Physics

1.The slit width, when a light of wavelength 6500Åis incident on a slit, if first minima for red light is at 300
a) 1×10−6m b) 5.2×10−6m c) 1.3×10−6m d) 2.6×10−6m
2.Newton's rings are observed by keeping a spherical surface of 100cm radius on a plane glass plate. The wave length of light used is 5880Å.If the diameter of the 15th bright ring is 0.59cm, the diameter of the 5th ring is
a) 0.226cm b) 0.446cm c) 0.336cm d) 0.556cm
3.The resulting intensity after interference of two coherent waves represented by y1a1cost and y2a2cos2t will be
a) a1−a2 b) a1+a2 c) a12−a22 d) a12+a22
4.In a young's experiment, one of the slit is covered with a transparent sheet of thickness 3.6×10−3cm due to which position of central fringe shifts to a position originally occupied by 30th bright fringe. The refractive index of the sheet, if λ=6000Å is
a) 1.5 b) 1.2 c) 1.3 d) 1.7
5.In young's double slit experiment with monochromatic light of wave length 600nm, the distance between slits is 10−3m. For changing fringe width by 3×10−5m
a) the screen is moved away from the slits by 5cm b) the screen is moved by 5cm towards the slits c) the screen is moved by 3cm towards the slits d) both (a) and (b) are correct
6.When two coherent monochromatic light beams of intensities I and 4I are superimposed, what are the maximum and minimum possible intensities in the resulting beams?
a) 5I and I b) 5I and 3I c) 9I and I d) 9I and 3I
7.In young's double slit experiment when violet light of wave length 4358Å is used, then 84 fringes are seen in the field of view, but when sodium light of certain wave length is used, then 62 fringes are seen in the field of view, the wave length of sodium light is
a) 6893Å b) 5904Å c) 5523Å d) 6429Å
8.In an interference pattern the position of zeroth order maxima is 4.8mm from a certain point P on the screen. The fringe width is 0.2mm. The position of second maxima from point P is
a) 5.1 mm b) 5 mm c) 40 mm d) 5.2 mm
9.If young's double slit experiment is performed in water,
a) the fringe width will decreases b) the fringe width will increase c) the fringe width will remain unchanged d) there will be no fringe
10.The first diffraction minimum due to single slit diffraction is θ, for a light of wave length 5000Å. If the width of the slit is 1×10−4cm, then the value of θ is
a) 300 b) 450 c) 600 d) 150
11.2 non-coherent sources emit light beam of intensities I and 4I. The maximum and minimum intensities in the resulting beam are
a) 9I and 3I b) 9I and 5I c) 5I and I d) 5I and 3I
12.Light propagates 2cm distance in glass of refractive index 1.5 in time t0. In the same time t0, light propagates a distance of 2.25 cm in a medium. The refractive index of the medium is
a) 4/3 b) 3/2 c) 8/3 d) none of these
13.Two wave fronts are emitted from coherent sources of path difference between them is 2.1 micron. Face difference between the wave fronts at that point is 7.692 π. Wave length of light emitted by source will be
a) 5386Å b) 5400Å c) 5460Å d) 5892Å
14.A spherical air bubble in water will act as
a) convex lens b) concave lens c) glass plate d) plano convex lens
15.A concave lens can be used as a simple magnifier if the object lies

a) beyond f b) within the focal length c) between f and 2f d) at 2f

16.For an equilateral prism the angle of minimum deviation is 300. Then the refractive index of the material of the prism is

a) 1/2 b) 2 c) 2 d) 22

17.Luminous flux is expressed in

a) Lumen b) Candela c) Weber d) Lue

18.Light travels through a glass plate of thickness d. If n is the refractive index of glass and c is the velocity of light in vacuum, the time taken by light to travel through the glass plate is

a) n/cd b) nc/d c) nd/c d) ndc

19.What is the magnification when an object is placed at 2f of a convex mirror

a) 1/3 b) 2/3 c) 1 d) 3/2

20.A tank is filled with water upto a height of 12.5 cm. The apparent depth of a needle at the bottom of the tank is (n of water =1.33)

a) 12.5 cm b) 9.4 cm c) 16.6 cm d) 11.17 cm

21.A man under water in a lake is viewing a boy standing on the bank of the lake. Then for him the boy appears to be

a) shorter b) taller c) of the same size d) 16 cm

22.A convex mirror placed at a distance of 20 cm from a candle forms a virtual image at the same position as that formed by a plane mirror at a distance of 12 cm from the candle. What is the focal length of the convex mirror?

