PHYSICS

BOOKS - SURA PHYSICS (TAMIL ENGLISH)

SURAS MODEL QUESTION PAPER -2 (PHYSICS)

Part I

1. If the error in the measurement of radius is 2%, then the error in the determination of volume of the pshere will be

A. 0.08

B. 0.02

C. 0.04

D. 0.06

Answer: D

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2. An object of mass m held against a vertical wall by applying horizontal force F as shown in the figure . The minimum value of the force F is

    A. less than mg

    B. Equal to mg

    C. Greater than mg

    D. Cannot determine

Answer: C

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3. A ball of mass 1 kg and another of mass 2 kg are dropped from a tall building whose height is 80 m. After, a fall of 40 m each towards Earth, their respective kinetic energies will be in the ratio of

    A. $\sqrt{2}:1$

    B. $1:\sqrt{2}$

    C. $2:1$

    D. $1:2$

Answer: D

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4. Choose the odd one out :

    A. Oil

    B. ball bearings

    C. Rollers

    D. Sliding

Answer: D

5. If the masses of the Earth and Sun suddenly double, the gravitational force between them will

A. remain the same

B. increase 2 times

C. increasse 4 times

D. decrease 2 times

Answer: C

6. Assertion : Any object thrown at an angle of $90°$ with an initial velocity is called projectile

Reason : When any object is thrown at an angle of $45°$, it reaches the maximum (horizontal) distance ex : Javelin throw, shot put throw etc.

    A. Assertion and are correct and Reason is correct explanation of Assertion

B. Assertion and Reason are true but Reason is the false explanation of the Assertion

C. Assertion of true but Reason is false

D. Assertion is false but Reason is true

Answer: D

7. The graph between volume and temperature in Charles'law is

   A. an ellipse

   B. a circle

   C. a striangle line

   D. a parabola

Answer: C

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8. A sample of ideal gas is at equilibrium. Which of the following quantity is zero?

A. rms speed

B. average speed

C. average velocity

D. most probabale speed

Answer: C

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9. Choose the correct pair

    A. Stoke's law - flotation of clouds

    B. Hooke's law - Laminco flow

    C. Reynold's number - stress - strain relation ship

    D. Terminal velocity - changing velocity

Answer: A

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10. A transverse wave moves from a medium A to a medium B. In medium A, the velocity of the transverse wave is 500 ms^{-1} and the wavelength is 5 m. The frequency and the wavelength of the wave in medium B when its velocity is $600ms^{-1}$, respectively are

   A. 120 Hz and 5 m

   B. 100 Hz and 5 m

   C. 120 Hz and 6 m

   D. 100 Hz and 6 m

Answer: D

11. Astronomical Scale is dealt with the_____Physics

A. Mesoscopice

B. Microscopic

C. Macropic

D. None

Answer: C

12. The angle between Ai +j and B = i-j is

A. 45°

B. 90°

C. -45°

D. 180°

Answer: B

13. Action and reaction

    A. act on two different objects

    B. have opposiite direction

    C. have equal magnitude

    D. all of these

Answer: D

14. (I) Possion's Ratio tells us about the ratio of relative contraction to relative expansion.

(II) Strain has no unit.

Which one is correct statement ?

    A. I only

    B. II only

    C. Both are correct

    D. None

Answer: C

Part Ii

1. Explain how the definition of work in physics is different from general perception.

2. Define the center of mass of a body.

3. State Newtons Universal law of gravitaion.

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4. Define stress and strain.

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5. An object contains more heat -Is it a right statement ? If not why ?

6. What is the microscopic origin of pressure?

7. What is meant by periodic and non-periodic motion ? Give any two examples , for each motion ?

8. What is meant by waves?

9. What is Degree of freeedom ?

10. The position vectors particle has length 1m and makes $30°$ with the x-axis. What are the lengths of the x and y components of the position vector?

11. Show that impulse is the change of momentum

Part Iii

1. Write the differences between conservative and Non - conscrvative force. Give two

examples each.

2. Explain how the torque can be expressed as a vector product of two vectors ? How the direction and magnitude of torque is determined ?

3. Why the the gravitational force between the Earth and the Sun is so great while the same force between two small objects is negligible ?

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4. Write down the expression for the elastic potential energy of a stretched wire .

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5. Define spectific heat capacity and give its unit .

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6. What is the relation between the average kinetic energy and pressure?

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7. Write down the equation of time period for linear harmonic oscillator ?

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1. Write the expression for the veloctiy of longitudinal waves in an elastic medium.

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2. Explain in detail the various types of errors.

3. Derive the expression for moment of inerita of a uniform disc about an axis passing through the centre and perpendicular to the plane.

4. Prove the law of conservation of linear momentum use it to find the recoil velocity of a gun when a bullet is fired from it

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5. State and explain work energy principle. Mention any three examples for it.

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6. Derive an expression for the position vector of the center of mass of particle system.

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7. Show that the projection of uniform circular motion on a diameter is SHM.

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8. What are the important characteristics of progressive wave?

9. Write the Applications of elasticity.

10. Write down the postulates of kinetic theory of gases.