# PHYSICS

# BOOKS - NTA MOCK TESTS

# NTA NEET SET 116

Physics

**1.** The period of revolution of an electron in the ground state of hydrogen atom is T. The

period of revolution of the electron in the first excited state is

A. 2 T

B. 4 T

C. 6 T

D. 8 T

**Answer: D**

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**2.** In each of the following atoms or ions, electronic transition form $n = 4 \rightarrow n = 1$ take place. Frequency of the radiation emitted out will be minimum for

A. Hydrogen atom

B. Deuterium atom

C. $He^+$ ion

D. $Li^{2+}$ ion

**Answer: A**

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**3.** A 70 kg man standing on ice throws a 3 kg body horizontally at 8m//s. The friction coefficient between the ice and his feet is 0.02. The distance, the man slip is

A. $0.3m$

B. $2m$

C. $1m$

D. $\infty$

**Answer: A**

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**4.** A bomb of mass 9 kg explodes into two pieces of mass 3 kg and 6 kg. The velocity of mass 3 kg is 16 m/s, The kinetic energy of mass 6 kg is

A. 96

B. 384

C. 192

D. 768

**Answer: C**

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**5.** A particle tied to a string describes a vertical circular motion of radius r continually. If it has a velocity $\sqrt{3gr}$ at the highest point, then the ratio of the respective tensions in the string holding it at the highest and lowest points is

A. $1:6$

B. $1:4$

C. $1:3$

D. $1:2$

**Answer: B**

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**6.** A short bar magnet has a length 2l and a magnetic moment $10Am^2$. Find the magnetic field at a distance of $z = 0.1m$ from its centre

on the axial line. Here , l is negligible as comppared to z

A. $4 \times 10^{-3}T$

B. $1 \times 10^{-3}T$

C. $3 \times 10^{-3}T$

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

**Answer: D**

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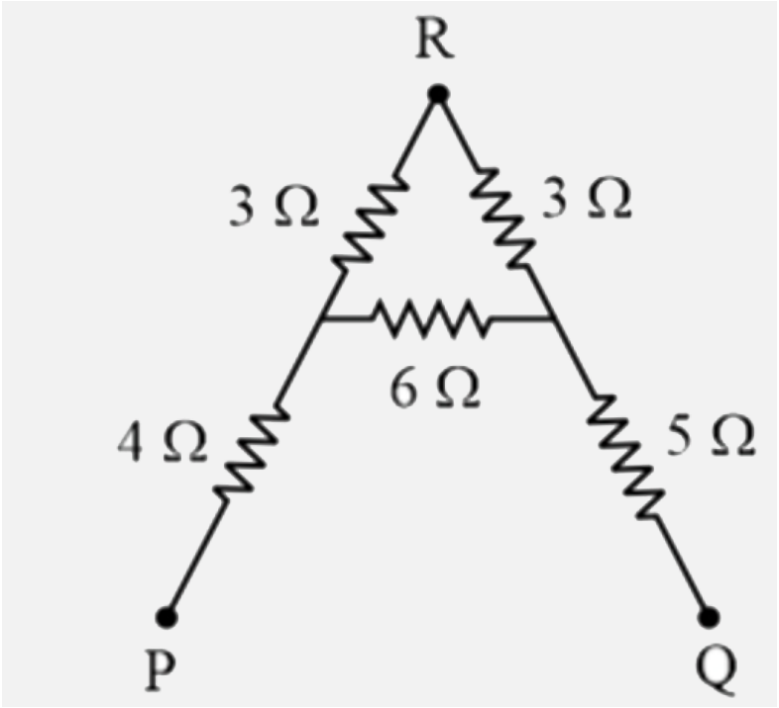
**7.** The effective resistance between P and Q for the following network is




