MULTIPLE CHOICE QUESTIONS (MCQs):

(1) **The particle theory of light was proposed by:**

* Maxwell
* Newton
* Huygen
* Fresnel

(2) **The wave theory of light was proposed by:**

* Maxwell
* Newton
* Huygen
* Hertz

(3) **The electromagnetic wave theory was proposed by:**

* Maxwell
* Newton
* Huygen
* Einstein

(4) **Einstein in 1905, suggested that light travels from one place to another in the form of:**

* Particles
* Waves
* Radiations
* Photons

(5) **The present idea about the nature of light is that it has:**

* Particle nature only
* Wave nature only
* Dual nature
* Spherical wave nature

(6) **Point source of light in a homogeneous medium give rise to:**

* Plane wave front
* Cylindrical wave front
* Spherical wave front
* Elliptical wave front

(7) **At a very large distance from the point source, we get:**

* Plane wave front
* Cylindrical wave front
* Spherical wave front
* Elliptical wave front

(8) **The angle made by the light ray with wave front is:**

* 0°
* 45°
* 90°
* 100°

(9) **The phase change of 180° is equivalent to a path difference of:**

* $\lambda/2$ * λ
* $3\lambda/2$ * 2λ

(10) **The energy contained in a Photon of frequency υ is:**

* $E = h\upsilon$ * $E = \frac{1}{2} h\upsilon$
* $E = 2h\upsilon$ * $E = \frac{1}{2} h\upsilon^2$

(11) **The locus of all points in the same phase of vibration is called:**

* Wave length * Wave front
* Wave form * Wave number

(12) **For constructive interference, the path difference is given by:**

* $(m - ½)\lambda$ * $(m + ½)\lambda$
* $m\lambda$ * $\frac{1}{2}m\lambda$

(13) **For destructive interference, the path difference is given by:**

* $(m - ½)\lambda$ * $(m + ½)\lambda$
* $m\lambda$ * $\frac{1}{2}m\lambda$

(14) **Diffraction of light is a special type of:**

* Reflection * Refraction
* Interference * Polarization

(15) **In Michelson interferometer, Semi silvered Plate is used to obtain:**

* Dispersion * Phase coherence
* Monochromatic light * Un polarzed ligh

(16) **Which of the following is not an electromagnetic wave?**

* X- rays * Radio wave
* Ultra-violet rays * γ -rays

(17) The condition for interference in Thin film is reversed because of:

* Small thickness of film
* Refraction
* Phase reversal
* None of these

(18) Which of the following exhibits the transverse nature of light waves?

* Interference
* Polarization
* Diffraction
* Refraction

(19) Which of the following equations represent the Bragg's Law:

* $m\lambda = d \sin\theta$
* $m\lambda = d \sin\theta/2$
* $2m\lambda = d \sin\theta$
* $2d \sin\theta = m\lambda$

(20) The characteristics property of light which does not change with the medium is:

* Frequency
* Wave length
* Velocity
* Amplitude

(21) Light possesses:

* Transverse nature
* Electromagnetic character
* Dual nature
* All of these

(22) The number of lines ruled per centimeter on a diffraction grating is 4000 Its grating element is:

* 2.5×10^{-4} m
* 2.5×10^{-6} m
* 4×10^{3} m
* 4×10^{-3} m

(23) In thin film, destructive interference is:

* An odd multiple of half wave length
* Half wave length
* Only an even multiple of wave length
* An integral multiple of wave length

(24) Electromagnetic wave consists of oscillatory electric field and magnetic field both are:

* Parallel to each other
* Parallel to direction of propagation
* Perpendicular to each other
* None of these

(25) A monochromatic beam of light is entering from one medium into another. The property which remain unchanged is:

* Amplitude
* Velocity
* Frequency
* Wave length

(26) The bending of light around an obstacle is called:

* Polarization
* Interferences
* Diffraction
* Refraction

(27) The dispersion of white light after passing through the prism is due to:

* Different intensities
* Different amplitude
* Different temperature
* Different wave length

(28) The appearance of colour in soap bubbles is due to:

* Polarization
* Diffraction
* Reflection
* Interference

(29) Which of the following phenomenon can not be explain by wave theory:

* Interference
* Diffraction
* Photo electric effect
* Dispersion

(30) The wavelength of visible light range from:

* 40nm to 70nm
* 400nm to 700nm
* 4000nm to 7000nm
* 4000 °A to 7000 °A

(31) The wavelength of x – rays can be determined by the equation:

* $m\lambda = d \sin \theta$
* $m\lambda = 2d \sin \theta$
* $m\lambda = \frac{1}{2} \sin \theta$
* $m\lambda = d \sin 2\theta$

