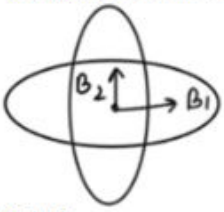
Question: Current $\sqrt{2I}$ in both rings, find resultant B?



Solution:

Question: If rate of heat supplied to the system is 1000 watt and the rate of work done by the system is 200 watt. Find rate of change of internal energy.
Answer: [redacted]
Solution:

Question: Find the ratio of energy density of E and B in EM waves.
Options:
(a) 1 : 1
(b) 1 : 2
(c) 2 : 1
(d) None of these

$2\mu_0$

Question: Percentage error in equivalent resistance if connected in parallel (10 ± 0.
and (15 ± 0.5) ohm
Options:
(a) 13 %
(b) 3 %
(c) 13/5 %
(d) 13/3 %

Question: Assertion: Earth has atmosphere while moon does not.
Reason: Escape velocity in moon is very small than earth.
Options:
(a) A correct, R correct & R is correct explanation
(b) A correct, R correct but not correct explanation
(c) A correct, R false
(d) A false, R false

Question: A mass of 100 g is rotated with a spring of natural length 20 cm, with angular velocity 5 $rads^{-1}$. Find tension in spring [R = spring constant 7.5 nm^{-1}]

Question: A solid infinite cylindrical wire with radius a is carrying current I find the graph of magnetic field inside & outside the wire.

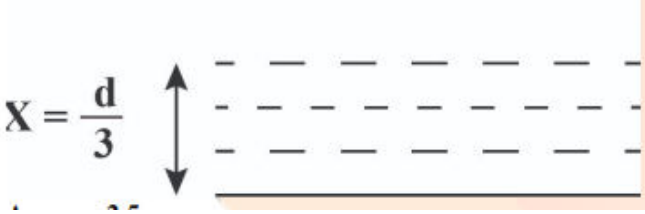
Answer:

Question: A: range is max at $\theta = 45°$
R : range is max when $\sin 2\theta = 1$

Options:

(a) R : true A : False
(b) R : true A : True
(c) R : False A : False
(d) R : False A : True

Question: In a capacitor when liquid of dielectric constant 'k' is filled upto height d/3 then capacitance is 2μF. Find capacitance when it is filled till $x = 2d/3$ Take $k = 2$



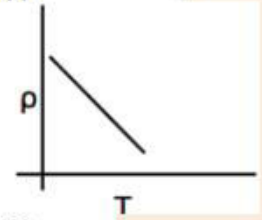
Question: If retardation of a body of mass 10 gram is given as $2x$, where x is the position of the particle starting from origin at rest. If loss of kinetic energy is $\left[\frac{10}{x}\right]^{-n}$ find n .

Question: Two spheres of mass 2 kg each placed on the ends of a light rod and r = 10 cm and dist b/w the centres = 40 cm find MOI about centre of the rod perpendicular to the line joining centres.

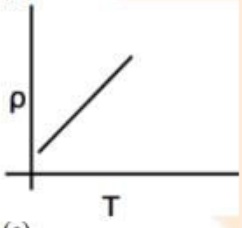
Question: Resistivity of semiconductor changes with temp according to which graph

Options:

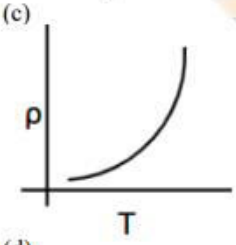
(a)



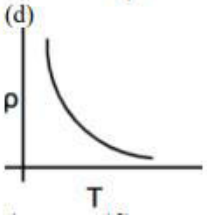
(b)



(c)

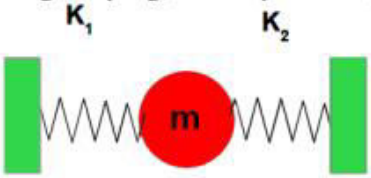


(d)



Question: Alpha, electron, proton has KE is such that $K_\alpha = 4K$, $K_e = 2K$, $K_p = K$ write order of de broglie wave
Solution: $\lambda_e > \lambda_P > \lambda_\alpha$

Question: For the oscillations exhibited by the spring block system on the smooth surface along the spring, the time period is equal to



Options:

(a) $2\pi\sqrt{\frac{m(K_1+K_2)}{K_1K_2}}$

(b) $2\pi\sqrt{\frac{m(K_1+K_2)}{2K_1K_2}}$

(c) $2\pi\sqrt{\frac{m}{K_1+K_2}}$

(d) $\pi\sqrt{\frac{m}{K_1+K_2}}$

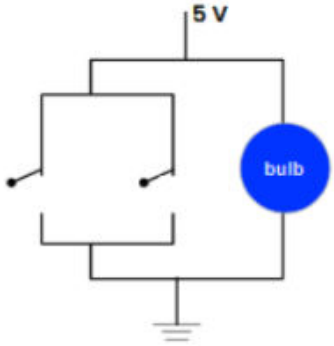
Question: A car is moving with speed of 15 m/s towards a stationary wall. A person in the car press the horn and experience the change in frequency of 40 Hz due to reflection from the stationary wall. Find the frequency of horn. (Use $v_{sound} = 330$ m/s)

Question: Communication system
Height of the tower increased 21% percentage increase in range.
Options:
(a) 10
(b) 12
(c) 14
(d) 15

Question: If length of wire is increased 20% and area is increased 4% the % change in resistance is

Question: A Body has mass m and moving with const vel in viscous fluid having coiff. of viscosity η density is ρb liquid density ρL find vel v
Solution:

Question: Which gate is this



Options:
(a) NOR
(b) OR
(c) AND
(d) NOT