A. $\frac{1}{12}\Omega$

B. $21\Omega$

C. $12\Omega$

D. $\frac{1}{21}\Omega$

**Answer: C**

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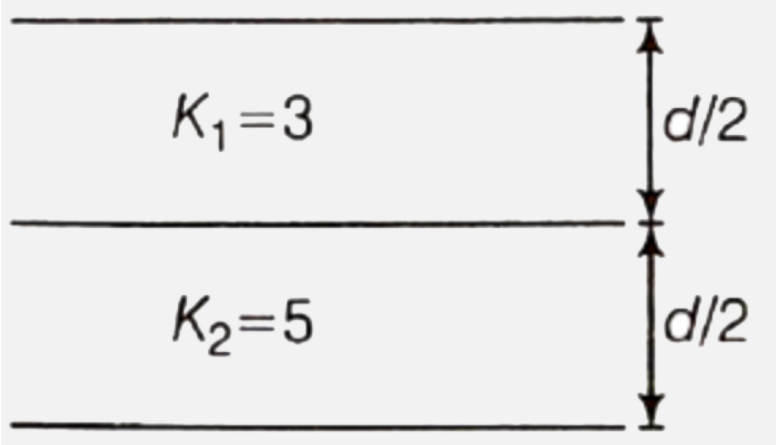
**8.** Two parallel plate of area A and separated by two different dielectric as shown in the

figure. The net capacitance is




A. $\frac{15\varepsilon_0 A}{4d}$

B. $\frac{10\varepsilon_0 A}{7d}$

C. $\frac{11\varepsilon_0 A}{5d}$

D. $\frac{12\varepsilon_0 A}{3d}$

**Answer: A**

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**9.** In a region of constant potential

A. The electric field is uniform and nonzero

B. The electric field is infinity

C. There can be no charge inside the region

D. None of the above

**Answer: C**

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**10.** The force of repulsion between two point charges is F, when these are at distance 0.5m apart. Now the point charges are replaced by spheres of radii 5 cm each having the same charge as that of the respective point charge. The distance between their centres is again kept 0.5 m. Then the force of repulsion will

A. increase

B. decrease

C. remain F

D. become $\frac{10F}{9}$

**Answer: C**

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**11.** Magnetic flux passing through a coil is initially $4 \times 10^{-4}$ Wb. It reduces to 10% of its original value in t second. If the emf induced is 0.72 mV then t in second is

A. $0.3$

B. $0.4$

C. $0.5$

D. $0.6$

**Answer: C**

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**12.** In an $AC$ circuit, the instantaneous values of e.m.f and current are $e = 200 \sin 314t$ volt and $i = \sin\left(314t + \frac{\pi}{3}\right)$ ampere. The average power consumed in watt is

A. 200

B. 100

C. 50

D. 25

**Answer: C**

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**13.** When a body is taken from the equator to the poles, its weight

A. Remains same

B. Increases

C. Decreases

D. Increase at N- Pole & decrease at S - pole

**Answer: B**

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**14.** The moon's radius is $1/4$ that of the earth and its mass $1/80$ times that of the earth. If g represents the acceleration due to gravity on

the surface of the earth, that on the surface of the moon is

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

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

C. $\frac{g}{6}$

D. $\frac{g}{8}$

**Answer: B**

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**15.** Calculate the temperature at which a perfect black body radiates at the rate of $1Wcm^{-2}$, value of Stefan's constant,

$\sigma = 5.67 \times 10^{-8} Wm^{-2}K^{-4}$

A. 576 K

B. 648 K

C. 695 K

D. 766 K

**Answer: B**

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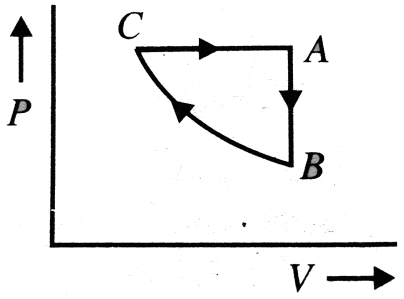
**16.** A sample of an ideal gas is taken through the cyclic-process $ABCA$ shown in Fig. It rejects $50J$ of heat during the part $AB$, doens not absorb or reject the heat during $BC$, and accepts $70J$ of heat during $CA$. Forty joules of works is done on the gas during the part $BC$. The internla energies at $B$ and $C$, respectively,

will be




A. 1450 J and 1410 J

B. 1550 J and 1590 J

C. 1450 J and 1490 J

D. 1550 J and 1510 J

**Answer: C**

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**17.** For a gas if ratio of specific heats at constant pressure and volume is g then value of degrees of freedom is

