



Chapter-03

Light

Diffraction, Dispersion, Scattering

1. Sun appears red in colour during sunrise and sunset due to

- (A) The fact that sun emits only red colour at that time
- (B) Red light having longer wavelength scatters away
- (C) The sun comes out of the mountains
- (D) The fact that all other colours scatter away except red

2. The colour of the ocean appears to be blue because the sunlight falling on it is

- (A) Reflected
- (B) Refracted
- (C) Diffracted
- (D) Scattered

3. In the absence of the earth's atmosphere sky would appear

- (A) Blue
- (B) Deep Red
- (C) White
- (D) Black

4. Which is the phenomenon which established the transverse nature of light?

- (A) Reflection
- (B) Refraction
- (C) Diffraction
- (D) Polarization

5. Rainbows are formed when sunlight

- (A) Incident on rain drops hanging in the atmosphere is dispersed after suffering refraction
- (B) Incident on rain drops hanging in the atmosphere is dispersed after suffering refraction and internal reflection.
- (C) Incident on raindrops hanging in the atmosphere is dispensed after suffering reflection
- (D) None of the given statement is correct

6. Which of the following colour of light deviates least through the prism?

- (A) Yellow
- (B) Green
- (C) Violet
- (D) Red

7. Rainbow is formed due to

- (A) Refraction and Dispersion
- (B) Scattering and Refraction
- (C) Diffraction and Refraction

(D) Reflection and Refraction

8. Which of these waves can be polarized

- (A) Sound waves in air
- (B) Longitudinal waves on a string
- (C) Transverse waves on a string
- (D) Light waves

9. The sky appears blue due to

- (A) Rayleigh scattering
- (B) Mie scattering
- (C) Back scattering
- (D) None of the above

10. The splitting of white light into its component is due to

- (A) Reflection
- (B) Refraction
- (C) Transmission
- (D) Dispersion

11. Light scattering takes place in

- (A) Colloidal solutions
- (B) Acidic solutions
- (C) Electrolyte solutions
- (D) Basic solutions

12. Which of the following statements is true when we see 'rainbow'?

- (A) We face sun and raindrops
- (B) The sun remains behind as and we face raindrops
- (C) In light rainfall, we face sun
- (D) The sky remains clear and the sun is at lower position in the sky

13. A soap bubble shows colours when illuminated with white light. The is due to

- (A) Diffraction
- (B) Polarisation
- (C) Interference
- (D) Reflection

14. The formation of Rainbow takes place, when sunlight-

- (A) Scattered due to the reflection from water drops in atmosphere
- (B) Scattered due to refraction from water drops in atmosphere
- (C) Scattered due to refraction and total internal reflection from water drops
- (D) None of the above

15. The Rainbow has: (Chose incorrect Statement)

- (A) Violet light as its innermost colour towards earth





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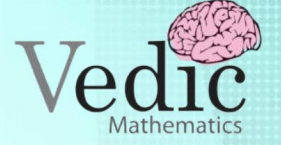
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- (B) Its curvature bends towards earth
(C) Red light as its outermost colour toward sky
(D) Red light as its innermost colour towards earth

16. On a rainy day small oily films on water shows brilliant colour. This is due to –

- (A) Scattering (B) Dispersion
(C) Interference (D) Polarization

17. An optically plane surface reflects a beam of light

- (A) As a parallel beam in one direction
(B) As diffused beams in all directions
(C) As parallel beams in all direction
(D) As a diffused beam in one direction

18. Which one of the following reflects back more sunlight as compared to other three?

- (A) Sand desert
(B) Land covered with fresh snow
(C) Prairie land
(D) Paddy crop land

19. Purpose of an optical fibre is to

- (A) Reflect light of different colours
(B) Dispense light into component colours
(C) Refract light of different colours
(D) Transmit light of different colours

20. The Phenomenon which causes mirage is

- (A) Interference (B) Diffraction
(C) Polarization (D) Total Internal Reflection

21. Total Internal Reflection can not take place when light goes from

- (A) Water to Glass (B) Glass to water
(C) Water to air (D) Glass to air

22. Optical fibre works on the principle of

- (A) Refraction
(B) Scattering
(C) Interference
(D) Total Internal Reflection

23. Energy in reflected light is

- (A) Does not depend on the angle of incidence
(B) Increases with increase in angle
(C) Decrease with increase in angle incidence
(D) Become maximum for an angle of incidence of 45°

24. Which of the following optical phenomena is responsible for the brilliance of diamond?

- (A) Maximum Refraction
(B) Total Internal Reflection
(C) Total surface Reflection
(D) 100% transmission

25. The phenomenon of change in direction of light when it passes from one medium to another is called

- (A) Propagation (B) Reflection
(C) Refraction (D) Dispersion

26. Which of the following is not caused by atmospheric refraction?

- (A) Sun appearing red at sunset
(B) Twinkling of stars at night
(C) Sun appearing higher in the sky than it actually is
(D) Sun becoming visible two or three minutes before actual sunrise.

