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Tsi11P Tenkasi District Common Half Yearly Examination - December 2024 20-12-24 Standard 11 Maximum Marks: 70 Time Allowed: 3.00 Hours PHYSICS PART - I 15×1=15 Answer all the questions: 1) A couple produces b) pure translation a) pure rotation d) no motion c) rotation and translation The gravitational potential energy of the moon with respect to earth is b) always negative a) always positive c) can be positive or negative d) always zero 3) For a given material, the rigidity modulus is (1/3)rd of Young's modulus. Its Poisson's ratio is d) 0.5 c) 0.3 a) 0 b) 0.25 4) In pure rolling of a disc, the velocity of its centre of mass is $\tilde{V}cm$. Then the resultant velocity at point of contact with the surface is d) -2.Vcm c) zero b) 2 Vcm a) Vcm 5) The damping force on an oscillator is directly proportional to its velocity. The units of the constant of proportionality are d) Kgs b) Kams⁻² c) Kqs⁻¹ a) Kams⁻¹ 6) Suppose two cars A and B are moving with same uniform velocities along parallel tracks but in opposite directions. If the velocity of cars is 40 Kmh⁻¹, then their relative velocity d) 100 Km h⁻¹ c) 80 Km h⁻¹ a) 40 Km h⁻¹ b) zero If the length and time period of an oscillating pendulum have errors of 1% and 3% respectively then the error in measurement of acceleration due to gravity is d) 7% c) 6% b) 5% a) 4% When an object is at rest on the inclined rough surface a) Static and Kinetic frictions acting on the object is zero. b) Static friction is zero but Kinetic friction is not zero. c) Static friction is not zero and Kinetic friction is zero. d) Static and Kinetic frictions are not zero. 9) Two objects of masses 8 kg and 20 kg are moving with same momentum. Then the ratio of their kinetic energies is 5 2 c) 1 a) _____ d) None of the above b) 2 10) If one object is dropped vertically downward and another object is thrown horizontally from the some height, then the ratio of vertical distance covered to both objects after 10s is d) 0.5 c) 1 b) 2 a) 4 11) A spring of force constant K is cut into two pieces such that one piece is double the length of the other. Then the long piece will have a force constant of a) $\frac{2}{3}$ K b) $\frac{3}{2}K$ d) 6K c) 3K 12) The time period of satellite of earth is 5 hours. When the distance between earth and satellite is increased by 4 times of initial value, then the new time period is c) 40 hours d) 80 hours b) 20 hours a) 10 hours 13) A metallic sphere of radius 1mm falling freely through a large column of glycerin. Then which of the following shows the variation in velocity of sphere, as it decends down, U U U υ d) c) b) a)

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- 2
- 14) When the uniform rod is heated which of the following quantity of the rod will increase
 - a) mass

a) Hydrogen

b) weight

c) centre of mass

- d) moment of inertia
- 15) Which of the following gases will have least rms speed at a given temperature? d) Carbon di oxide
 - c) Oxygen b) Nitrogen
 - PART-II

Answer ANY SIX questions. Q.No. 22 is compulsory:

- 16) Why moon has no atmosphere?
- 17) State first law of Thermodynamics.
- 18) Define surface tension. Give its unit.
- 19) Define gravitational field.
- 20) From a point on the ground, the top of a tree is seen have an angle of elevation 60°. The distance between the tree and the point is 50m. Calculate the height of the tree?
- 21) Define a vector. Give examples.
- 22) A weight lifter lifts a mass of 250 kg with a force 5000N to the height of 5m. Calculate the work done by the weight lifter.
- 23) What is meant by inertial frame of reference?
- 24) Consider two springs whose force constants are 1 Nm⁻¹ and 2 Nm⁻¹ which are connected in series. Calculate the effective spring constant.

PART-III

Answer ANY SIX questions. Q.No. 31 is compulsory:

- 25) List the applications of Viscosity.
- 26) Distinguish elastic and inelastic collisions.
- 27) Suppose an object is thrown with initial speed 10 ms⁻¹ at an angle $\pi/4$ with horizontal on the surface of moon. Calculate the range covered.
- 28) State Keplar's law.
- 29) Explain resonance. Give an example.
- 30) A foot ball at 27°C has 0.5 mole of air molecules. Calculate the internal energy of air in the ball.
- 31) When a cricket player catches the ball, he pulls his hands gradually in the direction of the ball's motion. Why?
- 32) Explain the method to find the centre of gravity of a irregularity shaped SIVAKUMAR, M lamina. SoiRavon Matoic HES
- 33) Define error. Give its types.

PART - IV

Answer all the questions:

- 34) a) State Pascal's law. Explain the working of Hydraulic lift.
 - b) Arrive at expression for Velocities of objects in one dimensional elastic collision.
- 35) a) Obtain an expression for the time period T of a simple pendulum using (OR) dimensional method.
 - b) Explain Newton's law of cooling.
- 36) a) Derive expressions for magnitude and direction of resultant vectors for (OR) vector addition.
 - b) Describe the total degrees of freedom for monoatomic molecule, diatomic molecule and triatomic molecule.
- (OR) 37) a) Discuss in detail, the energy in simple hormonic motion.
 - b) Discuss rolling on inclined plane and arrive at the expression for the acceleration.
- 38) a) Explain the variation of 'g' with depth from the surface of earth. (OR) b) Discuss the motion of a vehicle on a leveled circular road.

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5×5=25 (OR)

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6×2=12

6×3=18