a) 20 cm b) 15 cm c) 10 cm d) 5 cm

23.When light travels from 1 medium to another that remains unaltered is

a) speed b) wave length c) frequency d) intensity

24.The length of a telescope is 100 cm and magnification is 19. The focal length of the objective and eye piece are

a) 90 cm and 10 cm b) 85 cm and 1 cm c) 95 cm and 25 cm d) None of the above

25.In a compound microscope the object produces a magnification 10 and eyepiece produces a magnification 5. The overall magnification produced by the compound microscope is

a) 2 b) 5 c) 2 d) 50

26.The colour of the sky is due to

a) scattering of light b) refraction of light c) interference of light d) reflection of light

27.An object is placed at a distance f/2 from a convex lens of focal length f. The image will be at

a) 3f/2, real and inverted b) one of the foci, virtual, double the size of the object c) f/2, real and inverted d) f, virtual and erect

28.Two thin convex lenses of focal length 10 cm and 15 cm are combined together, the focal length of the combination is

a) 25cm b) 12.5cm c) 15cm d) 6cm

29.The focal length of a convex lens is minimum for

a) red b) violet c) blue d) green

30.A biconvex lens of focal length 20 cm is cut out into two plano-convex lenses. The focal length of each part is

a) 10 cm b) 20 cm c) 30 cm d) 40 cm

31.The minimum distance between the object and its real image formed by a convex lens of focal length f is

a) 1.5 f b) f c) 4 f d) 3 f

32.The refractive index of prism depends on

a) angle of the prism b) deviation produced by the prism c) intensity of light d) wave length of light

33.It is possible to observe total internal reflection when light travels from

a) air to water b) air to glass c) water to glass d) glass to water

34.A concave lens has focal length f. A real object placed at a distance f in front of the lens from the pole produces an image

a) at infinity b) at f c) at f/2 d) at 2/f

35.The image formed by a plane mirror is

a) real and same size as the object b) virtual, same size as the object c) real and magnified d) none of these

36.The limit of resolution of the eye is one minute at a distance x from the eye. Two persons stand with a lateral separation of 3cms. To see the two persons just resolved by the naked eye, x should be about

a) 20km b) 15km c) 10km d) 30km

37.In the displacement method of measuring the focal length of a convex lens, the length of the images in the two positions of the lens between the object and the screen is 9cm and 4cm respectively. The length of the object is

a) 6.25 cm b) 1.5 cm c) 6 cm d) 36 cm

38.The refracting angle of a prism is A and the refractive index of the material of the prism cot A/2, the angle of minimum deviation is

a) 180-A b) 180-3A c) 90-A d) 180-2A

39.A ray of light travels from vacuum into a medium of refractive index n. The angle of incidence is found to be twice the angle of refraction. The angle of incidence is

a) cos−1n/2 b) 2cos−1n/2 c) 2sin−1n d) 2sin−1n/2

40.An object placed at distance 'a' from the focus of a convex lens forms its real image at a distance 'b' from the focus. The focal length of the mirror is

a) ab b) ab c) a+b2 d) ab

41.The distance between a point source of light and a screen is doubled. The intensity of light on the screen will be

a) Four times the original value b) half of the original value c) two times the original value d) one quarter the original value.

42.From the following which one is used for studying ultra violet light?

a) prism of crown glass b) prism of flint glass c) prism of quartz d) prism with combination of flint and crown glass

43.Electromagnetic waves are

a) longitudinal waves b) transverse waves c) neither longitudinal nor transverse d) stationary waves

44.If there are no atmosphere the average temperature on the surface of the earth would be

a) lower b) higher c) same as now d) 00C

45.displacement current was first produced by

a) Ampere b) Henry c) Maxwell d) base

46.Pick out the odd one which has extremely short wave length much shorter than that of visible light and can be emitted from the nucleus of an atom.

a) UV radiation b) beta radiation c) γ radiation d) infra red radiation

47.The TV transmission tower in Delhi has a height of 240m. The distance upto when the broadcast can be received [taking radius of earth to be 6.4×106m]

a) 100 km b) 60 km c) 55 km d) 50 km

48.All the members of electro magnetic spectrum have same

a) frequency b) velocity c) wave length d) wave number

49.Infra red spectrum lies between

a) radio and micro wave region b) visible and UV region c) micro wave and visible region d) UV and X-ray region

50.Choose the waves relevant to telecommunications.

a) ultra violet b) visible c) infra red d) micro waves