27. A star appears twinkling in the sky because of

- (A) Scattering of light by atmosphere
(B) Reflection of light by atmosphere
(C) Refraction of light by atmosphere
(D) Diffraction of light by atmosphere

28. A water tank appears shallower when it is viewed from top due to

- (A) Rectilinear propagation of light
(B) Reflection
(C) Total Internal Reflection
(D) Refraction

29. The reason for a swimming pool to appear less deep than the actual depth is

- (A) Refraction (B) Light scattering
(C) Reflection (D) Interference

30. A plane glass slab is kept over coloured letters which appears least raised is –

- (A) Red (B) Green
(C) Violet (D) Blue

31. Lens is made up of

- (A) Pyrex glass (B) Flint glass
(C) Ordinary glass (D) Cobalt glass





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32. For a person having hypermetropia, the near point is

- (A) Greater than 25 cm
- (B) Greater than 50 cm
- (C) Less than 25 cm
- (D) Infinity

33. The head mirror used by ENT doctors is

- (A) Concave
- (B) Convex
- (C) Plane
- (D) Plano-convex

34. Vehicles use ____ to see the objects coming from behind
[SSC CGL 2016]

- (A) Concave Lens
- (B) Convex Lens
- (C) Concave Mirror
- (D) Convex Mirror

35. What is a compound microscope

- (A) A microscope that has one lens
- (B) A microscope that has two set of lenses
- (C) A microscope whose lenses are concave
- (D) A microscope whose lenses are convex

36. Convex mirrors are used as a rear view mirror in motor cycles because

- (A) It forms real image
- (B) It forms erect image
- (C) It forms smaller image as compared with object
- (D) All of the above

37. Persons suffering from myopia are advised to use

- (A) Convex lens
- (B) Concave lens
- (C) Plano-concave lens
- (D) Plano-convex lens

38. Magnifying Glass is basically a

- (A) Plano-concave lens
- (B) Concave lens
- (C) Convex lens
- (D) Cylindrical lens

Exp: A magnifying glass is a convex lens. It produces a magnified image of an object.

39. Shaving Mirror is

- (A) Convex
- (B) Concave
- (C) Plane
- (D) Parabolic

40. Which type of mirror is used in the head lights of vehicles

- (A) Plane Mirror
- (B) Concave Mirror
- (C) Convex Mirror

(D) Parabolic Mirror

41. Electron Microscope is more magnifier than light magnifying because

- (A) Velocity of electron is less than velocity of light
- (B) Wavelength of electron is less than the wavelength of light
- (C) Electron contains more energy than particles
- (D) More powerful lenses are used in electron Microscope

42. A periscope works on the principle of

- (A) Refraction
- (B) Total Internal Reflection
- (C) Diffraction
- (D) Reflection

43. In mirrors the back surface is painted with a thin layer of

- (A) Mercury
- (B) Silver
- (C) Red oxide
- (D) Silver Nitrate

44. Find the power of a convex lens if the image formed is at a distance of 10 cm from the lens when the object is placed on the other side of the lens at 40 cm from the optical centre?

- (A) 12.5 dioptre
- (B) 7.5 dioptre
- (C) -12.5 dioptre
- (D) -7.5 dioptre

45. Find the power of a convex lens if the image formed is at a distance of 20 cm from the lens when the object is placed on the other side of the lens at 60 cm from the optical centre?

- (A) 3.33 dioptre
- (B) 6.67 dioptre
- (C) -6.67 dioptre
- (D) -3.33 dioptre

46. Find the power of a convex lens if the image formed is at a distance of 20 cm from the lens when the object is placed on the other side of the lens at 25 cm from the optical centre?