A. $\frac{\gamma+1}{\gamma-1}$

B. $\frac{\gamma-1}{\gamma+1}$

C. $\frac{(\gamma-1)}{2}$

D. $\frac{2}{\gamma-1}$

**Answer: D**

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**18.** A straight wire carrying a current is turned into a circular loop if the magnitude of magnetic moment associated with it is M then the length of the wire will be

A. $L = \sqrt{\frac{M}{4\pi I}}$

B. $L = M\sqrt{\frac{2\pi}{L}}$

C. $L = \sqrt{\frac{4\pi M}{I}}$

D. $L = \sqrt{4\pi M.\, I}$

**Answer: C**

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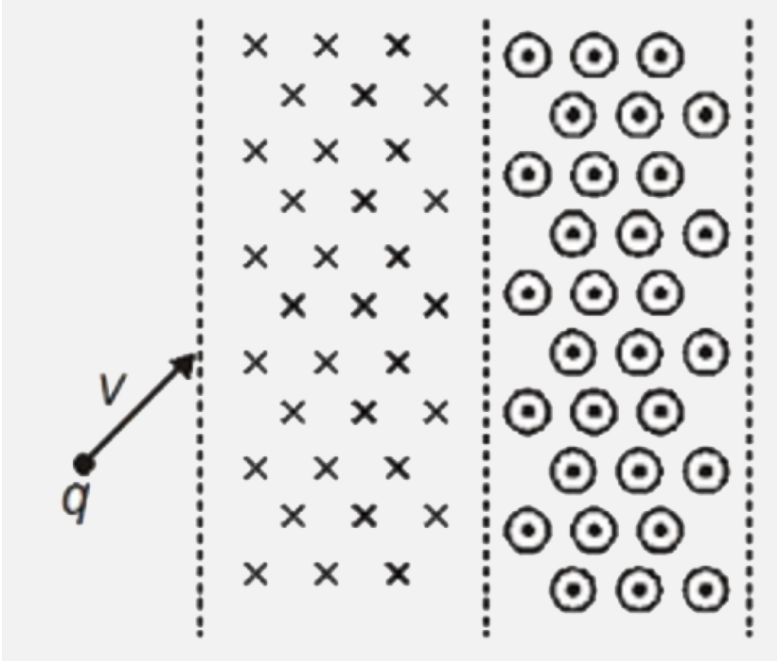
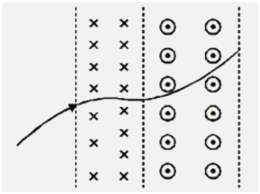
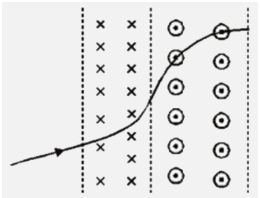
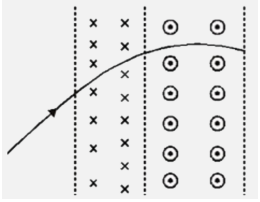
**19.** A positive charge enters in the region of transverse magnetic field as shown in figure. Velocity of charge is in such a way that charge passes through both inward and outward magnetic field regions, then possibly correct

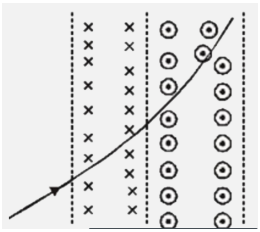
path of the charge is




A. 

B. 

C. 

D. 

**Answer: B**

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**20.** A train is moving due East and a car is moving due North, both with the same speed $30kmh^{-1}$. What is the observed speed and

diredction of motion of car to the passsenger in the train ?

