



PHYSICS

BOOKS - FULL MARKS PHYSICS (TAMIL ENGLISH)

SAMPLE PAPER - 7 (SOLVED)

Part I

1. If the error in the measurement of radius is 2%, then the error in the determination of

volume of the psphere will be

A. 8 %

B. 2 %

C. 4 %

D. 6 %

Answer:



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2. A ball is dropped from a building. It takes 4s to reach the ground. The height of the building is (use $g = 10 \text{ m} / \text{s}^2$)

A. 20 m

B. 40 m

C. 80 m

D. 75 m

Answer:



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3. For inelastic collision between two spherical rigid bodies, which one of the following statements is correct?

A. (a) the total kinetic energy is conserved

B. (b) the total mechanical energy is not conserved

C. (c) the linear momentum is not conserved

D. (d) the linear momentum is conserved

Answer:



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4. Two rods OA and OB of equal length and mass are lying on w plane as shown in figure.

Let I_x , I_y and I_z be the moments of inertia of the the rods about x , y and z axis respectively,

then



A. $I_x = I_y > I_z$

B. $I_x > I_y > I_z$

C. $I_x = I_y < I_z$

D. $I_z > I_y > I_x$

Answer:



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5. A rocket works on the principle of conservation of

A. linear momentum

B. mass

C. angular momentum

D. kinetic energy

Answer:



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6. The work done by the Sun's gravitational force on the Earth is

A. always zero

B. always positive

C. can be positive or negative

D. always negative

Answer:



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7. The efficiency of a heat engine working between the freezing point and boiling point of water is

A. 6.25 %

B. 20 %

C. 26.8 %

D. 12.5 %

Answer:



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8. Two waves represented by the following equation are travelling in the same medium

$$y_1 = 5 \sin 2\pi(75t - 0.25x)$$

and

$$y_2 = 10 \sin 2\pi(150 - 0.25x)$$

The intensity ratio of the two waves is

A. 1 : 2

B. 1 : 4

C. 1 : 8

D. 1 : 16

Answer:



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9. A man pushes a wall and fails to displace it.

He does.....

A. negative work

B. positive but not maximum work

C. no work at all

D. maximum work

Answer:



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10. A car moving on a horizontal road may be thrown out of the road in taking a turn

A. By the gravitational force

B. Due to lack of sufficient centripetal force

C. Due to rolling frictional force between
tyre and road

D. Due to the reaction of the ground

Answer:



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11. The volume of a gas expands by 0.25 m^3 at a constant pressure of 10^3 N/m^2 , the workdone is equal to

A. 250 W

B. 2.5 W

C. 250 N

D. 250 J

Answer:



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12. When three springs of spring constants k_1, k_2, k_3 connected in parallel, then the resultant spring constant is

A. $K = k_1 + k_2 + k_3$

B. $\frac{1}{K} = \frac{1}{k_1} + \frac{1}{k_2} + \frac{1}{k_3}$

C. $K = \frac{1}{k_1} + \frac{1}{k_2} + \frac{1}{k_3}$

D. $K = k_1 - k_2 + k_3$

Answer:



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13. The distance of two planets from the Sun are 10^{13} and 10^{12} metres respectively. The ratio of time periods of these two planets is:

A. 100

B. $\frac{1}{\sqrt{10}}$

C. $\sqrt{10}$

D. $10\sqrt{10}$

Answer:



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14. The dimensional formula of Planck's constant h is

A. $[ML^2T^{-1}]$

B. $[ML^2T^{-3}]$

C. $[MLT^{-1}]$

D. $[ML^3T^{-3}]$

Answer:



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1. A particle is moving along a circular track of radius 1m with uniform speed. What is the ratio of the distance covered and the displacement in half revolution?



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2. Give one argument in favour of the fact that frictional force is a non-conservative force.



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3. Why does a gas not have a unique value of specific heat?



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4. A boat which has a speed of 5 km/hr in still water crosses a river of width 1 km along the shortest possible path in 15 minutes. The velocity of the river water in km/hr is



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5. In a dark room would you be able to tell whether a given note had been produced by a piano or a violin ?



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6. What is PV diagram ?



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7. Why does a parachute descend slowly?



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8. What is Brownian motion?



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9. Write a note on reverberation.



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1. Write the rules for determining significant figures.



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2. Explain Joule's Experiment of the mechanical equivalent of heat.



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3. How do you classify the physical quantities on the basis of dimension ?



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4. State the laws of simple pendulum.



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5. What is meant by superposition of gravitational field?



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6. Write a note on static friction.



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7. A small metal ball falls in liquid with a terminal velocity of V . If a ball of radius twice of first ball but same mass falls through a same medium, calculate the terminal velocity with which it falls.



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8. Derive an expression for co-efficient of performance of refrigerator.



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9. Derive an expression for escape speed.



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1. Explain the different types of redox reactions with example.



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2. Derive the equation of motion, range and maximum height reached by the particle thrown at an oblique angle θ with respect to the horizontal direction.



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3. Explain in detail the triangle law of addition.



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4. Prove that there is a loss of KE during one dimensional inelastic collision.



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5. Explain the variation of 'g' with altitude.



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6. Explain in detail the Maxwell Boltzmann distribution function.



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7. The acceleration due to gravity on the surface of moon is $1.7ms^{-2}$. What is the time period of a simple pendulum on the surface of moon if its time period on the surface of earth is 3.5s ?



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8. Animals curl into a ball, when they feel very cold. Why?



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9. Explain the horizontal oscillations of a spring.



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10. What is capillarity? Obtain an expression for the surface tension of a liquid by capillary rise method.



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