- (A) 1 dioptre
- (B) -9 dioptre
- (C) 9 dioptre
- (D) 1 dioptre

47. Which of the following is used to split white light into different colours?

- (A) Glass slab
- (B) Convex lens
- (C) Concave lens
- (D) Prism

48. Spectacles used for viewing 3D films have

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- (A) Bifocal lens (B) Convex lens
(C) Concave lens (D) Polaroids
49. A concave lens always forms an image which is
(A) Real and erect (B) Virtual and erect
(C) Real and inverted (D) Virtual and inverted

50. One can distinguish a telescope from a microscope by observing
(A) Length
(B) Colour
(C) Size of the lens
(D) length and size of the lens

51. To get the magnified and virtual image mirror is used—
(A) Plane Mirror (B) Convex Mirror
(C) Concave Mirror (D) Concave Lens

52. Which of the following always makes the smaller image of body, which is placed in front of it?
(A) Plane Mirror (B) Convex Mirror
(C) Convex Lens (D) Concave Mirror

53. The image formed by specific mirror; legs appear as of same size but head and his body appear smaller than its real size, when person stands in front of mirror. What is the nature of mirror?
(A) Plane and Concave
(B) Convex and Concave
(C) Convex and Plane
(D) Plane

54. What is a zoom lens?
(A) A lens with a definite focal length
(B) A lens with a transitional focal length
(C) It is used in Radio Telescopes.
(D) None of these

55. Dioptre is the unit of—
(A) Power of lens
(B) Focal length of lens
(C) Intensity of lens
(D) Intensity of sound

56. Radio telescope are better than optical telescopes because—

- (A) They can detect faint galaxies which cannot be done by optical telescope.
(B) They can even work in cloudy conditions.
(C) They can work during day and night
(D) All of the above.

57. To eliminate the glare of headlight in motorcars—
(A) Polaroid's are used
(B) Glass prism are used
(C) Thin films are used
(D) Filters are used.

58. The outer white part of the eye that protects the inner structures is _____.
(A) Iris (B) Sclera
(C) Retina (D) Cornea

59. Person who is color blind can not distinguish between
(A) Black and yellow (B) Red and green
(C) Yellow and white (D) Green and blue

60. The least distance of distinct vision is
(A) 35 cm (B) 25 cm
(C) 45 cm (D) 15 cm

61. Distant objects are visible as little out of focus in the condition
(A) Presbyopia (B) Hypermetropia
(C) Astigmatism (D) Myopia

62. Sensitivity of human eye is maximum in the
(A) Violet region (B) Green region
(C) Blue region (D) Red region

63. A man can not see clearly beyond 10 meters. The disease he suffers from.
(A) Far sight (B) Myopia
(C) Cataract (D) Hypermetropia

64. The part of the eye having largest refractive index is
(A) Cornea (B) Aqueous humor
(C) Lens (D) Vitreous humor

65. Hypermetropia or long sightedness can be corrected by using
(A) Bifocal lenses (B) Cylindrical lenses
(C) Concave lenses (D) Convex lenses





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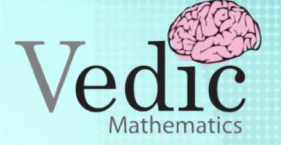
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66.The final image in a simple microscope is

- (A) Real, diminished and inverted
- (B) Real, magnified and erect
- (C) Virtual, magnified and erect
- (D) Virtual, diminished and erect

67.Is dangerous to observe solar eclipse with naked eyes because

- (A) Infrared radiations from sun burn our retina
- (B) Ultraviolet radiations from sun burn our retina
- (C) All radiations from sun initiate chemical reactions in eyes
- (D) Cosmic rays reach eyes more during the eclipse

68.Short-sight in human eye can be corrected by using proper

- (A) Convex lens
- (B) Concave lens
- (C) Cylindrical lens
- (D) Bifocal lens

69.Myopia is the same as (SSC Combined Matric 2000)

- (A) Near sightedness
- (B) Astigmatism
- (C) Presbyopia
- (D) Long sightedness

70.The owl can see most clearly in total darkness because

- (A) It has squint eyes
- (B) It has large eyes with rods directed forward, giving it binocular sight
- (C) It has light bulbs in its eyes provided by nature
- (D) It produces infrasonic sounds

71. What is myopia?

- (A) Inability to see distant objects clearly
- (B) Abnormal functioning of the thyroid gland
- (C) It is a condition of enlargement of heart
- (D) It is a kidney disorder

72.The Sky appears to an astronaut-

- (A) White
- (B) Dark Blue
- (C) Light Green
- (D) Black

73.Colour blindness defect can be corrected by using the lens-

- (A) Concave Lens
- (B) Convex Lens
- (C) Cylindrical lens
- (D) None of these

74.Protanopia is a kind of colour blindness, in which defected person can't see the colour -

- (A) Green
- (B) Red
- (C) Blue
- (D) All of these

75.The Plate of Blue glass appears blue in sunlight because-

- (A) It absorb the blue light
- (B) It transmits the blue light
- (C) It absorbs all the colours including blue
- (D) Transmits all the colours including blue.