A. East - North

B. South - East

C. West - North

D. North - South

**Answer: C**

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**21.** An aeroplane moving horizontally at a speed of $200m/s$ and at a height of $8.0 \times 10^3 m$ is to drop a bomb on a target. At what horizontal distance from the target should the bomb be released

A. 9124 m

B. 8714 m

C. 8000 m

D. 7234 m

**Answer: C**

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**22.** The mass of man when standing on the lift is 60 kg. The weight when the lift is moving upwards with acceration $4.9ms^{-2}$ is

A. 882 N

B. 600 N

C. 306 N

D. zero

**Answer: A**

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**23.** A stone is accelerated upwards by a cord whose breaking strength is three times the weight of the stone. The maximum acceleration with which the stone can be moved up without breaking the cord is

A. g

B. 2 g

C. 3 g

D. 4g

**Answer: B**

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**24.** The mass of a $._3^7 Li$ nucleus is $0.042u$ less than the sum of the masses of all its nucleons. The binding energy per nucleon of $._3^7 Li$ nucleus is nearly

A. 46 MeV

B. 5.6 MeV

C. 3.9 MeV

D. 23 MeV

**Answer: B**

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**25.** For pair production i.e. for the production of electron and positron, the incident photon must have a minimum frequency of the order of

A. $10^{18} s^{-1}$

B. $10^{21} s^{-1}$

C. $10^{25} s^{-1}$

D. $10^{30} s^{-1}$

**Answer: B**

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**26.** A particle executes SHM along a straight line so that its period is 12 s. The time it takes

in traversing a distance equal to half its amplitude from its equilibrium position is

A. 6s

B. 4 s

C. 2s

D. 1s

**Answer: A**

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**27.** A simple harmonic motion is represented by $x(t) = \sin^2 \omega t - 2\cos^2 \omega t.$ The angular frequency of oscillation is given by

A. $\omega$

B. $2\omega$

C. $4\omega$

D. $\frac{\omega}{2}$

**Answer: B**

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**28.** What is the de-Broglie wavelength of (a) a bullet of mass $0.040kg$ traveling at the speed of $1.0kms^{-1}$. (b) a ball of mass $0.060kg$ moving at a speed of $1.0ms^{-1}$ and (c) a dust particle of mass $1.0 \times 10^{-9}kg$ drifting with a speed of $2.2ms^{-1}$? $h = 6.63 \times 10^{-34}Js$.

A. $3.0 \times 10^{-25}m$

B. $1.0 \times 10^{-25}m$

C. $3.0 \times 10^{25}m$

D. $1.0 \times 10^{25} m$

**Answer: A**

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**29.** In photoelectric effect the slope of stop of stopping potential versus frequency of incident light for a given surface will be

A. $10^{-14}$

B. $5 \times 10^{-14}$

C. $4 \times 10^{-15}$

D. $4 \times 10^{-34}$

**Answer: C**

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**30.** A rectangular film of liquid is extended from $(4cm \times 2cm)$ to $(5cm \times 4cm)$. If the work done is $3 \times 10^{-4} J$, the value of the surface tension of the liquid is

A. $0.250Nm^{-1}$

B. $0.125Nm^{-1}$

C. $0.2Nm^{-1}$

D. $0.8Nm^{-1}$

**Answer: B**

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**31.** Two soap bubbles having radii 3 cm and 4 cm in vacuum, coalesce under isothermal conditions. The radius of the new bubble is

A. 3

B. 4

C. 5

D. 7

**Answer: C**

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**32.** A concave lens of focal length 20 cm product an image half in size of the real object. The distance of the real object is

A. 20cm

B. 30 cm

C. 40 cm

D. 60 cm

**Answer: A**

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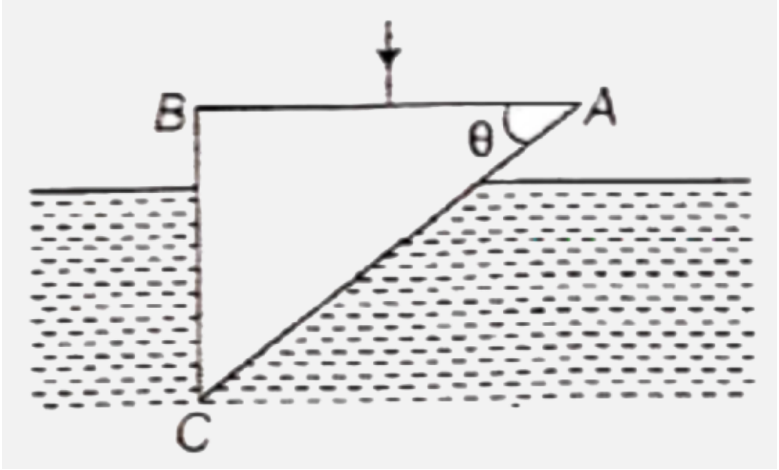
**33.** A glass prims ABC (refractive index 1.5) , immersed in water (refrective index $\frac{4}{3}$). A ray of light is incident normally one face AB. If it is

