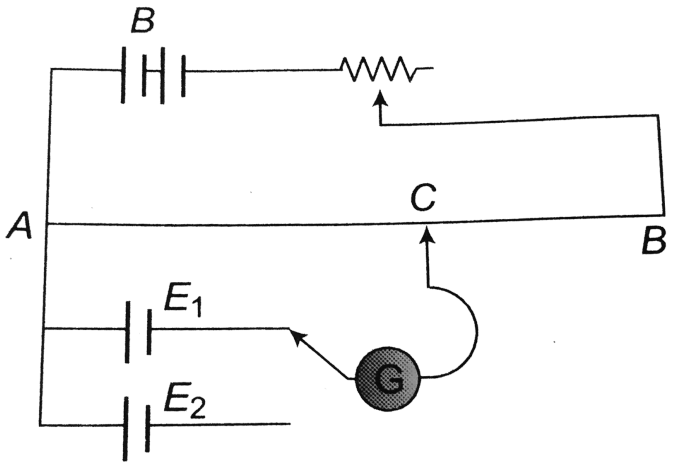
C. 4 V

D. 12 V

Answer: B

Watch Video Solution

8. The circuit shown here is used to compare the e.m.f. of the two cells $E_2(E)_1 > E_2$. The null point is at C when the galvanometer is connected to E_1. When the galvanometer is connected to E_2, the null point will be



A. to the left of C

B. to the right of C

C. at C itself

D. nowhere on AB

Answer: A

Watch Video Solution

9. In a series LCR circuit, the voltage across the resistance, capacitance and inductance is 10 V each. If the capacitance is short circuited, the voltage across the inductance will be

A. 10 V

B. $\frac{10}{\sqrt{2}}V$

C. $\frac{10}{3}V$

D. 20 V

Answer: B

Watch Video Solution

10. A small, metal wire loop is dragged across the gap between the poles of a magnet in 0.4 s. If the change in magnetic flux for the wire is

$8 \times 10^{-4} Wb$, then the emf induced in the wire is

A. $8 \times 10^{-3} V$

B. $6 \times 10^{-3} V$

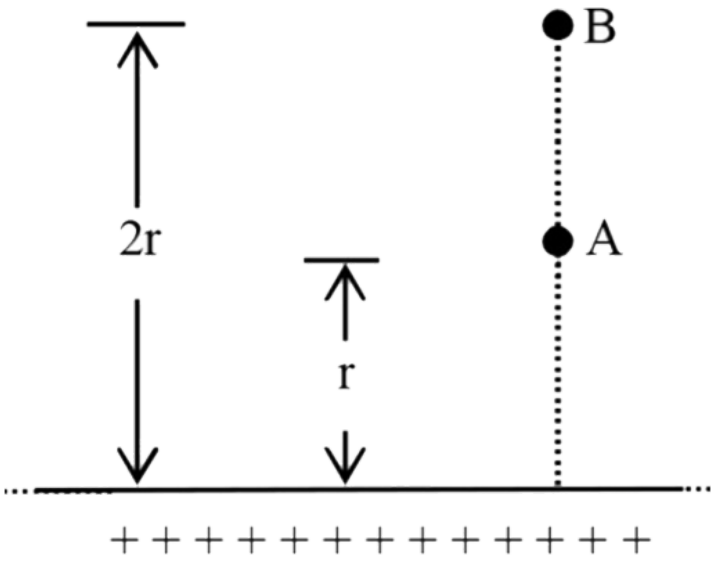
C. $4 \times 10^{-3} V$

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

Answer: D

Watch Video Solution

11. An infinitely long line of linear charge density λ is shown in the figure. The potential difference $V_A - V_B$ between the two points A and B is



A. $\frac{\lambda}{2\pi\varepsilon_0}\ln 2$

B. $-\frac{\lambda}{2\pi\varepsilon_0}\ln 2$

C. $\frac{\lambda}{4\pi\varepsilon_0}\ln 2$

D. $-\frac{\lambda}{4\pi\varepsilon_0}\ln 2$

Answer: A

Watch Video Solution

12. Three capacitors each of capacity $4\mu F$ are to be connected in such a way that the effective capacitance is $6\mu F$. This can be done by