76.The speed of light in air is

- (A) 3×10^8 m/s
- (B) 3×10^{-8} m/s
- (C) 3×10^3 m/s
- (D) Infinity

77.Photon is the fundamental unit/quantum of

- (A) Gravitation
- (B) Electricity
- (C) Magnetism
- (D) Light

78.Light beam which is highly directional is called

- (A) Eraser
- (B) Grazer
- (C) Maser
- (D) Laser

Exp: Laser is a coherent, monochromatic unidirectional beam of light.

79.Persistence of vision is the principle behind

- (A) Binocular
- (B) Camera
- (C) Periscope
- (D) Cinema

80.Which of the following is responsible for the working of newton's colour disc experiment

- (A) Formation of pure spectra
- (B) Formation of impure spectra
- (C) Persistence of vision
- (D) Principle of complementary colour

81.Solar cells work on the principle of

- (A) Photovoltaic effect
- (B) Photoelectric effect
- (C) Photoconductive effect
- (D) Photosynthesis

82.A light year is a unit of

- (A) Time
- (B) Distance
- (C) Speed of light
- (D) Intensity of light

83.Ozone layer above the surface of Earth provides a shield against

- (A) X-rays
- (B) Ultra Violet Rays





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(C) Gamma Rays (D) Infrared Rays

84. The primary colours in photography are

- (A) Red, Blue, Yellow
- (B) Red, Yellow, Green
- (C) Red, Blue, Green
- (D) Blue, Yellow, Green

85. Which of the following is not a part of a CRT?

- (A) Phosphor Screen
- (B) Shadow Mask
- (C) Electron Gun
- (D) Gas Plasma

86. Light travels fastest in

- (A) Nitrogen (B) Air
- (C) Steel (D) Vacuum

87. Who Invented Laser?

- (A) William Friese Greene
- (B) Arthur Fry
- (C) Gordon Gould
- (D) Otto von Guericke

88. Who Invented LED?

- (A) Nick Holonyak (B) Elias Howe
- (C) Chuck Hull (D) Christiaan Huygens

89. Instrument for measuring blueness of the sky or ocean is called _____.

- (A) Bathymeter (B) Ceraunograph
- (C) Cyanometer (D) Barometer

90. Lumen is a unit of -

- (A) Luminous Flux (B) Luminous Intensity
- (C) Luminous density (D) Brightness

91. White Light constitutes the colours -

- (A) 4 (B) 5
- (C) 6 (D) 7

92. Atomic clock transitions depends upon the -

- (A) Sodium (B) Caesium
- (C) Magnesium (D) Aluminum

93. The photoelectric effect is described as the ejection of electrons from the surface of a metal when -

- (A) It is heated

(B) It is placed in the strong electric field.

- (C) Electron of suitable velocity impinge on it.
- (D) Light of suitable wavelength falls on it.

94. Which of the following gas is used in the Yellowish lamps used as street Lights?

- (A) Sodium (B) Neon
- (C) Hydrogen (D) Nitrogen

95. Photo oxidation process is initiated by -

- (A) Light (B) Heat
- (C) Oxygen (D) Catalyst

96. What is a Hologram?

- (A) Graphical Representation of frequency distribution
- (B) 3D- MRI
- (C) A 3D Shadow to reproduce the photographic record
- (D) A Liquid Crystal Display

97. Who invented the optical fibre?

- (A) Samuel Cohen
- (B) Narinder Kapany
- (C) Percy Spencer
- (D) T.H. Maimah

98. Which of the following purpose optical fibre is used for?

- (A) Weaving (B) Musical Instrument
- (C) Eye Surgery (D) Communication

99. Sir C.V. Raman is awarded by Nobel Prize for his experiment of -

- (A) Reflection of Light
- (B) Dispersion of Light
- (C) Scattering of Light
- (D) Diffraction of Light

100. Light Waves are -

- (A) Electric Wave
- (B) Magnetic Wave
- (C) Electromagnetic Wave
- (D) Electrostatic Wave

101. Time taken by the Sun Light to reach the earth?

- (A) 5.5 min. (B) 6.8 min.
- (C) 8.3 min. (D) 9.5 min.

Exp: Sunlight takes 8.3 min to reach the surface of earth.





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102.The speed of light with the rise in the temperature of the medium:

- (A) Increases (B) Decreases
(C) Remains unaltered (D) Drops suddenly

103.Who measured the velocity of light first?

- (A) Galileo (B) Newton
(C) Romer (D) Einstein

104.Which colour is the complementary colour of yellow?

