PHYSICS

BOOKS - CAREER POINT

REVISION TEST 1

Physics

1. If $\vec{P} + \vec{Q} = \vec{R}$ & $\vec{R}$ is perpendicular to $\vec{P}$.

define angle between $\vec{P}$ & $\vec{Q}$ if $\overrightarrow{|P|} = \overrightarrow{|R|} -$

A. $\frac{3\pi}{4}$

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

C. π

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

Answer:

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2. The nth division of main scale coincides with (n +1) th division of vernier scale. Given one main division is equal to 'a' units. Find the least count of the vernier.

A. $\frac{L}{(n-1)} unit$

B. $(n-1)$ L unit

C. $\left(\frac{L}{n-1}\right)$ unit

D. $\left(\frac{nL}{n+1}\right)$ unit

Answer:

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3. In the forumla $a = 3bc^2$ ' a ' and ' c ' have dimensions of electric capacitance and magnetic induction, respectively, what are dimensions of ' b ' in MKS system?

A. $\left[M^{-3}L^{-2}T^4Q^4\right]$

B. $\left[M^{-3}T^4Q^4\right]$

C. $\left[M^{-3}T^3Q\right]$

D. $\left[M^{-3}L^2T^4Q^{-4}\right]$

Answer:

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4. Four marbles are dropped from the top of a tower one after the other with an interval of one second. The first one reaches the ground after 4 seconds . When the first one reaches the ground the distance between the first and second, the second and third and the third and forth will be respectively

A. 35, 25 and 15m

B. 30, 20 and 10mS

C. 20, 10 and 5m

D. 40, 30 and 20m

Answer:

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5. A bullet travelling horizontally looses $1/20^{th}$ of its velocity while piercing a wooden

plank. Then the number of such planks required to stop the bullet is

A. 6

B. 9

C. 11

D. 13

Answer:

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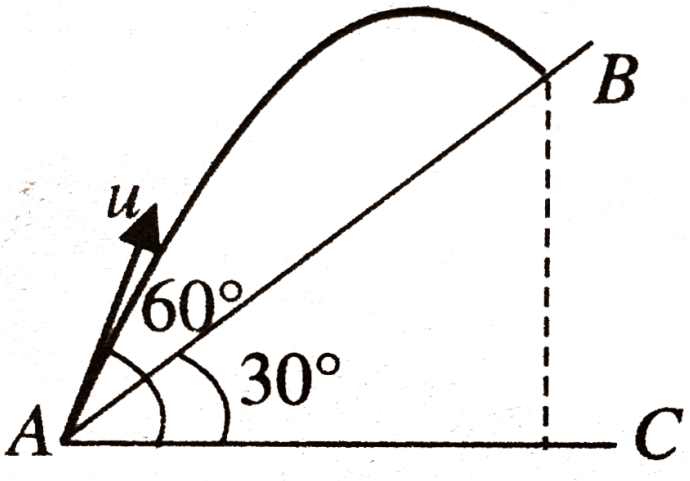
6. In the time taken by the projectile to reach from A to B is t. Then the distance AB is equal to.



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

B. $\frac{\sqrt{3}ut}{2}$

C. $\left(\sqrt{3}ut\right)$

D. $2ut$

Answer:

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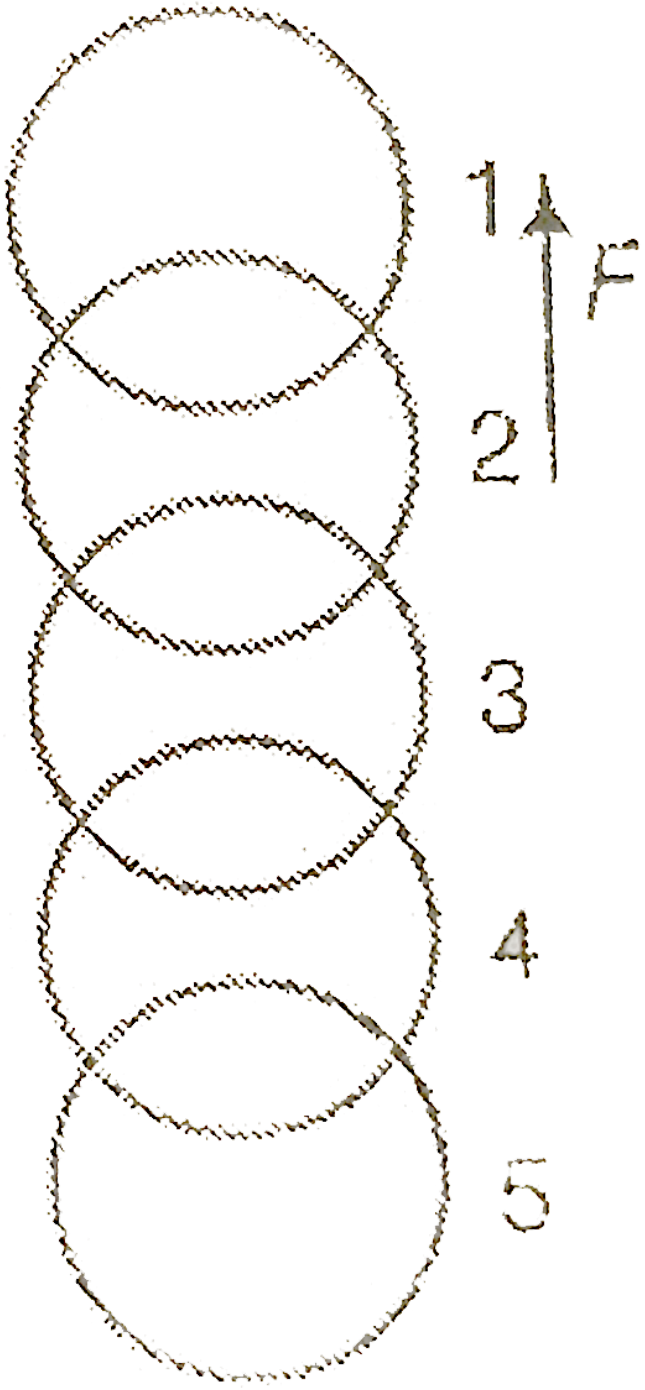
7. A chain consisting of 5 links each of mass 0.1 kg is lifted vertically with a constant acceleration of $2.5m/s^2$ as shown in the figure. The force of interaction between the top link and the link immediately below it, will

be



A. 6.15N

B. 4.92N

C. 3.69N

D. 2046N

Answer:

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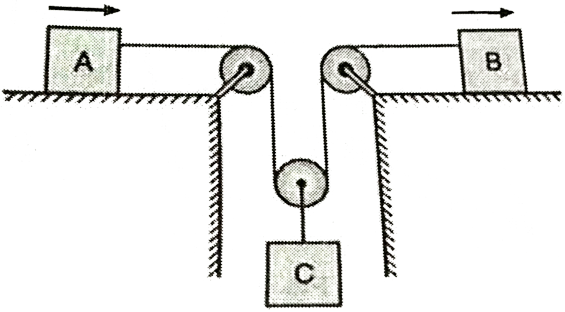
8. Block A and C start from rest and move to the right with acceleration $a_A = 12tm/s^2$ and $a_C = 3m/s^2$ Here t is in seconds. The

time when block B attain comes to rest is:



A. 2s

B. 1s

C. 2//2s

D. 1//4s

Answer:

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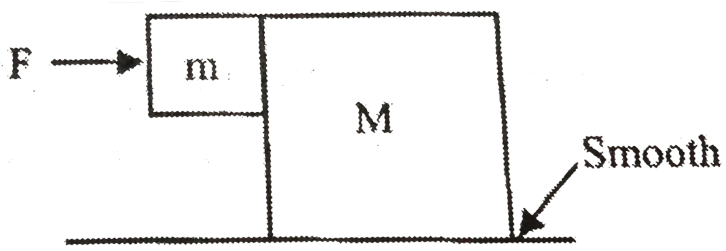
9. The two blocks, m= 10 kg and M = 50 kg are free to move as shown. The coefficient of static friction between the blocks is 0.5 and there is no friction between M and the ground. A minimum horizontal force F is applied to hold m against M that is equal to -



A. 100 N

B. 50 N

C. 240 N

D. 180 N

Answer:

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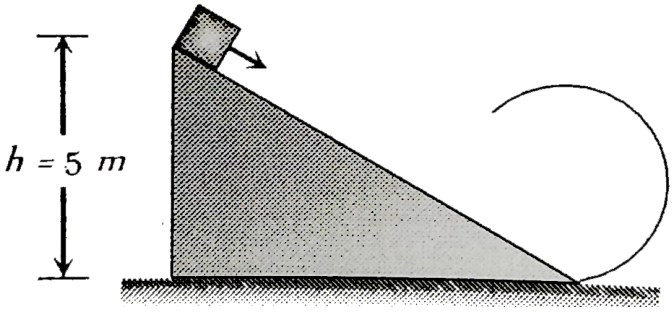
10. As per given figure to complete the circular loop what should be the radius if initial height

is 5 m



A. 4m

B. 3m

C. 2.5m

D. 2m

Answer:

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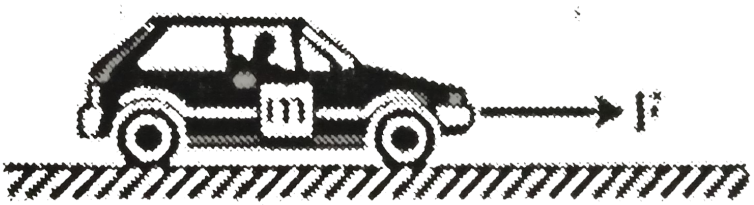
11. A car (treat it as particle) of mas 'm' is accelerating on a level smooth roud under the action of single force F. The power dellvered to the car is constant and equal to P. If the velocity of the car at an instant is v, then after traveclling how much distance it becomes double ?



A. $\frac{7mv^3}{3p}$

B. $\frac{4mv^3}{3p}$

C. $\frac{mv^3}{P}$

D. $\frac{18mv^3}{7P}$

Answer:

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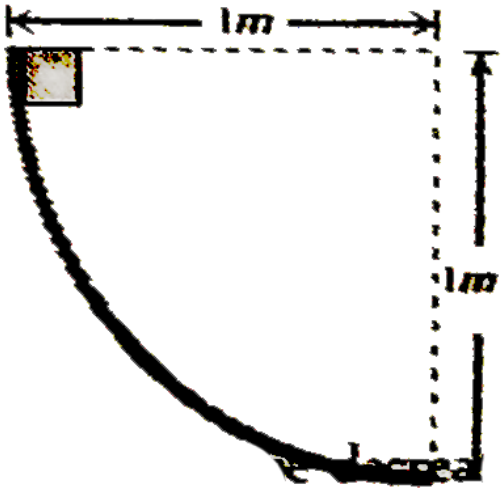

12.

A body of mass 2kg slides down a curved track which is quadrant of a circle of radius 1 metre . All the surfaces are frictionless. If the body starts from rest, its speed at the bottom of the track is

A. $4.43ms^{-1}$

B. $2ms^{-1}$

C. $0.5ms^{-1}$

D. $19.6ms^{-1}$

Answer:

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13. A uniform chain of length L and mass M overhangs a horizontal table with its two third part n the table. The friction coefficient between the table and the chain is μ. Find the

work done by the friction during the period the chain slips off the table.

A. $-\frac{1}{4}\mu MgL$

B. $-\frac{2}{9}\mu MgL$

C. $-\frac{4}{9}\mu MgL$

D. $-\frac{6}{7}\mu MgL$

Answer:

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14. A moving body with a mass m_1 strikes a stationary body of mass m_2. The masses m_1 and m_2 should be in the ratio $\frac{m_1}{m_2}$ so as to decrease the velocity of the first body 1.5 times assuming a perfectly clastic impact. Then the ratio $\frac{m_1}{m_2}$ is

A. 5

B. 1//5

C. 1//125

D. 25

Answer:

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15. Consider a sytem of two particles having masses m_1 and m_2. If the particle of mass m_1 is pushed towards the centre of mass of particles through a distance d, by what distance would the particle of mass m_2 move so as to keep the mass centre of particles at the original position?

