



PHYSICS

BOOKS - FULL MARKS PHYSICS (TAMIL ENGLISH)

SAMPLE PAPER -10 (SOLVED)

Part I

1. Two protons are travelling along the same straight path but in opposite directions. The

relative velocity between the two is

A. c

B. $\frac{c}{2}$

C. $2c$

D. 0

Answer: A



Watch Video Solution

2. If the Earth stops rotating about its own axis, g remains unchanged at

A. equator

B. poles

C. latitude of 45°

D. no where

Answer: B



Watch Video Solution

3. When train stops, the passenger move forward, It is due to

- A. inertia of passenger
- B. Inertia of train
- C. gravitational pull by Earth
- D. none of the above

Answer: A



Watch Video Solution

4. A particle of mass m moves in the xy plane with a velocity v along the straight line AB . If the angular momentum of the particle with respect to origin O is L_A when it is at A and L_B when it is at B , then



A. $L_A = L_B$

B. $L_A < L_B$

C. $L_A > L_B$

D. the relationship between L_A and L_B

depends upon the slope of the line AB

Answer: A



View Text Solution

5. A couple produces

A. pure rotation

B. pure translation

C. rotation and translation

D. no motion

Answer: A



Watch Video Solution

6. A body starting from rest has an acceleration of 20ms^{-2} the distance travelled by it in the sixth second is ...

A. 110 m

B. 130 m

C. 90 m

D. 50 m

Answer: A



Watch Video Solution

7. A lift of mass 1000 kg which is moving with an acceleration of 1ms^{-2} in upward direction, then the tension developed in string which is connected to lift is _____

A. 9800 N

B. 10800 N

C. 11000 N

D. 10000 N

Answer: C



Watch Video Solution

8. The relation between acceleration and displacement of four particles are given below

A. $a_x = 2x$

B. $a_x = + 2x^2$

C. $a_x = - 2x^2$

D. $a_x = - 2x$

Answer: D



Watch Video Solution

9. A sonometer wire is vibrating in the second overtone. In the wire there are

- A. two nodes and two antinodes
- B. one node and two antinodes
- C. four nodes and three antinodes
- D. three nodes and three antinodes

Answer: D



Watch Video Solution

10. Which of the following is the best reflector of light?

A. 

B. 

C. 

D. 

Answer: C



Watch Video Solution

11. According to kinetic theory of gases, the rms velocity of the gas molecules is directly proportional to

A. \sqrt{T}

B. T^3

C. T

D. T^4

Answer: A



Watch Video Solution

12. A body of mass m moving with velocity v collides head on with another body of mass

2m which is initially at rest. The ratio of K.E of colliding body before and after collision will be

A. 1 : 1

B. 2 : 1

C. 4 : 1

D. 9 : 1

Answer: D



Watch Video Solution

13. Four particles have velocity 1, 0, 2 and 3ms^{-1} . The root mean square velocity of the particles is

A. 3.5ms^{-1}

B. $\sqrt{3.5}\text{ms}^{-1}$

C. 1.5ms^{-1}

D. 0

Answer: B



Watch Video Solution

14. Two vibrating tuning forks produce progressive waves given by $y_1 = 4 \sin 500\pi t$ and $y_2 = 2 \sin 506\pi t$ where t is in seconds. The number of beats produced per minute is

A. 360

B. 180

C. 3

D. 60

Answer: B



Watch Video Solution

15. Workdone by a simple pendulum in one complete oscillation is

A. 0

B. \sqrt{mg}

C. $mg \cos \theta$

D. $mg \sin \theta$

Answer: A



Watch Video Solution

Part II

1. A girl is swinging on a swing in the sitting position. How will the period of swing be affected if she stands up?



[Watch Video Solution](#)

2. A car starts to move from rest with uniform acceleration 10ms^{-2} then after 5 sec, what is its velocity?



Watch Video Solution

3. Define Lami's theorem.



Watch Video Solution

4. A constant torque is acting on a wheel. If starting from rest, the wheel makes n rotations in t seconds, Show that the angular acceleration is given by

$$\alpha = \frac{4\pi n}{t^2} \text{ rad s}^{-2}.$$



[Watch Video Solution](#)

5. Why a given sound is louder in a hall than in the open?



[Watch Video Solution](#)

6. What are the differences between connection and conduction?



[Watch Video Solution](#)

7. Why two holes are made to empty an oil tin ?



[Watch Video Solution](#)

8. If the length of the simple pendulum is increased by 44% from its original length, calculate the percentage increase in time period of the pendulum.



[Watch Video Solution](#)

9. When do the real gases obey more correctly the gas equation : $PV=nRT$?



[Watch Video Solution](#)

Part Iii

1. A stone is thrown upwards with a speed y from the top of a tower. It reaches the ground with a velocity $3v$. What is the height of the tower?



[Watch Video Solution](#)

2. An object is projected at an angle such that the horizontal range is 4 times of the maximum height. What is the angle of projection of the object?



[Watch Video Solution](#)

3. A room contains oxygen and hydrogen molecules in the ratio 3:1. The temperature of the room is $27^{\circ}C$. The molar mass of O_2 is 32

g mol^{-1} and for H_2 3 g mol^{-1} . The value of gas constant R is $8.32 \text{ J mol}^{-1} \text{K}^{-1}$

calculate:

(a) rms speed of oxygen and hydrogen molecule.

(b) Average kinetic energy per oxygen molecule and per hydrogen molecule.

(c) Ratio of average kinetic energy of oxygen molecules and hydrogen molecules.



Watch Video Solution

4. Define angle of friction



[Watch Video Solution](#)

5. How does resolve a vector into its component? Explain.



[Watch Video Solution](#)

6. Derive an expression for energy of satellite.



[Watch Video Solution](#)

7. Explain in detail newton's law of cooling .



[Watch Video Solution](#)

8. Explain Laplace's correction.



[Watch Video Solution](#)

9. Explain the types of equilibrium with suitable examples



Watch Video Solution

Part Iv

1. What are the applications of dimensional analysis? Verify $s = ut + \frac{1}{2}at^2$ by dimensional analysis



Watch Video Solution

2. Explain the types of equilibrium with suitable examples



[Watch Video Solution](#)

3. Explain the motion of blocks connected by a string in (i) vertical motion (ii) horizontal motion .



[Watch Video Solution](#)

4. Derive the kinematic equations of motion for constant acceleration.



[Watch Video Solution](#)

5. State and prove perpendicular axis theorem.



[Watch Video Solution](#)

6. Explain in detail the triangle law of addition.



[Watch Video Solution](#)

7. Explain in detail the various types of errors.



[Watch Video Solution](#)

8. To move an object, which one is easier, push or pull? Explain



[Watch Video Solution](#)

9. Describe the method of measuring angle of repose



Watch Video Solution

10. A block of mass m slides down the plane inclined at an angle 60° with an acceleration $g/2$. Find the co-efficient of kinetic friction.



Watch Video Solution

11. (i) Explain the use of screw gauge and vernier caliper in measuring smaller distances.

(ii) Write a note on triangulation method and radar method to measure larger distances.



Watch Video Solution

12. Jupiter is at a distance of 824.7 million km from the Earth. Its angular diameter is measured to be $35.72''$. Calculate the diameter of Jupiter.





[Watch Video Solution](#)