(32) The condition for the constructive and destructive interference are reversed in case of thin film due to:

* Phase reversal of one part of a wave
* Phase reversal of both parts of wave
* Phase reversal of none
* Change in frequency of waves

(33) Yellow light from a sodium lamp is used to form Newton's rings. The central spot in Newton's ring will be:

* Yellow
* Bright
* Dark
* None of these

(34) In a young's double slit experiment the fringe spacing is:

* $\frac{d\lambda}{L}$
* $\frac{\lambda L}{d}$
* $\frac{d}{\lambda L}$
* λLd

(35) A very useful device for analyzing spectrum of a light source is a /an:

* Diffraction grating
* Interferometer
* Newton's rings
* Spectrometer

(36) In the complete electromagnetic spectrum which of the following has the least frequency:

* x – rays
* Infrared light
* Ultraviolet light
* γ – rays

(37) The phenomenon of interference of light was first demonstrated by:

* Newton's
* Thomas young
* Einstein
* Michelson

(38) Two monochromatic waves of the same wavelength are travelling through a medium. They can interfere destructively, provided their path difference is:

* λ
* $\frac{3\lambda}{2}$
* 2λ
* 5λ

(39) To replace a bright fringe by the next bright fringe in a Michelson interferometer, the movable mirror is moved through a distance equal to:

* λ
* $\lambda/2$
* $\lambda/4$
* 2λ

(40) When light falls on a thin film, the colours appear due to:

* Polarization
* Interference
* Diffraction
* None of these

(41) Diffraction of x – rays can be studied by:

* Diffraction grating
* Rock salt
* Young's Double Salt Experiment
* Thin films

(42) The phenomenon of interference, diffraction and polarization can be explained on the basis of:

* Wave theory of light
* Quantum theory light
* Wave and quantum theory
* None of these

(43) One angstrom is equal to:

* 10^{-10}m
* 10^{-8}m
* 10^{-6}m
* 10^{-3}m

(44) If 2000 lines/cm are ruled on a grating its grating element is:

* 5×10^{-4}m
* 5×10^{-5}m
* 5×10^{-6}m
* 5×10^{-7}m

(45) The reciprocal of the number of lines per unit length of a diffraction grating is called:

* Slit spacing
* Fringe spacing
* Grating element
* Grating unit

(46) When light enters from one medium to another medium:

* Frequency is changed
* Speed is changed
* Both are changed
* None of these

(47) In grating spectrum the largest deviation angle will be for the colour:

* Red
* Yellow
* Blue
* Violet

(48) Michelson's interferometer may be used to find the:

* Wave length of light
* Wave length of sound
* Velocity of light
* Velocity of sound

(49) When the movable mirror of Michelson's interferometer moves a distance equal to the wave length of the monochromatic light, the interference pattern shifts.

* One fringe
* Two fringes
* Three fringes
* Four fringes

(50) In Bragg's equation, the angle θ denotes:

* Glancing angle
* Angle of diffraction
* Angle of deviation
* Critical angle

(51) Monochromatic yellow light is unable to show:

* Reflection
* Refraction
* Dispersion
* Interference

ANSWER KEY

1. Newton	**2.** Huygen
3. Maxwell	**4.** Photons
5. Dual nature	**6.** Spherical wave front
7. Plane wave front	**8.** 90°
9. λ	**10.** $E = h\nu$
11. Wave front	**12.** $m\lambda$
13. $(m + \frac{1}{2})\lambda$	**14.** Interference
15. Phase Coherence	**16.** Radio wave
17. Phase reversal	**18.** Polarization
19. $2d \sin\theta = m\lambda$	**20.** Frequency
21. All of these	**22.** 2.5×10^{-6}m
23. An integral multiple of wave length	**24.** Perpendicular to each other
25. Frequency	**26.** Diffraction
27. Different wave length	**28.** Interference
29. Photo electric effect	**30.** 4000 °A to 7000 °A
31. $m\lambda = 2d \sin\theta$	**32.** Phase reversal of one part of a wave
33. Dark	**34.** $\frac{\lambda L}{d}$
35. Spectrometer	**36.** Infrared light
37. Thomas young	**38.** $\frac{3\lambda}{2}$
39. $\lambda/2$	**40.** Interference
41. Rock salt	**42.** Wave theory of light
43. 10^{-10}m	**44.** 5×10^{-6}m
45. Grating element	**46.** Speed is changed
47. Red	**48.** Wave length of light
49. Two fringes	**50.** Glancing angle
51. Dispersion	