Tsi11P

Tenkasi District

Second Revision Examination - February 2024

12-02-2024

Standard - 11

PHYSICS

Time: 3.00 Hours

Maximum Marks: 70

I. Choose the correct answer: **15×1=15**

1) Which of the following represents a wave?

a) $(x-vt)^3$ b) $x(x+vt)$ c) $\frac{1}{(x+vt)}$ d) $\sin(x+vt)$

2) Which of the following gases will have least rms speed at a given temperature?
a) hydrogen b) nitrogen c) oxygen d) carbon di oxide

3) Bernouli theorem is based on conservation of
a) momentum b) mass c) energy d) angular momentum

4) If the masses ofthe Earth and Sun suddenly double, the gravitational force between them will be
a) remain the same b) increase 2 times
c) increases 4 times d) decrease 2 times

5) Which of the following pairs of physical quantities have same dimensions?
a) force and power b) torque and energy
c) torque and power d) force and torque

6) A bus is moving with a spped of 10 ms^{-1} on a straight road. A scooterist wishes to overtake the bus in 100 s. If the bus is at a distance of 1 km from the scooterist, with what speed should the scooterist, chase the bus?
a) 40 ms^{-1} b) 25 ms^{-1} c) 10 ms^{-1} d) 20 ms^{-1}

7) An organ pipe A closed at one end is allowed to vibrate in its first harmonic and another pipe B open at both ends is allowed to vibrate in its third harmonic. Both A and B are in resonance with a given turning fork. The ratio of the length of A and B is

a) $\frac{8}{3}$ b) $\frac{3}{8}$ c) $\frac{1}{6}$ d) $\frac{1}{3}$

8) A body of mass 4 m is lying in xy-plane at rest. It suddenly explodes into three pieces. Two pieces each of mass m move perpendicular to each other with equal speed v. The total kinetic energy generated due to explosion is

a) mv^2 b) $\frac{3}{2}mv^2$ c) $2mv^2$ d) $4mv^2$

9) The speed of a solid sphere after rolling downfrom rest without sliding on an inclined plane of vertical height h is

a) $\sqrt{\frac{4}{3}gh}$ b) $\sqrt{\frac{10}{7}gh}$ c) $\sqrt{2gh}$ d) $\sqrt{\frac{1}{2}gh}$

10) Consider two wire X and Y. The radius of wire X is 3 times the radius of Y. If they are stretched by the same load then the stress on Y is
a) equal to that on X b) thrice that on X
c) nine times that on X d) half that on X

11) A mass of 3 kg is attached at the end of a spring moves with simple harmonic motion on a horizontal friction less table with time period 2π and with amplitude of 2m then the maximum force exerted on the spring is
a) 1.5 N b) 3N c) 6 N d) 12 N

12) When a cycle tyre suddenly bursts, the air inside the tyre expands, this process is
a) isothermal b) adiabatic c) isobaric d) isochoric

13) A car accelerates on a horizontal road due to the force exerted by
a) the engine of the car b) the driver of the car
c) the earth d) the road

14) The work done on an object does not depend upon the
a) displacement b) force applied
c) angle between force and displacement d) initial velocity of the object

15) If one object is dropped vertically downward and another object is thrown horizontally from the same height then the ratio of vertical distance covered by both object at any instant is
a) 1 b) 2 c) 4 d) 0.5

II. Answer any six question. Question no 24 is compulsory: 6×2=12

16) What are the advantages of SI units?
17) Define-vector product.
18) Consider a circular road of radius 20 meter banked an angle of 15 degree. With what speed a car has to move on the turn so that it will have safe turn?
19) Distinguish between Elastic collision and inelastic collision.
20) State Universal Gravitational Law.
21) State Pascal Law.
22) Write the conditions for reversible process.
23) What are the factors affecting browning motion?
24) Calculate the velocity of sound at steel bar
$Y = 2\times10^{11}\ Nm^{-1}$ & density $\rho = 7800\ Kgm^{-3}$

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III. Answer any six question. Question no 33 is compulsory: 6×3=18

25) Explain Laplace correction.
26) Derive Gravitational Potential energy of the object near the surface of the Earth.
27) Calculate the Efficiency of Carnot's Engine.
28) Explain the limitations of Dimensional Analysis.
29) State and Explain triangle law of vectors.
30) Two objects of masses 2 kg and 4 kg are moving with the same momentum of 20 Kg ms^{-1}?
a) Will they have same kinetic energy?
b) Will they have same speed?
31) Deduce the relation between Torque and Angular acceleration.
32) What is resonance? Give some examples.
33) A solid sphere having radius 15 cm and mass 0.038 kg. Calculate the relative density of the solid sphere.

IV. Answer in detail: 5×5=25

34) a] Write down the difference between simple harmonic motion and angular simple harmonic motion. **(OR)**
b] State and Explain parallel axes theorem.
35) a] Convert 76 cm of mercury pressure into Nm^{-2} using the method of dimensions. **(OR)**
b] Explain the characteristics of progressive wave.
36) a] Give the postulates of kinetic theory of gases. **(OR)**
b] State and Explain Work Energy Theorem.
37) a] Explain three types of moduli of Elasticity. **(OR)**
b] Show that the path of projectile is a parabola when the projectile is projected along the horizontal motion.
38) a] i) Gravitational field Intensity - Define: Give its unit
ii) State the Kepler laws of planetary motion. **(OR)**
b] Deduce that Meyer's relation.

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