A. all in series

B. all in parallel

C. two in parallel and one in series

D. two in series and one in parallel

Answer: D

Watch Video Solution

13. Two satellite of mass m and $9m$ are orbiting a planet in orbits of radius R. Their periods of revolution will be in the ratio of

A. $1:9$

B. $1:3$

C. $1:1$

D. $3:1$

Answer: C

Watch Video Solution

14. Let ω be the angular velocity of the earth's rotation about its axis. Assume that the acceleration due to gravity on the earth's

surface has the same value at the equator and the poles. An object weighed at the equator gives the same reading as a reading taken at a depth d below earth's surface at a pole $(d << R)$. the value of d is-

A. $\frac{\omega^2 R^2}{g}$

B. $\frac{\omega^2 R^2}{2g}$

C. $\frac{2\omega^2 R^2}{g}$

D. $\frac{\omega^2 R^2}{4g}$

Answer: A

Watch Video Solution

15. Two identical conducting rods are first connected independently to two vessels, one containing water at $100^\circ C$ and the other containing ice at $0^\circ C$. In the second case, the rods are joined end to end and connected to the same vessels. Let q_1 and q_2 gram per second be the rate of melting of ice in the two cases respectively. The ratio $\frac{q_1}{q_2}$ is

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

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

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

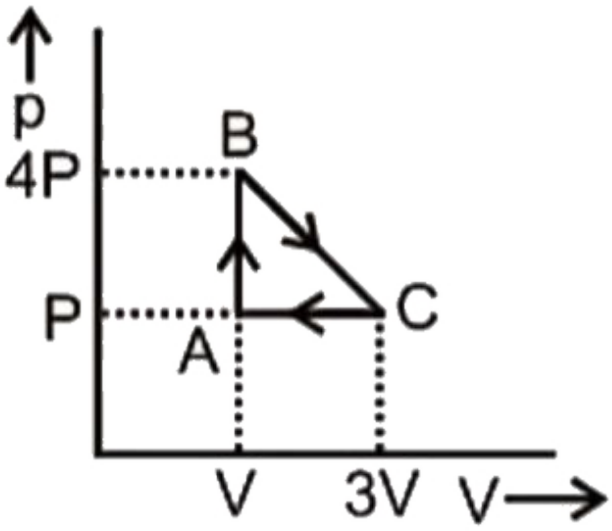
D. $\frac{1}{4}$

Answer: C

Watch Video Solution

16. An ideal gas is taken around the cycle ABCA as shown in the P-V diagram. The total work

done by the gas during the cycle is



A. PV

B. 2PV

C. 4PV

D. 3PV

Answer: D

Watch Video Solution

17. A refrigerator absorbs 2000 cal of heat from ice trays. If the coefficient of performance is 4, then work done by the motor is

A. 2100 J

B. 4200 J

C. 8400 J

D. 500 J

Answer: A

Watch Video Solution

18. A vessel is filled with an ideal gas at a pressure of 10 atmospheres and temp 27^0C. Half of the mass of the gas is removed from the vessel the temperature of the remaining gas is increased to 87^0C. Then the pressure of the gas in the vessel will be

