Indicate True or False as the case may be

1. Waves coming out from a source of light will propagate inwards in all directions.
2. A small portion on a wave front is called a plane wave-front.
3. Two non coherent beams of light will give interference pattern.
4. In interference by thin films, the path difference does not depend upon thickness and nature of the film.
5. In forming the Newton's rings, a Plano-convex lens of long focal length is placed in contact on a plane glass plate.
6. A diffraction grating is a glass plate having a large number of equidistant slits.
7. If θ is zero in equation $d \sin\theta = m\lambda$. The path difference between two rays will be zero.
8. For the dark fringe, $d \sin\theta = 2\lambda$.
9. According to Huygens, light consist of photons.
10. X-Rays are a type of electromagnetic radiations of much shorter wavelengths.

Encircle the most suitable answer from the given ones in each question

11. According to Huygens principle, light travels in the form of:-

    a. None of the above b. Wave fronts c. Photons d. Corpuscles

12. The wavelength of light can be guessed by:-

    a. Refraction b. Interference c. Diffraction d. Reflection

13. According to Young's double slit experiment, a clear interference is obtained due to:-

    a. White screen b. Small separation between slits

    c. Short wavelength of light d. Long wavelength of light

14. Interference produced by the reflected light is constructive if the thickness of the their film is:-

    a. $(m+ 1)\ \lambda_n$ b. $(m+ 1/2)\ \lambda_n$ c. Approximately zero d. Very small

15. Diffraction of x-rays by crystals shows that:-

    a. The intensity of x-rays is high b. X-rays have very short focal length

    c. X-rays are just like visible light d. X-rays are electromagnetic waves

16. Polarization of light proves that light waves are:-

    a. Very fast moving waves b. Electromagnetic waves

    c. Longitudinal waves d. Transverse waves

17. Two independent light sources do not show interference because they are not:-

    a. Coherent b. Mechanical waves

    c. Obeying the inverse square law d. Having the same intensity

18. The direction of propagation of light ray is:-

    a. Parallel to the plane wave front b. Parallel to the wave front

    c. Perpendicular to the wave front d. Independent of the plane of the wave front

19. Fringe spacing in the interference pattern produced by Young's double slit experiment depends upon:-

    a. Size of the screen b. Intensity of light c. Size of the slits

    d. Distance between the slits and the screen

20. Interference of light takes place due to the:-

    a. All of the above b. Product of amplitudes of waves

c. Angular superposition of waves d. Linear superposition of waves

21. Light is type of ___ which produces sensation of vision.
a. Object b. Energy c. Force

22. Waves emitted from the source with speed C, after time t travels a distance _____
a. Ct b. bt c. It

23. A surface on which all the points have the same phase of vibration is called ____..
a. Wave Length b. Wave Front c. Wave Amplitude

24. Every point on wave front is considered as a _____ of secondary wavelets.
a. Outlet b. Measure c. Source

25. The Interfering beams of light must be coherent and _____
a. Monochromatic b. Non-monochromatic c. Dichromatic d. Non-chromatic

26. The bright fringes are termed as _____
a. Minimal b. Maxima c. Minima d. Minimum

27. Distance between two consecutive wave fronts is called _____
a. Wave amplitude b. Wave length c. Frequency d. Wave front

28. Polarization of light proves that light consists of _____ waves.
a. Horizontal b. Transverse c. Vertical

29. In NaCl crystal inter atomic planes are separated by a distance compared to the wavelength of
a. Y-Rays b. X-Rays c. Gamma Rays

30. Light waves emitted from a source will propagate with
a. Less than Speed of light b. Speed of sound c. Speed of light

31. In constructive interference, the amplitude of the resultant wave will
a. Greater than that of individual waves b. Smaller than that of individual waves

32. For the interference of light waves the beams of light must be
a. Monochromatic and coherent b. Coherent c. Monochromatic

33. $m\lambda$
a. $\lambda L + d$ b. $\lambda L / d$ c. $\lambda L \times d$

34. Path difference for constructive interference in diffraction grating is
a. $m\lambda$ b. $1/2m\lambda$ c. $1/4m\lambda$

35. Plano convex lens of long focal length is used to form
a. Newton's Laws a. Octet Law a. Newton's Rings

36. Wave length of x-rays
a. 10^{-2} m b. 10^{2} m c. 10^{-10} m

37. An ordinary incandescent light emits
a. Un-polarized light b. polarized light

38. The direction of polarization in a plane polarized light wave is taken as the direction of
a. The magnetic field vector b. The electric field vector

39. Optically active crystals can be used to determine their
a. Magnetic field vector b. Concentration of the solutions c. Electric field vector

40. The corpuscular nature of light was given by
a. Huygens b. Maxwell c. Newton. d. Thomas Young

41. Huygens's principal is used to,
a. Determine the speed of light b. Locate the wave front
c. Explain polarization d. Find index of refraction

