



PHYSICS

BOOKS - NTA MOCK TESTS

NEET MOCK TEST 14

Physics

1. A dip circle is taken to geomagnetic equator.

The needle is allowed to move in a vertical

plane perpendicular to the magnetic meridian.

The needle will stay

A. horizontal

B. vertical

C. somewhere in between horizontal and
vertical

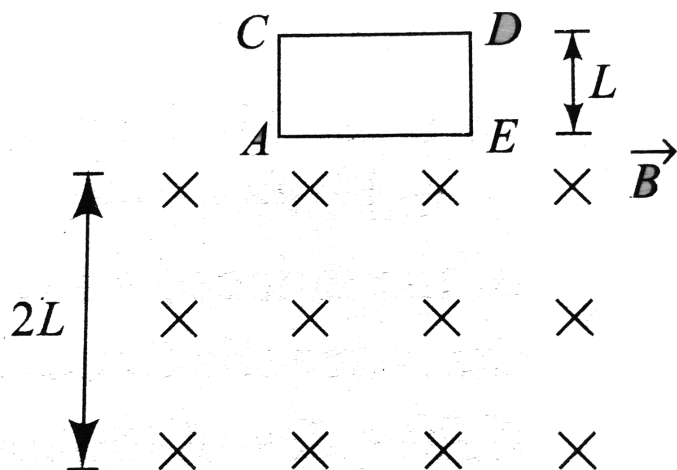
D. none of these

Answer: B



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2. A square coil $ACDE$ with its plane vertically is released from rest in a horizontal uniform magnetic field \vec{B} of length $2L$. The acceleration of the coil is



A. less than g for all the time till the loop crosses the magnetic field completely

B. less than g when it enters the field and
greater than g when it comes out of the
field

C. equal to g all the time

D. less than g when it enters and comes

Answer: D



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3. The magnetic flux linked with a coil is ϕ and the emf induced in it is e .

A. If $\phi = 0$, E must be 0

B. If $\phi \neq 0$, E cannot be zero

C. If E is not 0, ϕ may or may not be 0

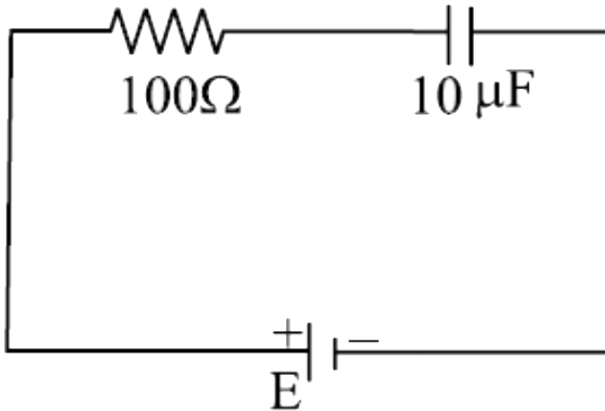
D. none of the above is correct

Answer: C



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4. The impedance of given circuit will be



A. zero

B. infinite

C. 110Ω

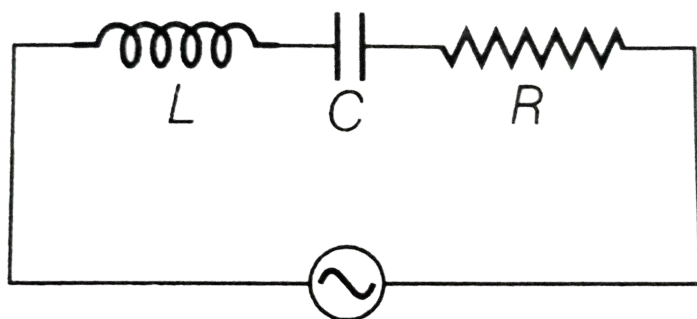
D. 90Ω

Answer: B



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5. A $100V$, AC source of frequency of $500Hz$ is connected to an L-C-R circuit with $L = 8.1mH$, $C = 12.5\mu F$, $R = 10\Omega$ all connected in series as shown in figure. What is the quality factor of circuit?



