Class : 11

Register Number

REVISION EXAMINATION, JANUARY - 2023

PHYSICS

Time Allowed : 3.00 Hours] [Max. Marks : 70

PART-I

Note: (i) Answer all the questions **15x1=15**

(ii) Choose the most suitable answer from the given four alternatives and write the option code and the corresponding answer.

1. If the temperature of the wire is increased, then the young's modulus will
   a) Remains the same b) decrease
   c) Increases rapidly d) Increase by very small amount
2. A sound wave whose frequency is 5000 it 2 travels in air and then hits the water surface. The ratio of its wave lengths in water and air is
   a) 430 b) 0.23 c) 5.30 d) 1.23
3. An object of mass 10kg is hanging on a spring scale which is attached to the roof of a lift. If the lift is in free fall, the reading in the spring scale is
   a) 98 N b) Zero c) 49 N d) 9.8 N
4. A refrigerator has cop of 3. How much work must be supplied to the refrigerator in order to remove 300J of heat from its interior
   a) 300 J b) 100 J c) 3 J d) 200 J
5. A pendulum is hung in a very high building oscillates to and fro motion freely like a simple harmonic oscillator. If the acceleration of the bob is $16ms^{-1}$ at a distance of 4m from the mean position then the time period is
   a) 2 S b) 1 S c) 2π S d) π S
6. A couple produces
   a) Pure rotation b) Pure translation
   c) rotation and translation d) No motion
7. Which of the following gases will have least rms speed at a given temperature
   a) Hydrogen b) Nitrogen c) Oxygen d) Carbon dioxide
8. Number of significant figures for 0.0460200 is
   a) 7 b) 4 c) 6 d) 8
9. 1kwh is equal to
   a) 3.6×10^6 J b) 3.6×10^{-9} J c) 3.6×10^{-6} J d) 36×10^6 J
10. Two trains A and B moving along parallel tracks with the same velocity 50 kmh^{-1} due east the relative velocities of the trains are
    a) 0 kmh^{-1} b) 50 kmh^{-1} c) 100 kmh^{-1} d) 25 kmh^{-1}
11. Choose the correct statement from the following
    a) Centrifugal and centripetal forces are action reaction pairs
    b) Centripetal forces is a natural force
    c) Centrifugal force arises from gravitational force
    d) Centripetal force acts towards the Centre and centrifugal force appears to act away from the Centre in a circular motion.
12. When sudden break is applied in a moving vehicles in this case
    a) $V_{TRAN} > V_{ROT}$ b) $V_{TRAN} < V_{ROT}$ c) $V_{TRAN} = V_{ROT}$ d) $V_{TRAN} = 0$
13. Water has a maximum density at
    a) 4°C b) 0°C c) between 0°C and 4°C d) above 4°C
14. Occurrence of earth quake is
    a) Periodic motion b) Non periodic motion
    c) Simple harmonic motion d) Angular harmonic motion
15. If the linear momentum of the object is increased by 0.1 % then the kinetic energy is increased by
    a) 0.1 % b) 0.2 % c) 0.4 % d) 0.01%

PART – II

NOTE : Answer any six questions .
Question No: 24 is compulsory. **6x2=12**

16. Why is there is no lunar and solar ellipse every month?
17. What is resonance ?
18. If two sound waves propagate with frequency 55Hz and 66Hz respectively. Calculate the number beats per second.
19. Mention uses of Dimensional analysis.
20. Which one of these more elastic steel or rubber why?
21. Show that impulse is the change of momentum?
22. What is meant by coefficient of restitution.
23. State perpendicular axis theorem.
24. Two vectors are given as $\vec{r} = 2\vec{i} + 3\vec{j} + 5\vec{k}$ and $\vec{F} = 3\vec{i} - 2\vec{j} + 4\vec{k}$. Find the resultant vector $\vec{\tau} = \vec{r} \times \vec{F}$.

PART – III

NOTE : Answer any six questions .
Question No: 33 is compulsory. **6x3=18**

25. How do you deduce that two vectors are perpendicular. Check whether the following vectors are(perpendicular) orthogonal $\vec{A} = 5\vec{i} + 2\vec{j}$ and $\vec{F} = 2\vec{i} - 5\vec{j}$.
26. Differentiate static and kinetic fiction.
27. Derive the relation between momentum and kinetic energy.
28. A cyclic while negotiating a circular path with speed 20 ms^{-1} is found to bend an angle by 30° with vertical. What is the radius of the circular path? (given g = 10 ms^{-1})
29. Obtain an expression for the excess pressure inside a i) Liquid drop and ii) soap bubble
30. Differentiate transverse waves and longitudinal waves .
31. State the laws of Simple Pendulum
32. Describe the total degrees of freedom for mono atomic molecule, diatomic molecule
33. If a clarinet sounds with the frequency 450 HZ. What are the frequencies of the second, third and fourth harmonics of this pitch.

PART – IV

Answer all the questions . **5x5=25**

34. a) describe the newton's formula for velocity of sound waves in air and also discuss the LaPlace's correction.

(or)

b) State and Prove parallel axis theorem.

35. a) i) State and explain work energy principle.
ii) Differentiate elastic and inelastic collision.

(or)

b) Derive Meyer's relation for ideal gas.

36. a) what is capillarity? obtain an expression for the surface Tension a capillary method.

(or)

b) Explain the variation of g with depth from the Earth's surface.

37. a) Explain the motion of blocks connected by a string in vertical motion.

(or)

b) Derive the expression for Range Time of flight and maximum height reached by the particle throw at an oblique angle θ with respect to the horizontal direction.

38. a) Explain in detail the various types of errors.

(or)

b) Discuss in detail the energy in Simple Harmonic Motion.