A. $\frac{m_1 d}{m_2}$

B. d

C. $\frac{m_2 d}{m_1}$

D. $\frac{m_1}{m_1 + m_2} d$

Answer:

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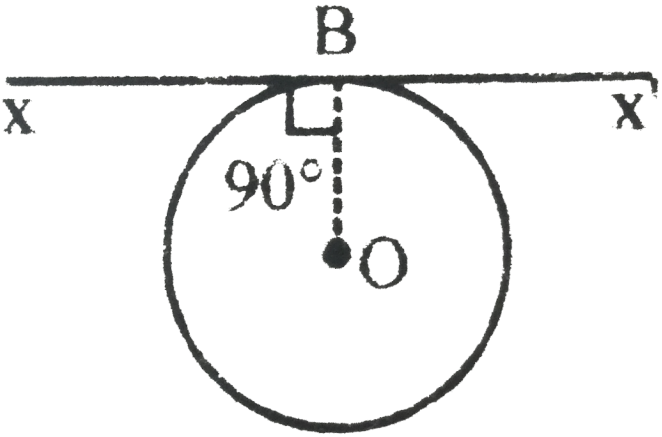
16. A thin wire of length L and uniform linear mass density ρ is bent into a circular loop with centre at O as shown. The moment of inertia

of the loop about the axis XX' is :



A. $\frac{pL^3}{8\pi^2}$

B. $\frac{pL^3}{16\pi^2}$

C. $\frac{5pL^3}{16\pi^2}$

D. $\frac{3pL^3}{8\pi^2}$

Answer:

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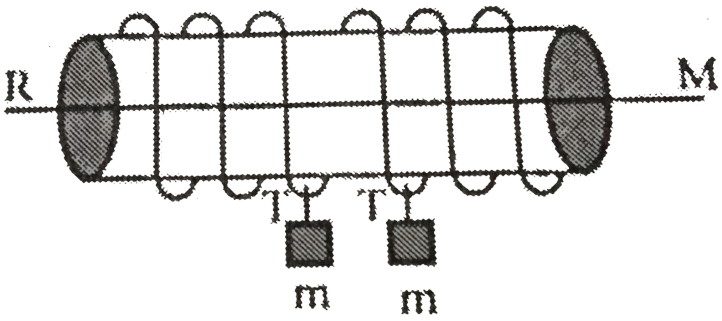
17. In the arrangement shown in figure two equal masses (each m) hung light cords wrapped around a uniform solid cylinder of mass M and radius R. The cylinder is free to roate about a harizontal axis. If the system is released from rest then, the tension in each cord is-



A. $\frac{Mmg}{4m+M}$

B. $\frac{Mmg}{m+M}$

C. $\frac{Mmg}{M+3m}$

D. $\frac{Mmg}{2m+M}$

Answer:

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18. Two spheres each of mass M and radius $R/2$ are connected at their centres with a mass less rod of length $2R$. What will be the

moment of inertia of the system about an axis passing through the centre of one of the sphere and perpendicular to the rod ?

A. $\frac{21}{5}MR^2$

B. $\frac{2}{5}MR^2$

C. $\frac{5}{2}MR^2$

D. $\frac{5}{21}MR^2$

Answer:

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19. A tunnel is dug along a diameter of the planet. A particle is dropped into it at the surface. The particle reaches the centre of the planet with speed v. If v_e is the escape velocity from the surface fo the planet, then-

A. $\sqrt{2}v = v_e$

B. $v = v_e$

C. $v_e = \sqrt{3}v$

D. $v_e = \sqrt{5}v$

Answer:

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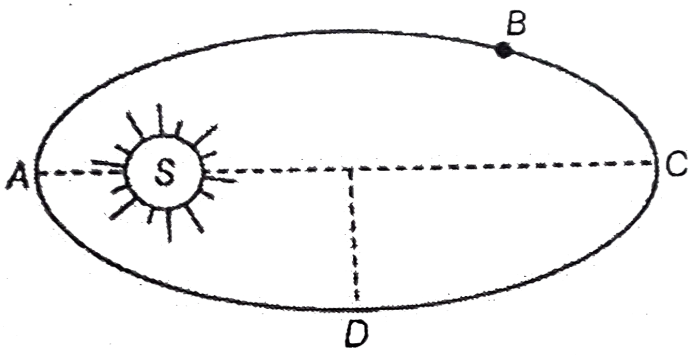
20. A planet revolves in elliptical orbit around the sun. (see figure). The linear speed of the planet will be maximum at



A. A

B. B

C. C

D. D

Answer:

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21. A particle at the end of a spring executes simple harmonic motion with a period t_1 while the corresponding period for another spring is t_2 if the oscillation with the two springs in series is T then

A. $T = t_1 + t_2$

B. $T^2 = t_1^2 + t_2^2$

C. $T^1 = t_1^{-1} + t_2^{-1}$

D. $T^2 = t_1^{-2} + t_2^{-2}$

Answer:

