Model Question paper for online examination

F.Y.B.Sc. CS PHYSICS PAPER-I

Q1. Which one of the following terms is used to indicate the natural tendency of an object to remain at rest or in motion at a constant speed along a straight line?

1. Velocity
2. **Inertia
3. Equilibrium
4. Force
5.

Q2. A bullet moving at 250 m/s penetrates 5 cm into a tree limb before coming to rest. Assuming that the force exerted by the tree limb is uniform, what is the magnitude of the force? (Given: Mass of the bullet is 10 g.)

1. 6500 N
2. 3125 N
3. 3250 N
4. **6250 N

Q3. Extensive property of a system is one whose value

1. **Depends on the mass of the system like volume
2. Does not depend on the mass of the system like temperature
3. Is always constant
4. Is independent of the path followed

Q4. Work done in the free expansion process is

1. Negative
2. Maximum
3. Positive
4. **Zero

Q5. In an isothermal process, the internal energy of the ideal gas

1. **Remains constant
2. Decreases
3. Increases
4. May increase or decrease depending on the properties of gas

Q6. In the longitudinal waves the direction of vibration in medium of particle is

1. Perpendicular to propagation of wave
2. Different from each other
3. **Parallel to propagation of wave
4. Variable for time to time

Q7. Which of the following are mechanical waves?

1. Radio waves
2. X-rays
3. Light waves
4. **Sound waves

Q8. The maximum displacement of any particle of the medium from its equilibrium position is known as

1. Frequency of the wave
2. **Amplitude of the wave
3. Wavelength of the wave
4. Phase difference

Q9. The relation between frequency n, wavelength λ and velocity ν of a wave is

1. $n = \nu\lambda$
2. $\nu = n\lambda$
3. **$n = \frac{\lambda}{\nu}$
4. $n = \frac{1}{\nu}$

Q10. Which of the following equations represents a wave travelling along Y-axis?

1. **$x = A \sin(ky - \omega t)$
2. $y = A \sin(kx - \omega t)$
3. $y = A \sin ky \cos \omega t$
4. $y = A \cos ky \sin \omega t$.

Q11. In a periodic process, the number of cycles per unit of time is called

1. Amplitude
2. Wavelength
3. Period
4. **Frequency

Q12. A particle moves in a circular path with a uniform speed. Its motion is

1. **Periodic
2. Oscillatory
3. Simple harmonic
4. Angular simple harmonic

Q13. The length of a simple pendulum oscillating with a period T is quadrupled, what is the new period of oscillations in terms of T?

1. **2T
2. T
3. 4T
4. T/2

Q14. In SHM, when the mass reaches point x = 0 its instantaneous acceleration is

1. Maximum and positive
2. Maximum and negative
3. **Zero
4. Slightly less than maximum and positive

Q15. A body at rest breaks into two pieces of equal masses. The parts will move

1. In the same direction
2. Along different lines
3. **In opposite directions with equal speeds
4. In opposite directions with unequal speeds

Q16. The main principle used in Interference is

1. Heisenberg’s Uncertainty Principle
2. **Superposition Principle
3. Quantum Mechanics
4. Fermi Principle

Q17. What principle is responsible for alternating light and dark bands when light passes through two or more narrow slits?

1. Refraction
2. Diffraction
3. Polarization
4. **Interference

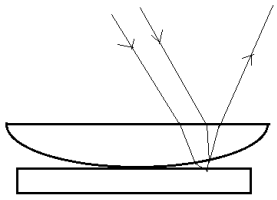
Q18. If instead of monochromatic light white light is used for interference of light, what would be the change in the observation?

1. The pattern will not be visible
2. The bright and dark fringes will change position
3. The shape of the pattern will change from hyperbolic to circular
4. **Coloured fringes will be observed with a white bright fringe at the centre

Q19. The centre of Newton’s rings in transmitted light is

1. **Bright
2. Dark
3. Dependent on wavelength
4. Dependent on radius of curvature of lens.

Q20. Which phenomenon is observed in the following figure?



1. Wedge-Shaped film
2. Destructive Interference
3. **Newton’s Rings
4. Refraction

Q21. He-Ne laser is a type of

1. Solid laser
2. Diode laser
3. **Gas laser
4. Liquid laser

Q22. What is need to achieve population inversion?

1. **To excite most of the atoms
2. To bring most of the atoms to the ground state
3. To achieve stable condition
4. To reduce the time of production of laser

Q23. What is the full form of LASER?

1. Light Absorbent and Stimulated Emission of Radiations
2. Light Absorbing Solar Energy Resource
3. **Light Amplification by Stimulated Emission of Radiations
4. Light Amplification of Singular Emission of Radiations

Q24. Which of the following is the unique property of laser?

1. Directional
2. **Coherence
3. Speed
4. Wavelength

Q25. Laser beam is made a of

1. Electrons
2. **Photons
3. Excited atoms
4. Elastic particles

Note: Option marked with asterisk (**) is correct option.