Tenkasi District
First Revision Examination - 2024

Tsi11P

01-02-2024

Time: 3.00 Hours

Standard 11
PHYSICS
Part - I

Marks: 70

I. **Choose the correct answer.**   15x1=15

1) A sound wave whose frequency is 5000 Hz travels in air and then hits the water surface. The ratio of its wavelength in water and air is
   a) 4.30   b) 0.23   c) 5.30   d) 1.23

2) If the acceleration due to gravity becomes 4 times its original value, then escape speed
   a) remains same   b) 2 times of original value
   c) becomes halved   d) 4 times of original value

3) The centrifugal force appears to exist
   a) only in inertial frames   b) Only in rotating frames
   c) in any accelerated frame   d) both in inertial and non-inertial frames

4) A solid object rotates whose angular momentum L. then its kinetic energy reduced to $\left(\frac{1}{4}\right)^{th}$, then its angular momentum becomes

   a) L   b) $\left(\frac{L}{2}\right)$ c) 2 L   d) $\frac{L}{\sqrt{2}}$

5) An ideal refrigerator has a freezer at temperature – 12°C. The co-efficient of performance of the engine is 5. The temperature of the air (to which the heat ejected) is
   a) 50°C   b) 45.2°C   c) 40.2°C   d) 37.5°C

6) Rounding of 231.25×10^5 up to 4 digits will give
   a) 231.3   b) 231.3×10^5 c) 231.2×10^5 d) 231.2

7) If the temperature and pressure of a gas is doubles the mean free path of the gas molecules
   a) remains same   b) doubled   c) tripled   d) qradrapoled

8) A wind-powered generator converts wind - energy into electric energy. Assume that the generator converts a fixed fraction of the wird energy intercepted by its blades into electrical energy. For wind speed V, the electrical power output will be proportional to
   a) V   b) V^2 c) V^3 d) V^4

9) The first three frequencies of harmonics of a closed organ pipe will be in the ratio
   a) 1 : 2 : 3   b) 1 : 3 : 5   c) 1 : 4 : 9   d) 2 : 4 : 6

10) A ball moves on a frictionless inclined table without slipping. The workdone by the table surface on the ball is
    a) positive   b) negative   c) Zero   d) none

11) The wettablitiy of a surface by a liquid depends primarily on
    a) viscosity
    b) surface
    c) density
    d) angle of contact between the surface and the liquid

12) The damping force on an oscillator is directly proportional to the velocity. The units of the constant of proportionality are
    a) $kgms^{-1}$ b) $kgms^{-2}$ c) kgs^{-2} d) kg s.

13) Which one of the following physical quantities cannot be represented by a scalar?
    a) Mass   b) length
    c) momentum   d) magnitude of acceleration

14) If two wires have same dimension but of different materials, the graph between load and extension is as follows, then which of the following is true.
    a) $Y_B = Y_A$ b) $Y_A < Y_B$
    c) $Y_A > Y_B$ d) $Y_A = Y_B = 0$
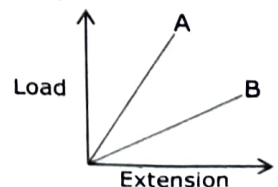
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15) A particle is in circular motion with an acceleratoin $\alpha = 0.2$ rad S^{-2}. What is the angular displacement made by the particle after 5 s?,
a) 2.5 rad   b) 25 rad   c) 250 rad   d) 2500 rad

Part - II

II. Answer any six questions. Q.No. 24 is compulsory.   **6x2=12**

16) Two vectors $\vec{A}$ and $\vec{B}$ are given in the component from as $\vec{A} = 5\hat{i} + 7\hat{j} - 4\hat{k}$ and $\vec{B} = 6\hat{i} + 3\hat{j} + 2\hat{k}$ Find. $\vec{A} + \vec{B}$

17) Define - co-efficient of Restitation
18) State - Law of conservation of anglular momemtum.
19) Why is there no lunar eclipse and solar eclipse every month?
20) Define - Poisson's ratio
21) State - Wien's displacement law.
22) Define - Degrees of freedom
23) What is called Doppler effect?
24) A RADAR signal is beamed towards a planet and its echo is received 7 minutes later. If the distance between the planet and the Earth is 6.3×10^{10} m. Calculate the speed of the signal?

Part - III

III. Answer any six questions. Q.No. 33 is compulsory.   **6x3=18**

25) Compare the properties of Longitudinal wave and tromsverse wave.
26) Derive an expression for terminal velocity.
27) Write the rules for significant figures.
28) State theLaws of simple pendulum.
29) Deduce the Relation between linear velocity and angular velocity.
30) To move an object - push or pull? Which is easier?
31) Explain loss of kinetic energy in perfect inelastic collisim.
32) State and Explain perpendicular axes theorem.
33) During a cyclic process, a heat engine absorbs 500 J of heat from a hot reservior, does work and ejects an amount of heat 300 J into the surrounding (cold reservoir). Calculate the efficiency of heat Engine.

Part - IV

                                                    5x5=25

IV. Answer in detail

34) a) i) Write the uses of dimensional Analysis.
     ii) Check the correctness of the equation $\frac{1}{2}mv^2 = mgh$ using dimentional Analysis.

(OR)

     b) Explain moment of inertia of uniform circular Disc

35) a) Derive equations of uniformly accelerated motion by Calculus method.

(OR)

     b) State and Explain Bernouli's principle

36) a) Calculate the velociy of an object in an elastic collision in one dimension

(OR)

     b) Explain Escape speed.

37) a) Deduce the Relation for $C_p - C_v = R$.

(OR)

     b) Compare the properties of Kinetic friction and Static friction

38) a) Write the postulates of Kinetic theory of gases

(OR)

     b) Explain   i) Closed organ pipe
               ii) Open organ pipe.

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