A. 2.02

B. 2.54

C. 50.54

D. 200.54

Answer: B



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6. Magnification produced by astronomical telescope for normal adjustment is 10 and length of telescope is 1.1m. The magnification

when the image is formed at least distance of distinct vision ($D = 25\text{cm}$) is-

A. 14

B. 6

C. 16

D. 18

Answer: A



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7. What happens to the fringe pattern if in the path of one of the slits a glass plate which absorbs 50% energy is interposed?

- A. The bright fringes become brighter and dark fringes become darker
- B. No fringes are observed
- C. The fringe width decreases
- D. None of the above

Answer: D





8. A circular beam of light of diameter $d = 2\text{cm}$ falls on a plane refractive of glass. The angle of incidence is 60° and refractive index of glass is $\mu = 3/2$. The diameter of the refracted beam is

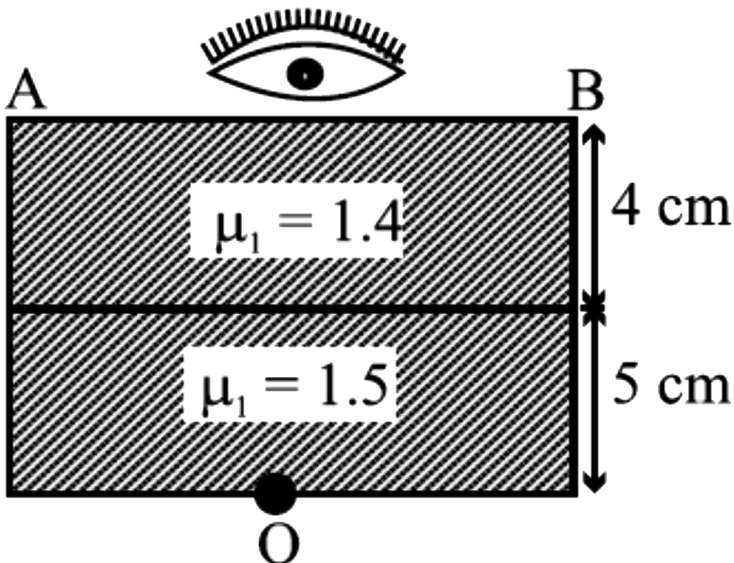
- A. 4.0 cm
- B. 3.0 cm
- C. 3.26 cm
- D. 2.52 cm

Answer: C



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9. The apparent depth of an object O from AB is



A. 4.29cm

B. 5.43 cm

C. 6.19 cm

D. 5.99 cm

Answer: C



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10. The deviation produced by a prism is

A. same for all wavelengths

B. greatest for red and least for violet

C. greatest for violet and least for red

D. the prism produces no deviation

Answer: C



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11. A transistor is used as an amplifier in CB mode with a load resistance of $5k\Omega$ the current gain of amplifier is 0.98 and the input

resistance is 70Ω , the voltage gain and power gain respectively are

A. 70, 68.6

B. 80, 66.6

C. 60, 96.6

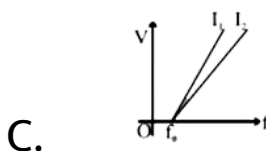
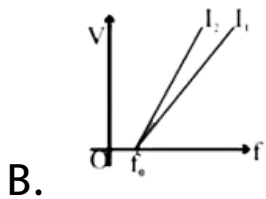
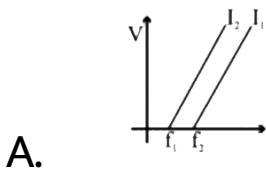
D. 9, 96.6

Answer: A



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12. A photoelectric experiment is performed at two different light intensities I_1 and $I_2 (I_2 > I_1)$. Choose the correct graph showing the variation of stopping potential versus frequency of light.



D. None of these

Answer: D



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13. In a radioactive series, ${}_{92}\text{U}^{238}$ changes to ${}_{82}\text{Pb}^{206}$ through n_1 (α -decay processes) and n_2 (β - decay processes)

A. $n_1 = 8, n_2 = 8$

B. $n_1 = 6, n_2 = 6$

C. $n_1 = 8, n_2 = 6$

D. $n_1 = 6, n_2 = 8$

Answer: C



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14. In which of the following systems will the radius of the first orbit ($n=1$) be minimum?