42. A light ray is inclined to the wave front at an angle
a. 0 b. $\frac{\Pi}{2}$ c. 2Π d. Π

43. The electromagnetic wave theory was proposed by
a. Hertz b. Maxwell c. Huygens d. Young

44. The speed of light in vacuum depends upon
a. frequency b. wavelength c. velocity d. none of these

45. The wave length of light is 6000^{o}A, the *number* of waves continued in 0.01 m distance will be
a. 1.6×10^{4} b. 3×10^{3} c. 2×10^{6} d. 4×10^{8}

46. Condition *for* constructive interference is that the path difference of rays *from* the two sources should be
a. Even multiple of $\frac{\Pi}{2}$ b. Odd multiple of $\frac{\Pi}{2}$ c. An integral Multiple of $\frac{\Pi}{2}$ d. some other value

47. Which one of the following is approximately monochromatic light,
a. Light *from* Neon Lamp b. Light from Fluorescent lamp
c. Light *from* Sodium lamp d. Light *from* Magnesium lamp

48. Interference, between light *from* two independent sources is not possible because
a. They don't give light of same wavelengths b. They don't give light of same amplitudes
c. Phase difference between them is not constant d. due to some other reason

49. A unit suitable *for* the measurement of Plank's constant
a. Joule-see b. Watt c. Newton d. Kg

50. A thin film of variable thickness is illuminated by a parallel beam of white light. The colour of the film at a certain point depends upon
a. the thickness of the film at that point b. the refractive index of the film
c. The angle of incidence d. All Of the above.

51. In Young's double slit experiment, the slits are separated by 0.2 mm and the screen is placed 1.4 m away. The distance between the fourth bright fringe and the central bright fringe is measured to be 1.2 cm. What is the wavelength of light used in the experiment?
a. 200 nm b. 400 nm c. 600 nm d. 800 nm

52. If N is the number of lines in a unit length then the grating element d is given by , The frequency of visible light is of the order of
a. 10^{3}Hz b. 10^{-3}Hz c. 10^{15}Hz

53. Which of the following has the longest wavelength?
a. Blue light b. Gamma ray c. X-ray

54. Two sources of light are coherent if they emit
a. same wavelength, b. same amplitude of vibration
c. same wavelength with constant phase difference d. same wavelength and amplitude

55. Sound waves can easily bend around corners while light waves bend only slightly due to their extremely
a. low frequency b. High Frequency c. Short Wavelength d. High velocity

56. Water waves
a. Can be polarized b. Can not be polarized because they are longitudinal .
c. Are polarized. d. Can be polarized because they are longitudinal .

57. When x-rays are diffracted by crystals the condition *for* Constructive interference of diffracted rays is given by , To observe diffraction, the size of the obstacle
a. Should be of the same order as the wavelength b. Should be much larger than the wavelength

c. Has no relation to wavelength d. Should be exactly half the wavelength

58. In Young's double slit experiment. If the distance between the slits is made 3 fold the fringe
a. 1/3 fold b. 3 fold c. 1/9 fold d. 9 fold

59. An astronaut in earth satellite will observe the sky as
a. White b. Black c. Deep blue d. light blue

60. Interference and diffraction of light support the
a. wave nature of light b. quantum nature of light
c. transverse nature of light d. complex nature of light.

61. Which one of the following cannot be polarized?
a. ultraviolet b. sound waves c. radio waves d. x-rays

62. Wave Length of x-rays falling at glance angle 30° on crystal with atomic spacing $2x10^{-9}$ m for The first order diffraction is ,
a. $4 x10^{-6}$ m b. $2 X 10^{-10}$m c. $0.2 X10^{-10}$m d. $20 X .10^{-10}$m

63. Which of the following cannot be polarized?
a. Radio wave b. X-rays c. Infrared radiation d. Sound waves in air

64. The wave-length of x-rays is of the order of
a. 10 A^O b. 1000 A^O c.1 A^O d. 100 A^O

65. When viewed in white light, soap bubbles show colors because of
a. Interference b. Scattering c. Diffraction d. Dispersion

66. According to Young's double slit experiment, a clear interference is obtained due to. .
a. short wavelength of light. b. long wavelength of light c. small separation between slits d. white screen

67. Diffraction effect is,
a. More for round edge b. Less for round edge c. Mo re for sharp edge d. less for sharp edge

68. The fringe width in young's double slit experiment can be increased by decreasing
a. Separation of the slits b. Frequency of the source of light
c. Distance between slit and the screen d. Wavelength of the source of light

69. The phenomenon of polarizations done by
a. Selection absorption b. Refraction through crystals
c. Scattering through particles d. All of above

70. Polarizer are made by special substances called
a. dichoric substances b. Super conductor c. Organic substances d. None of above

71. Sunlight reaches earth nearly in the form of:
a. plane wave fronts b. Circular wave fronts
c. Spherical wave fronts d. All of the above

72. In Bragg's relation, the angle θ is called
a. Glancing angle b. reflection angle
c. refraction angle d. none of these