totally reflected at the face AC, then




A. $\sin\theta \geq \frac{8}{9}$

B. $\sin\theta \geq \frac{2}{3}$

C. $\sin\theta \geq \frac{\sqrt{3}}{2}$

D. $\frac{2}{3} < \sin\theta < \frac{8}{9}$

**Answer: A**

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**34.** A tire of radius R rolls on a flat surface with angular velocity omega and velocity $v$ as shown in the diagram. If $v > \omega R$, in which direction does friction from the tire act on the road?

A. Towards downwards

B. Towards upwards

C. Towards the left

D. Towards the right

**Answer: C**

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**35.** A rupee coin, starting from rest rolls down a distance of 1 m on a plane inclined at an

angle of $30^\circ$ with the horizontal. Assuming that $g = 9.81ms^{-2}$, time taken is : -

A. 0.68 s

B. 0.6s

C. 0.5 s

D. 0.7 s

**Answer: D**

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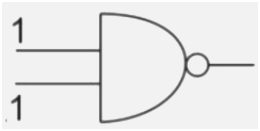
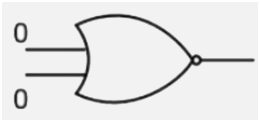
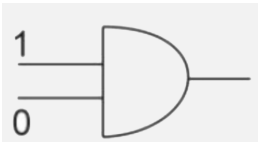
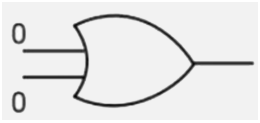
**36.** Which of following gates produces output of 1?

A. 


B. 


C. 


D. 


**Answer: B**

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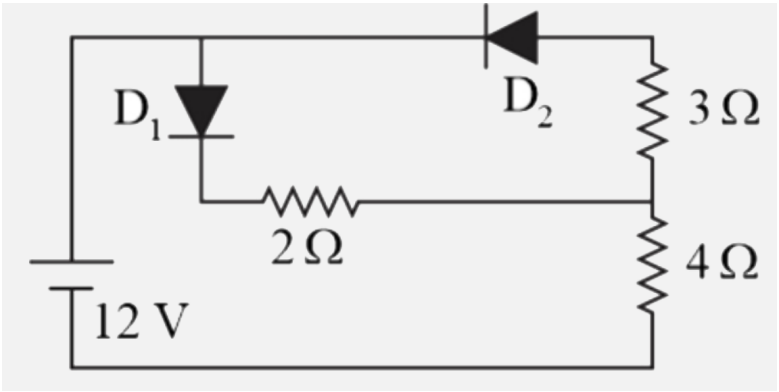
**37.** In the circuit of the figure, treat diode as ideal, current in the $4\Omega$ resistor is




A. $2A$

B. $3A$

C. $\frac{12}{7}A$

D. $\frac{30}{13}A$

**Answer: A**

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**38.** The rms speed of oxygen at room temperature is about $500\ m/s$.The rms speed of hydrogen at the same temperature is about

A. $125ms^{-1}$

B. $2000ms^{-1}$

C. $8000ms^{-1}$

D. $31ms^{-1}$

**Answer: B**

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**39.** A screw gauge gives the following reading when used to mesure the diametre of a wire.

Main scale reading : $0$mm

Circular scale reading : $52$ divisions

Given that $1$mm on main scale corresponds to $100$ divisions of the circular scale. the diameter of wire from the above data is :

A. $0.052cm$

B. $0.026cm$

C. $0.005cm$

D. $0.52cm$

**Answer: A**

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**40.** In Young's double slit experiment, if the slit widths are in the ratio $1:9$, then the ratio of

the intensity at minima to that at maxima will be

A. 1

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

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

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

**Answer: C**

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**41.** A parallel beam of light of wavelength $4000\text{Å}$ passes through a slit of width $5 \times 10^{-3} m$. The angular spread of the central maxima in the diffraction pattern is

A. $1.6 \times 10^{-3} rad$

B. $1.6 \times 10^{-4} rad$

C. $3.2 \times 10^{-3} rad$

D. $3.2 \times 10^{-4} rad$

**Answer: B**

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**42.** An open organ pipe has fundamental frequency

100 Hz. What frequency will be produced if its one

end is closed ?