- (A) Blue (B) Green
(C) Orange (D) Red

105.Ability to distinguish two closely placed objects is ____.

- (A) Resolving power (B) Video power
(C) Distinguish power (D) Magnifying power

Exp: Resolving power is the capacity of an optical instrument to resolve two points which are closely placed.

106.Which of the following phenomena is involved in Kaleidoscope?

- (A) Refraction
(B) Reflection
(C) Total Internal reflection
(D) Diffraction

107.In a magnifying glass ____ lens is used.

- (A) Convex (B) Concave
(C) Plano concave (D) Plano convex

108.When an object is kept between two parallel plane mirrors then what is the number of images formed?

- (A) 1 (B) 2
(C) 4 (D) Infinite

109.A ____ splits sunlight into seven colours.

- (A) Concave lens (B) Convex lens
(C) Prism (D) Concave mirror

110.Which type of mirror is used by dentists to see large images of teeth?

- (A) Concave mirror (B) Convex mirror
(C) Plane mirror (D) Cylindrical mirror

111.According to law of reflection:

- (A) Angle of incidence is greater than angle of reflection
(B) Angle of incidence is smaller than angle of reflection

- (C) Angle of incidence is always equal to angle of reflection
(D) Both angles are always unequal

112.Who invented first working laser?

- (A) A. H. Taylor (B) W. K. Roentgen
(C) T. H. Maiman (D) Fred Morrisson

113. Reflection from a smooth surface like that of a mirror is called ____ reflection.

- (A) Regular (B) Irregular
(C) Diffused (D) Fused

114.Why does a black board appears black in colour?

- (A) It reflects black colour
(B) It absorbs black colour
(C) It reflects all colours
(D) It absorbs all the colours

115.The bending of light when it passes around a corner or a slit is due to ____.

- (A) Reflection (B) Refraction
(C) Diffraction (D) Total internal reflection

116.What is the reason for formation of Mirage in desert? (SSC CGL 2017)

- (A) Refraction of light
(B) Reflection of light
(C) Total internal reflection of light
(D) Both Refraction and Total internal reflection of light

117.Speed of light is maximum in ____.

- (A) Vacuum (B) Solids
(C) Liquids (D) Gases

118.Convex mirror is generally used in ____.

- (A) Solar cookers
(B) Ophthalmoscope
(C) Reflector for head light
(D) Rear view mirror

119. If objects appear enlarged and inverted in a rear view mirror, then which type of mirror is used?

- (A) Concave (B) Convex
(C) Cylindrical (D) Plane

120.Why does water tank appear shallower when viewed from the top?





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- (A) Due to reflection
(B) Due to refraction
(C) Due to diffraction
(D) Due to total internal reflection

121. Which colour is formed when Red and Green are mixed?

- (A) Light blue (B) Yellow
(C) White (D) Grey

122. Which phenomena shows the particle nature of light?

- (A) Diffraction (B) Interference
(C) Photoelectric effect (D) Polarisation

123. Which colour is formed when Blue and Green are mixed?

- (A) Cyan (B) Brown
(C) Black (D) Violet

124. Optical fibre works on which of the following principle of light?

- (A) Reflection (B) Refraction
(C) Diffraction (D) Total internal reflection

125. When light passes from one medium to another, this phenomenon of change in its direction is called ____.

- (A) Refraction (B) Diffraction
(C) Propagation (D) No option is correct

126. The side mirrors of vehicles are of which type of mirrors?

- (A) Convex (B) Concave
(C) Plane (D) Inverted

127. An image formed by a plane mirror, that cannot be obtained on a screen is called ____.

- (A) Virtual image (B) Real image
(C) Inverted image (D) Erect image

128. The impression of an image persists on the retina for about ____ of a second.

- (A) 1/10th (B) 1/8th
(C) 1/16th (D) 1/5th

129. An image formed by a concave mirror on a screen is called ____?

- (A) Virtual image (B) Real image

(C) Inverted image

(D) Erect image

130. The incident ray, the _____ at the point of incidence and the reflected ray all lie in the same plane.

- (A) Surface (B) Tangent
(C) Normal (D) Angle of reflection

131. The reflection formed by the plane mirror is _____.

- (A) Vertical inversion
(B) A real image
(C) Lateral inversion
(D) An enlarged image

132. Convex and concave mirrors are examples of?

- (A) Plane mirrors (B) Spherical mirrors
(C) Inverted mirror (D) Erect mirror

133. The angle between the _____ and the incident ray is called the angle of incidence.

- (A) Surface (B) Normal
(C) Tangent (D) Reflected ray