A. Hydrogen atom

B. Deuterium atom

C. Singly ionized Helium

D. Doubly ionized Lithium

Answer: D



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15. A cyclist taking turn bends inwards while a car passenger taking same turn is thrown outwards. The reason is

A. car is heavier than cycle

B. car has four wheels while cycle has only two

C. difference in the speed of the two

D. cyclist has to counteract the centrifugal force while in the case of car only the passenger is thrown by this force

Answer: D



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16. A bird weighs 2 kg and is inside a closed cage of 1 kg. If it starts flying, then what is the weight of the bird and cage assembly

A. 1.5 kg

B. 2.5 kg

C. 3 kg

D. 4 kg

Answer: C



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17. A uniform rope of length l lies on a table . If the coefficient of friction is μ , then the maximum length l_1 of the part of this rope which can overhang from the edge of the table without sliding down is :

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

B. $\frac{l}{\mu + 1}$

C. $\frac{\mu l}{1 + \mu}$

D. $\frac{\mu l}{1 - \mu}$

Answer: C



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18. A truck travelling due north at 20 m/s turns east and travels at the same speed. What is the change in velocity :

A. $40ms^{-1}N - W$

B. $20\sqrt{2}ms^{-1}N - W$

C. $40ms^{-1}S - W$

D. $20\sqrt{2}ms^{-1}S - W$

Answer: D



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19. A stationary object at $4^{\circ}C$ and weighing $3.5kg$ falls from a height of $2000m$ on a snow mountain at $0^{\circ}C$. If the temperature of the object just before hitting the snow is $0^{\circ}C$ and the object comes to rest immediately? ($g = 10m/s^2$ and heat of ice $= 3.5 \times 10^5$ joule / sec), then the object will melt

A. 2 kg of ice

B. 200 g of ice

C. 20 g ice

D. 2 g of ice

Answer: B



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20. In rainy season, on a clear night the black seat of a bicycle becomes wet because

A. it absorbs water vapour

B. black seat is good absorber of heat

C. black seat is good radiator of heat energy

D. none of the above

Answer: C



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21. While measuring the thermal conductivity of liquids the upper part is kept hot and lower cooled so that .

A. convection may be stopped

B. radiation may be stopped

C. heat conduction is easier downwards

D. it is easier and more convenient to do so

Answer: A



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22. At NTP water boils at $100^{\circ}C$. Deep down the mine, water will boil at a temperature

A. $100^{\circ}C$

B. $> 100^{\circ}C$

C. $< 100^{\circ}C$

D. will not boil at all

Answer: B



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23. A tuning fork of frequency 100 when sounded together with another tuning fork of unknown frequency produces 2 beats per

second. On loading the tuning fork whose frequency is not known and sounded together with a tuning fork of frequency 100 produces one beat, then the frequency of the other tuning fork is

A. 102

B. 98

C. 99

D. 101

Answer: A



24. The equation of a transverse wave is given by

$$y = 10 \sin \pi(0.01x - 2t)$$

where x and y are in cm and t is in second. Its frequency is

A. $10s^{-1}$

B. $2s^{-1}$

C. $1s^{-1}$

D. $0.01s^{-1}$

Answer: C



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25. A particle executing simple harmonic motion along y -axis has its motion described by the equation $y = A \sin(\omega t) + B$. The amplitude of the simple harmonic motion is

A. A

B. B

C. $A + B$

D. $\sqrt{A + B}$

Answer: A



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26. A perfect gas contained in a cylinder is kept in vacuum. If the cylinder suddenly bursts, then the temperature of the gas

A. remains constant

B. becomes zero

C. increases

D. decreases

Answer: A



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27. The density of a gas at $27^{\circ}C$ and $760mm$ pressure is 24. Calculate the temperature at which it will be 18, the pressure remaining constant.

A. 6

B. 12

C. 18

D. 24

Answer: C



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28. A vertical column 50 cm long at $50^{\circ}C$ balances another column of same liquid 60 cm

long at $100^{\circ}C$. The coefficient of absolute expansion of the liquid is

A. $0.005 / .^{\circ} C$

B. $0.0005 / .^{\circ} C$

C. $0.002 / .^{\circ} C$

D. $0.0002 / .^{\circ} C$

Answer: A



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29. The height of a mercury barometer is 75 cm at sea level and 50 cm at the top of a hill. Ration of density of mercury to that of air is 10^4 . The height of the hill is

- A. 250 m
- B. 2.5 km
- C. 1.25 km
- D. 750 m

Answer: B



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30. A ball is dropped from a height h on to a floor . If the coefficient of restitution is e , calculate the height the ball first rebounds ?

