Assignment 1 Chapter 10 Subject: Physics Class: First year Total Marks: 60

Name _____

Question No. 1. Encircle the correct option

1. The least distance of distinct vision for a normal eye is
   a. 25 cm b. 26 cm c. 27 cm d. 28 cm
2. When object is held at focus point the image is formed
   a. at focus point b. away from focus point c. between focus point and centre of curvature d. at infinity
3. The magnifying power of compound microscope is
   a. $q/p\ (1+d/f_0)$ b. $q/p\ (1+d/f_e)$ c. $q/p\ (1+ f_e/f_0)$ d. $q/p\ (1+ f_0/d)$
4. In an astronomical telescope the focal length of objective lens is ------ than eyepiece
   a. less b. equal to c. greater d. none of these
5. The main part of spectrometer is
   a. collimator b. telescope c. turntable d. all of these
6. The principle of communication of data through fiber optics is based upon
   a. diffraction b. polarization c. continuous refraction d. continuous refraction and TIR
7. The size of fiber optics is
   a. very large b. large c. small d. very small
8. The main sources of loss of data in fiber optics are
   a. scattering b. absorption c. dispersion d. all of these
9. The ability of an optical instrument to reveal minor details is called
   a. magnifying power b. refraction c. resolving power d. magnification
10. Alexander Graham Bell also invented
    a. transmitter b. radio c. wireless d. photo-phone
11. The diameter of core of multimode graded index fiber is
    a. 50 to 100 µm b. 50 to 200 µm c. 50 to 500 µm d. 50 to 1000 µm
12. Single mode step index fiber carry the information with the help of
    a. laser light b. white light c. blue light d. x-rays
13. When slit is at the focus of the convex lens of collimator in spectrometer, the light rays becomes
    a. perpendicular b. parallel c. antiparallel d. at 60^o
14. The length of an astronomical telescope is given by the formula
    a. f_o / f_e b. f_e / f_o c. $f_o - f_e$ d. $f_o + f_e$
15. Photodiode is used convert light signal to
    a. electrical signal b. sound signal c. both a&b d. cannot be used as convertor
16. The wavelength of light is of the order of
    a. 1 A^o b. 10 A^o c. 100 A^o d. 1000 A^o
17. A convex lens acts as diverging lens when the object is placed
    a. at 2f b. between f and 2f c. at f d. inside focus
18. Image formed by a convex lens of focal length 10 cm is twice the size of object. The position of object will be
    a. 20 cm b. 50 cm c. 30 cm d. 15 cm
19. When telescope is in normal adjustment its length is given by the formula
    a. $f_o + f_e$ b. $f_o - f_e$ c. f_o / f_e d. f_e / f_o
20. If a convex lens of focal length f is cut into two identical halves along the lens diameter, focal length of each half is
    a. 2f b. f c. both a&b d. none of these
21. In Michelson's experiment, the equation used to find the speed of light is
    a. c=16fd b. c=16f/d c. c= 16 d/f d. c= 1/16fd
22. The value of critical angle for glass-air boundary is
    a. 41.8^o b. 41.5^o c. 42^o d. 42.8^o
23. The magnifying power of simple microscope is
    a. $q/p\ (1+d/f_0)$ b. $(1+d/f)$ c. $q/p\ (1+ f_e/f_0)$ d. $q/p\ (1+ f_0/d)$
24. In a compound microscope, the focal length of eyepiece is ------ than objective
    a. less b. equal to c. greater d. none of these
25. The part of the spectrometer which makes the light rays parallel is called
    a. collimator b. telescope c. turntable d. all of these
26. A convex lens gives virtual image only when object is placed
    a. at focus b. between focus and centre of curvature c. inside focus d. away from centre of curvature
27. An object is placed at a distance of 2 m from a convex lens of focal length 2.5 m. its image will be
    a. real and erect b. virtual and magnified c. real and magnified d. real and inverted
28. Cladding in the fiber optics is used
    a. to absorb light b. for T.I.R c. for dispersion d. to transmit light
29. Least distance of distinct vision
    a. increases with increase of age b. deceases with increase of age
    c. measures refractive index of material d. all of these
30. In optical fiber communication system, the wavelength of light used is
    a. 1.3 µm b. 1.5 µm c. 5 µm d. 50 µm
31. The final image formed by simple microscope is
    a. virtual & inverted b. virtual & erect c. real & erect d. real & inverted
32. The magnifying power of a convex lens of focal length 10 cm is
    a. 7 b. 9.6 c. 11 d. 3.5

