

MULTIPLE CHOICE QUESTIONS (MCQs):

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

- * Maxwell
- * Huygen
- * Newton
- * Fresnel

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

- * Maxwell
- * Huygen
- * Newton
- * Hertz

(3) The electromagnetic wave theory was proposed by:

- * Maxwell
- * Huygen
- * Newton
- * Einstein

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

- * Particles
- * Radiations
- * Waves
- * Photons

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

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

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

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

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

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

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

- * 0°
- * 90°
- * 45°
- * 100°

www.educationinkarachi.org
Printer Printing & Photo: AT
Shop # 6, BS4/1, Asif Centre,
F.B. Area, Block-1, Near Usman
Memorial Hospital, Karachi
0315-8290802 / 0321-2622769

www.educationinkarachi.org
Printer Printing & Photo: AT
Shop # 6, BS4/1, Asif Centre,
F.B. Area, Block-1, Near Usman
Memorial Hospital, Karachi
0315-8290802 / 0321-2622769

(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 ν is:

* $E = h\nu$

* $E = \frac{1}{2} h\nu$

* $E = 2h\nu$

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

(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:

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

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

* $m\lambda$

* $\frac{1}{2} m\lambda$

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

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

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

* $m\lambda$

* $\frac{1}{2} m\lambda$

(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 polarized light

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

* X-rays

* Radio wave

* Ultra-violet rays

* γ -rays

WWW.EDUCATIONINKARACHI.ORG
PRINTER PRINTING & PHOTO STAT
Shop # 6, BS411, Asif Centre,
F.B. Area, Block-1, Near Usman
Memorial Hospital, Karachi
0315-8290802 / 0321-2622759

(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:

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

(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:

- * $2.5 \times 10^{-4} \text{ m}$
- * $2.5 \times 10^{-6} \text{ m}$
- * $4 \times 10^3 \text{ m}$
- * $4 \times 10^{-3} \text{ m}$

(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 Slit 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

PRINER PRINTING & PHOTOGRAPHY
Shop # 6, BS4/1, Asif Centre, F.B. Area, Block-1, Near Usman Memorial Hospital, Karachi
0315-8290802 / 0321-2622769

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. $E = hv$
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. $2.5 \times 10^{-6}m$
23. An integral multiple of wave-length	24. Perpendicular to each other
25. Frequency	26. Diffraction
27. Different wave length	28. Interference
29. Photoelectric effect	30. $4000^\circ A$ to $7000^\circ A$
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. $5 \times 10^{-6}m$
45. Grating element	46. Speed is changed
47. Red	48. Wavelength of light
49. Two fringes	50. Glancing angle
51. Dispersion	