A. he^{2n}

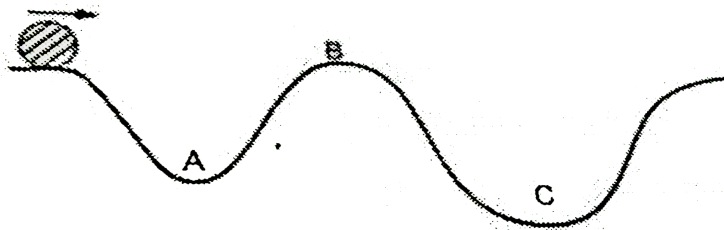
B. he^n

C. $\frac{e^{2n}}{h}$

D. $\frac{h}{e^{2n}}$

Answer: A





31.

A body moves along an uneven horizontal road surface with constant speed at all points.

The normal reaction of the road on the body is

A. maximum at A

B. maximum at B

C. minimum at C

D. same at A, B and C

Answer: A



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32. Two loops P and Q are made from a uniform wire. The radii of P and Q are r_1 and r_2 respectively, and their moments of inertia are I_1 and I_2 respectively, If $I_2 = 4I_1$, then $\frac{r_2}{r_1}$ equals-

A. $4^{\frac{2}{3}}$

B. $4^{\frac{1}{3}}$

C. $4^{-\frac{2}{3}}$

D. $4^{\frac{-1}{3}}$

Answer: B



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33. A ball of mass m approaches a wall of mass M ($M \gg m$), with speed 2 m s^{-1} along the normal to the wall. The speed of wall is 1

$m s^{-1}$ towards the ball. The speed of the ball after an elastic collision with the wall is-

- A. $5 m s^{-1}$ away from the wall
- B. $9 m s^{-1}$ away from the wall
- C. $3 m s^{-1}$ away from the wall
- D. $6 m s^{-1}$ away from the wall

Answer: D



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34. A mass of 1 kg is acted upon by a single force $F = (4\hat{i} + 4\hat{j})N$. Under this force it is displaced from (0,0) to (1m,1m). If initially the speed of the particle was 2 ms^{-1} , its final speed should be

A. 6ms^{-1}

B. 4.5ms^{-1}

C. 8ms^{-1}

D. 7.2ms^{-1}

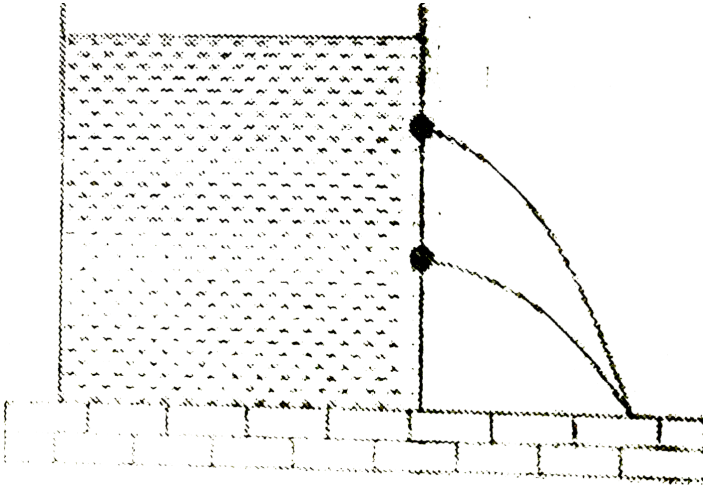
Answer: B



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35. In a cylindrical vessel containing liquid of density ρ there are two holes in the side walls at heights of h_1 and h_2 respectively such that the range of efflux at the bottom of the vessel is same. The height of a hole for which the

range of efflux would be maximum, will be



A. $h_2 - h_1$

B. $h_2 + h_1$

C. $\frac{h_2 - h_1}{2}$

D. $\frac{h_2 + h_1}{2}$

Answer: D



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36. An anisotropic material has a coefficient of linear expansion α , 2α and 3α along the three co - ordinate axis. Coefficient of cubical expansion of material will be equal to

A. 2α

B. $\sqrt[3]{6}\alpha$

C. 6α

D. None of these

Answer: C



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37. Which one of the following would raise the temperature of 20 g of water at $30^{\circ}C$ most when mixed with?