A. 5 atm

B. 6 atm

C. 7 atm

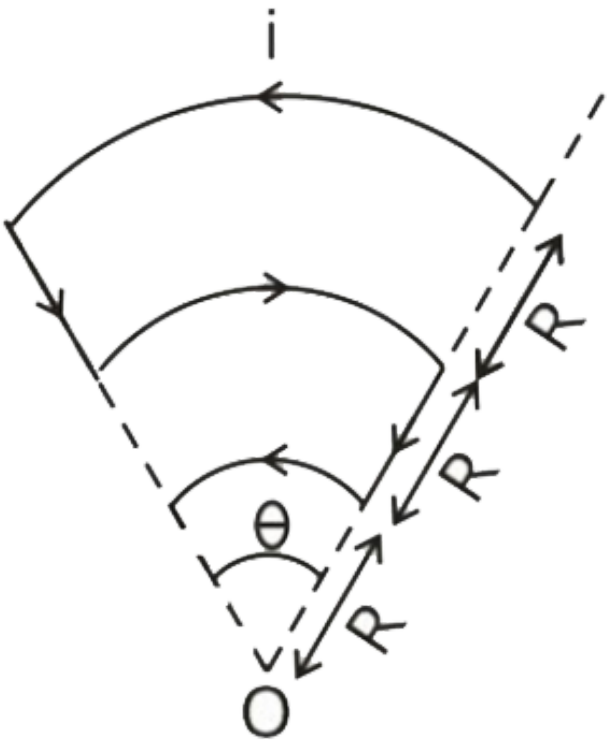
D. 8 atm

Answer: C

Watch Video Solution

19. A conductor is carrying a current i. the magnetic field intensity at a the point O which

is the common centre of three arcs is



A. $\frac{5\mu_0 I\theta}{24\pi R}$

B. $\frac{\mu_0 i\theta}{24\pi R}$

C. $\frac{11\mu_0 i\theta}{24\pi R}$

D. zero

Answer: A

 Watch Video Solution

20. Identify the correct statement among the following.

A. cyclotron frequency is dependent on speed of the charged particle

B. kinetic energy of charged particle in cyclotron does not dependent on its mass

C. cyclotron frequency does not depend on the speed of the charged particle

D. kinetic energy of charged particle in cyclotron is independent of its charge

Answer: C

 Watch Video Solution

21. A body is thrown up in a lift with a velocity $5ms^{-1}$ relative to the lift and the time of flight is found to be 0.8 s. The acceleration with which the lift is moving up is $(g = 10ms^{-2})$

A. $1.5ms^{-2}$

B. $2ms^{-2}$

C. $2.5ms^{-2}$

D. $3ms^{-2}$

Answer: C

Watch Video Solution

22. A particle is projected at an angle of 60° above the horizontal with a speed of $10m/s$. After some time the direction of its velocity makes an angle of 30° above the horizontal. The speed of the particle at this instant is

A. $\frac{5}{\sqrt{3}}ms^{-1}$

B. $5\sqrt{3}ms^{-1}$

C. $5ms^{-1}$

D. $\frac{10}{\sqrt{3}} ms^{-1}$

Answer: D

Watch Video Solution

23. A packet of weight w is dropped with the help of a parachute and on striking the ground comes to rest with retardation equal to twice the acceleration due to gravity. The force exerted on the ground is

A. w

B. 2w

C. 3w

D. 4w

Answer: C

 Watch Video Solution

24. The binding energy per nucleon are 53 Mev, 6.2 MeV and 7.4 MeV for the nucleus with mass number ,3,4 and 5 respectively . If one nucleus of mass number 3 combines with one nucleus

of mass number 5 to give two nuclei of mass number 4, then

A. 0.3 MeV energyis absorbed

B. 0.3 MeV energy is released

C. 28.1 MEV energy is abosrbed

D. 3.3 MeV energy is absorbed

Answer: D

 Watch Video Solution

25. If the total energy of a simple harmonic oscillator is E, then its potential energy, when it is halfway to its endpoint will be

A. $\frac{2}{3}F$

B. $\frac{1}{8}E$

C. $\frac{1}{4}E$

D. $\frac{1}{2}E$

Answer: C

Watch Video Solution

26. For simple Harmonic Oscillator, the potential energy is equal to kinetic energy

A. twice during each cycle

B. four times during each cycle

C. when x = 0

D. whe x = a

Answer: B

Watch Video Solution

27. A lamp radiates power P_0 uniformly in all directions, the amplitude of electric field strength E_0 at a distance r from it is