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22. The matallic bob of a simple pendulum has the relative density ρ. The time period of this

pendulum is T it the metallic bob is immersed in water the new time period is given by

A. $T\frac{p-1}{p}$

B. $T\frac{p}{p-1}$

C. $T\sqrt{\frac{p-1}{p}}$

D. $T\sqrt{\frac{p}{p-1}}$

Answer:

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23. A block of mass M is suspended from a wire of length L, area of cross-section A and Young's modulus Y. The elastic potential energy stored in the wire is

A. $\frac{1}{2}\frac{M^2g^2L}{AY}$

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

C. $\frac{1}{2}\frac{M^2g^2A}{YL}$

D. $\frac{1}{2}\frac{MgY}{AL}$

Answer:

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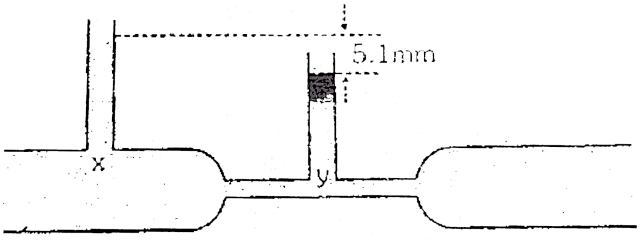
24.



The diagram (figure) shows a venturimeter, through which water is flowing the speed of water at X is 2cm/s. the speed of water at Y (taking $g = 1000cm/s^2$) is

A. $23cms^{-1}$

B. $23cms^{-1}$

C. $101cms^{-1}$

D. $1024 cm s^{-1}$

Answer:

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25. Equal masses of three liquids A, B and C have temperature $10^{\circ}C, 25^{\circ}C$ and $40^{\circ}c$ respectively. If A and B are mixed, the mixture has a temperature of $15^{\circ}C$. If B and C are mixed, the mixture has a temperature of $30^{\circ}C$

, if A and C are mixed will have a temperature of

A. $16^\circ C$

B. $20^\circ C$

C. $25^\circ C$

D. 29°

Answer:

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26. The density of carbon dioxide gas at $0^\circ C$ and at pressure $1.0 \times 10^5 Nm^{-2}$ is $1.98 kgm^{-3}$. Find the rms velocity of its molecules at $0^\circ C$ and also at $30^\circ C$, assuming pressure to be constant.

A. $423 m/s$

B. $300 m/s$

C. $100 m/s$

D. $500 m/s$

Answer:

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27. Find the amount of work done to increase the temperature of one mole of ideal gas by $30^{\circ}C$ .if its is expanding under the condition $V \propto R^{2/3}(R = 8.31J/mol - K)$:

A. $16.62J$

B. $166.2J$

C. $1662J$

D. $1.662J$

Answer:

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28. One end of a copper rod of length 1.0 m and area of cross-section 10^{-3} is immersed in boiling water and the other end in ice. If the coefficient of thermal conductivity of copper is $92cal/m-s-.^{\circ}C$ and the latent heat of ice is $8\times10^{4}cal/kg$, then the amount of ice which will melt in one minute is

A. $9.2 \times 10^{-3} kg$

B. $8 \times 10^{-3} kg$

C. $6.9 \times 10^{-3} kg$

D. $5.4 \times 10^{-3} kg$

Answer:

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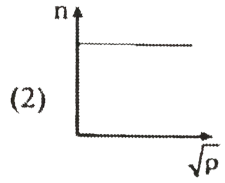
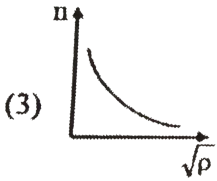
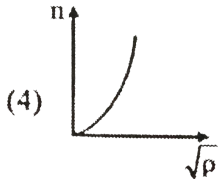
29. The correct graph between the frequecny n and square root of density (p) of a wire,

keeping its length, radius and tension constant, is

A. 

B. 

C. 

D. 

Answer:

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30. A siren placed at a railway platform is emitting sound of frequency $5kHz$. A passenger sitting in a moving train A records a frequency of $5.5kHz$ while the train approaches the siren. During his return journey in a different train B he records a frequency of $6.0kHz$ while approaching the same siren. the ratio the velocity of train B to that of train A is

A. $242/252$

B. 2

C. 3

D. $11/6$

Answer:

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