(Specific heat of water is $1\text{ cal} / \text{g} \cdot ^{\circ}C$)

A. 20 g of water at $40^{\circ}C$

B. 40 g of water at $35^{\circ}C$

C. 10 g of water at $50^{\circ}C$

D. 4 g of water at $80^{\circ} C$

Answer: D



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38. Energy is being emitted from the surface of a black body at $127^{\circ} C$ temperature at the rate of $1.0 \times 10^6 J / \text{sec} - m^2$. Temperature of the black at which the rate of energy emission is $16.0 \times 10^6 J / \text{sec} - m^2$ will be

A. $254^{\circ} C$

B. $508^{\circ} C$

C. $527^{\circ} C$

D. $727^{\circ} C$

Answer: C



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39. Wein's constant is 2892×10^{-6} MKS unit and the value of λ_m from moon is 14.46 microns. What is the surface temperature of moon

A. 100 K

B. 300 K

C. 400 K

D. 200 K

Answer: D



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40. Two particles are projected from a point at the same instant with velocities whose horizontal and vertical components are u_1, v_1

and u_2, v_2 respectively. Prove that the interval between their passing through the other common point of their path is

$$\frac{2(v_1u_2 - v_2u_1)}{g(u_1 + u_2)}$$

A. $\frac{2}{g} \left(\frac{v_1u_1 - v_2v_2}{u_1 + u_2} \right)$

B. $\frac{2}{g} \left(\frac{v_1^2 + v_2^2}{u_1 + u_2} \right)$

C. $\frac{2}{g} \left(\frac{u_1^2 + u_2^2}{v_1 + v_2} \right)$

D. $\frac{2}{g} \left(\frac{v_1u_2 - v_2u_1}{u_1 + u_2} \right)$

Answer: A



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41. The capacity of an isolated sphere is increased n times when it is enclosed by an earthed concentric sphere. The ratio of their radii is

A. $\frac{n^2}{n - 1}$

B. $\frac{n}{n - 1}$

C. $\frac{2n}{n + 1}$

D. $\frac{2n + 1}{n + 1}$

Answer: B



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42. Capacitor C_1 of the capacitance $1\mu F$ and another capacitor C_2 of capacitance $2\mu F$ are separately charged fully by a common battery. The two capacitors are then separately allowed to discharge through equal resistors at time $t = 0$.

A. At $t = 0$ the value of current in the circuit containing $1\mu F$ is more than current in the circuit containing $2\mu F$

B. At $t = 0$ the current in $2\mu F$ capacitor circuit is more than current in $1\mu F$ capacitor circuit

C. $1\mu F$ capacitor losses 50% charge sooner than $2\mu F$ capacitor

D. $2\mu F$ capacitor losses 50% charge sooner than $1\mu F$ capacitor

Answer: C



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43. A charged soap bobbe having surface charge density σ and radius r . If the pressure inside and outsides the soap bubble is the same, then the surface tension of the soap solution is

$$\text{A. } T = \frac{\sigma^2 R}{8\epsilon_0}$$

$$\text{B. } T = \frac{\sigma^2 R}{2\epsilon_0}$$

$$\text{C. } T = \frac{\sigma^2 R}{2\epsilon_0}$$

$$\text{D. } T = \frac{\sigma^2 R}{\epsilon_0}$$

Answer: A



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44. Light of wavelength $\lambda = 5000\text{\AA}$ falls normally on a narrow slit. A screen is placed at a distance of 1m from the slit and perpendicular to the direction of light. The first minima of the diffraction pattern is situated at 5mm from the centre of central maximum. The width of the slit is

A. 0.1 mm

B. 1.0 mm

C. 0.5 mm

D. 0.2 mm

Answer: A



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45. How many minimum numbers of a coplanar vector having different magnitudes can be added to give zero resultant

A. 2

B. 3

C. 4

D. 5

Answer: B



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