A. $\frac{P}{\pi c \varepsilon_0 r^2}$

B. $\frac{P}{2\pi c \varepsilon r^2}$

C. $\sqrt{\frac{P}{\pi \varepsilon_0 r^2 c}}$

D. $\sqrt{\frac{P}{\pi \varepsilon_0 c r^2}}$

Answer: C

Watch Video Solution

28. A photon will have less energy if its

A. amplitude is higher

B. frequency is higher

C. wavelength is longer

D. wavelength is shorter

Answer: C

 Watch Video Solution

29. Assume that a drop of liquid evaporates by decreases in its surface energy, so that its temperature remains unchanged. What should be the minimum radius of the drop for this to be possible? The surface tension is T, density of liquid is ρ and L is its latent heat of vaporization.

A. $T/\rho L$

B. $2T/\rho L$

C. $\rho L/T$

D. $\sqrt{T/\rho L}$

Answer: B

Watch Video Solution

30. Flow rate of blood through a capillary of cross - sectional are of $0.25m^2$ is $100cm^3/s$. The velocity of flow of blood is

A. $1 \ \text{mm s}^{-1}$

B. $0.2 \ \text{mm s}^{-1}$

C. $0.3 \ \mathrm{mm\ s^{-1}}$

D. $0.4 \ \mathrm{mm\ s^{-1}}$

Answer: D

Watch Video Solution

31. The focal length of lens of refractive index 1.5 in air is $30cm$ When it is immersed in water of refractive index $\frac{4}{3}$,then its focal length will be

A. 0.15 m

B. 0.30 m

C. 0.45 m

D. 1.20 m

Answer: D

Watch Video Solution

32. An astronomical telescope has objective and eye-piece lens of powers 0.5 D and 20 D respectively, its magnifying power will be

A. 10

B. 20

C. 30

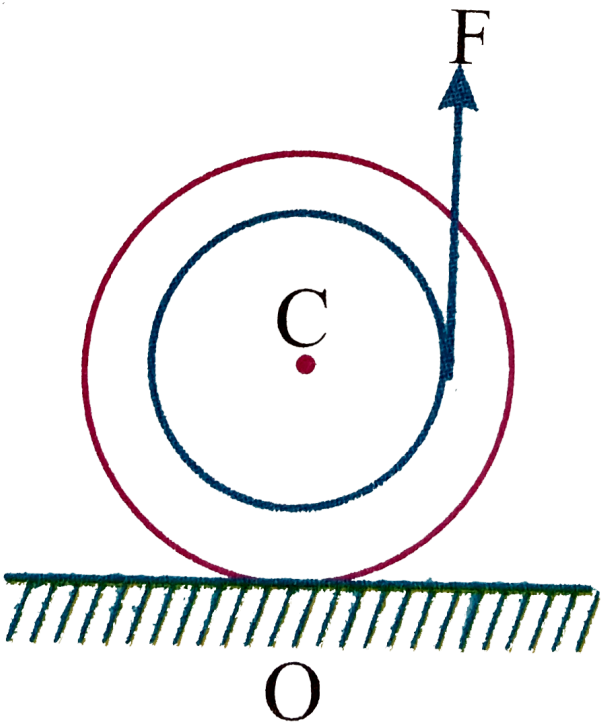
D. 40

Answer: D

Watch Video Solution

33. A yo-yo is placed on a rough horizontal surface and a constant force F, which is less

than its weight, pulls it vertically. Due to this



A. friction force acts towards left, so it will move towards left

B. friction force acts towards right, so it will move towards right

C. it will move towards left, so friction force acts towards left

D. it will move towards right so friction force acts towards right

Answer: A

 Watch Video Solution

34. A thin circular ring of mass M and radius R is rotating about its axis with a constant angular velocity omega. Four objects each of

mass m, are kept gently to the opposite ends of two perpendicular diameters of the ring. The angular velocity of the ring will be

A. $\frac{M}{4m}\omega$

B. $\left(\frac{M+4m}{M}\right)\omega$

C. $\left(\frac{M}{M-4m}\right)\omega$

D. $\left(\frac{M}{M+4m}\right)\omega$

Answer: D

Watch Video Solution

35. If the ratio of the concentration of electron to that of holes in a semiconductor is $\frac{7}{5}$ and the ratio of current is $\frac{7}{4}$ then what is the ratio of their drift velocities ?