33. The diameter of core of single mode strep index fiber is
a. 5 μ m b. 10 μ m c. 30 μ m d. 100 μ m

34. For normal adjustment the length of an astronomical telescope is given by the formula
a. f_o / f_e b. f_e / f_o c. $f_o - f_e$ d. $f_o + f_e$

35. Microphone is used convert sound signal into
a. electrical signal b. light c. both a&b d. cannot be used as convertor

36. A single convex lens is placed close to eye, then it is being used as
a. telescope b. microscope c. magnifying glass d. none of these

37. Fiber optic cable carries data in the form of
a. electrical signal b. sound signal c. light d. heat

38. A point inside the lens through which a light ray does not deviate is called
a. pole b. focus point c. centre of curvature d. optical centre

39. When light passes from denser medium to rare medium
a. it bens away from normal b. it bends towards normal c. it does not bend d. diffracted

40. The optical fibers are of
a. two types b. three types c. four types d. five types

41. Which is the optical instrument
a. telescope b. microscope c. spectrometer d. all of these

42. The layer over the central core of fiber optics is called
a. jacket b. cladding c. plastic d. rubber

43. The angle subtended by an object at the eye is called
a. Visual angle b. Critical angle c. Polarizing angle d. None

44. In normal adjustment, distance between objective and eyepiece of Astronomical Telescope is equal to
a. Focal length of objective b. Length of telescope
c. Magnifying power of telescope d. Aperture of objective

45. The speed of light in other materials as compared to vacuum
a. Greater b. Lesser c. Equal d. Zero

46. The ratio of speed of light in vacuum to the speed of light in certain material is called
a. Wavelength b. Refractive Index c. Snell's law d. T.I.R.

47. Which source of light is used by multimode graded index fiber?
a. Monochromatic b. Laser c. White light d. Ultraviolet light

48. Which of the following is true for cladding?
a. It absorbs unwanted light b. It transmit the light c. It produces T.I.R. d. It scatters light

49. The minimum angle subtended by two point sources (α_{min}) at the instrument will be greater if
a. diameter of lens is greater b. diameter of lens is smaller c. wavelength of light is small d. All

50. The speed of light was measured correctly by .
(a) Galileo (b) Michelson (c) Newton (d) Maxwell

51. The device used to study the spectra from different sources of light is
(a) telescope (b) optical fibre (c) spectrometer (d) microscope

52. Which of the following lights can be used in single mode step index fibre for transmission of data
a. white light b. ultraviolet light c. x-rays d. laser light

53. A fibre optics communication system consists of
a. a transmitter b. an optical fibre c. a receiver d. all of these

54. Which is the principle of communication for single mode step index fibre?
a. T.I.R b. continuous refraction c. reflection d. transmission

55. Which of the following is necessary to increase the resolving power of a microscope?
a. a wider objective b. light of shorter wavelength c. both a&b d. x-rays

56. If N is no. of ruled lines in the grating and m is the order of diffraction, then resolving power can be given by
a. R= N x m b. R= N / m c. R= m / N d. R= N + m

57. If focal length is 5 cm the power of lens is
a. 5 b. 10 c. 15 d. 20

58. An astronomical telescope is made with the objective of focal length 100 cm and eye piece of focal length is 5 cm the length of telescope when focused or infinity is
a. 20 cm b. 95 cm c. 100 cm d. 105 cm

59. The refractive index of water is 1.33, the speed of light in water is
a. $3x10^8$ m/s b. $1.5x10^8$ m/s c. $2.8x10^8$ m/s d. zero

60. In the newer system of fibre optics, signals are regenerated by placing repeaters, which may be repeated as much as
a. 30 km b. 50 km c. 100 km d. 500 km

Assignment 2 Chapter 10 Subject: Physics Class: First year Total Marks: 12

Note: Write short answers

Q.1 Name three essential parts of spectrometer.
Q.2 Define refractive index.
Q.3 What is Snell's law?
Q.4 Why objective of short focal length is preferred in microscope?
Q.5 Differentiate between cladding and jacket.
Q.6 Find the magnifying power of convex lens of 10 cm focal length?