A. $100, 200, 300. \ldots \ldots$

B. $50, 150, 250, \ldots \ldots$

C. $50, 100, 200, 300, \ldots \ldots$

D. $50, 100, 150, 200, \ldots$

**Answer: B**

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**43.** Consider the propagating sound (with velocity $330ms^{-1}$) in a pipe of length 1.5 m with one end closed and the other open. The frequency associated with the fundamental mode is

A. 11 Hz

B. 55 Hz

C. 110 Hz

D. 165 Hz

**Answer: B**

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**44.** A machine which is 75 percent efficient, uses 12 joules of energy in lifting up a 1 kg mass through a certain distance. The mass is then allowed to fall through that distance. The velocity at the end of its fall is (in $ms^{-1}$)

A. $\sqrt{24}ms^{-1}$

B. $\sqrt{32}ms^{-1}$

C. $\sqrt{18}ms^{-1}$

D. $3ms^{-1}$

**Answer: C**

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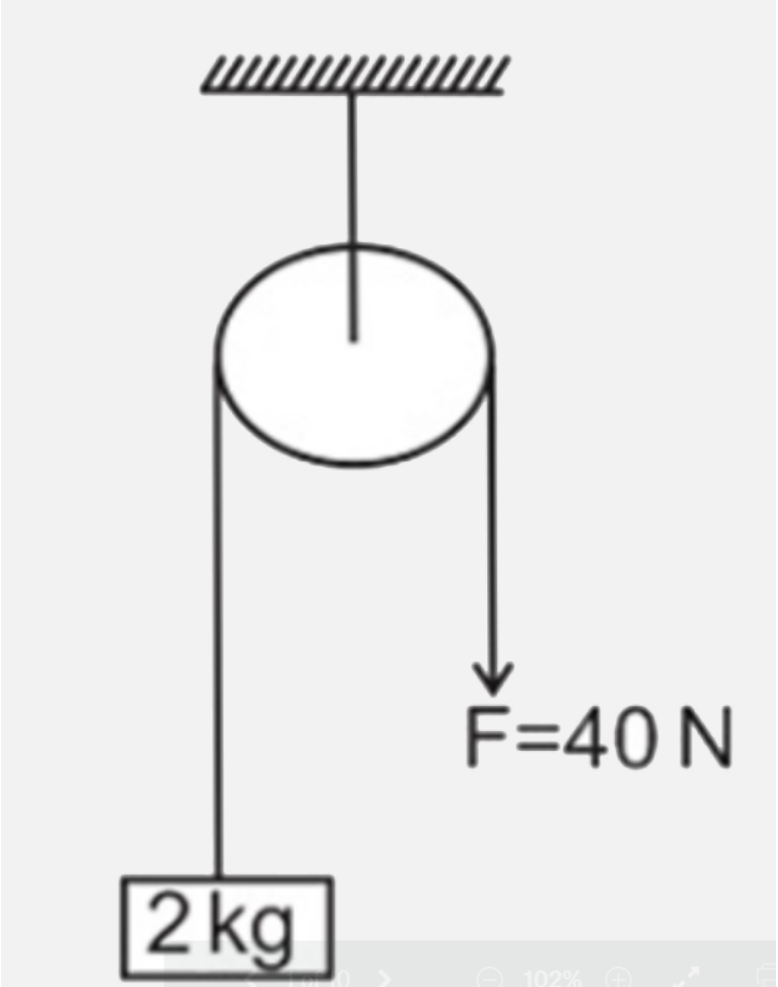
**45.** In the system shown in the figure, the block is pulled by applying a force of 40 N on the other end of the string. If the kinetic

energy of the block increases by 40 J in a given interval of time then work done by tension on the block is $\left(g = 10ms^{-2}\right)$



A. 40 J

B. 80 J

C. Zero

D. 20 J

**Answer: B**

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