A. $4/7$

B. $5/8$

C. $4/5$

D. $5/4$

Answer: D

Watch Video Solution

36. An AND gate is following by a NOT gate in series. With two inputs A & B, the Boolean expression for the out put Y will be :

A. $A.B$

B. $A+B$

C. $\overline{A+B}$

D. $\overline{A.B}$

Answer: D

Watch Video Solution

37. With forward biased mode, the p-n junction diode

A. is one in which width of depletion layer increases

B. is one in which potential barrier increases

C. acts as closed switch

D. acts as open switch

Answer: C

Watch Video Solution

38. If specific heat of a substance is infinite, it means

A. heat is given out

B. heat is taken in

C. no change in temperature whether heat is taken in or given out

D. all of the above

Answer: C

Watch Video Solution

39. Which of the following physical quantities has neither units nor dimensions?

A. Angle

B. Lumnous intensity

C. Coefficient of friction

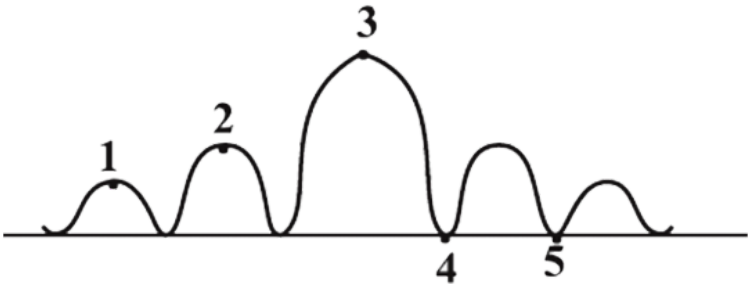
D. Current

Answer: C

Watch Video Solution

40. The diffraction pattern of a single slit is shown in the figure. The point at which the path difference of the extreme rays is two

times the wavelength is



A. point 1

B. point 2

C. point 5

D. point 5

Answer: D

Watch Video Solution

41. In Young's double slit experiment, how many maximas can be obtained on a screen (including the central maximum) on both sides of the central fringe if $\lambda = 2000\text{Å}$ and $d = 7000\text{Å}$?

A. 12

B. 7

C. 18

D. 6

Answer: B

Watch Video Solution

42. In Young's double experiment , in air interference pattern second minimum is observed exactly in front of one slit. The distance beween the two coherent source is 'd' and the distance between source and screen 'D'. The wavelength of light source used is

A. $\frac{d^2}{D}$

B. $\frac{d^2}{2D}$

C. $\frac{d^2}{3D}$

D. $\frac{d^2}{4D}$

Answer: C

Watch Video Solution

43. A string of density $7.5gcm^{-3}$ and area of cross - section $0.2mm^2$ is stretched under a tension of 20 N. When it is plucked at the mid-

point, the speed of the transverse wave on the wire is

A. $116ms^{-1}$

B. $40ms^{-1}$

C. $200ms^{-1}$

D. $5900ms^{-1}$

Answer: A

Watch Video Solution

44. Each of the two strings of length $51.6cm$ and $49.1cm$ are tensioned separately by $20N$ force. Mass per unit length of both the strings is same and equal to $1g/m$. When both the strings vibrate simultaneously, the number of beats is

A. 7

B. 8

C. 3

D. 5

Answer: A

Watch Video Solution

45. Two springs A and B are identical except that A is stiffer than B i.e., $k_A > k_B$. If the two springs are stretched by the same force, then

A. more work is done one B, i.e. $W_B > W_A$

B. more work is done on A, i.e. $W_A > W_B$

C. work done on A and B are equal

D. work done depends upon the way in which they ae stretched

Answer: A

Watch Video Solution