

Refraction and Reflection

Section - I

Straight Objective Type

This section contains multiple choice questions. Each question has 4 choices (A), (B), (C), (D), out of which ONLY ONE is correct. Choose the correct option.

1.	The wave length of red colour	ed light ray is 7000 A, its frequency is
	(a) $4.2 \times 10^{14} Hz$	(b) $4 \times 10^{14} Hz$
	(c) $3.6 \times 10^{14} Hz$	(d) $3.4 \times 10^{14} Hz$
2.	The frequency of a light ray is (a) $5000 { m \AA}$	7.5×10 ¹⁴ Hz, its wave length is (b) 4000 Å
	(c) 3000 Å	(d) 2000 Å
3.	The wave length range of vi Spectrum is	sible light waves in Electromagnetic Wave
	(a) $1000 \text{ \AA} - 4000 \text{ \AA}$	(b) $2000 \text{ Å} - 7000 \text{ Å}$
	(c) $4000 \text{ Å} - 7000 \text{ Å}$	(d) $5000 \text{\AA} - 7000 \text{\AA}$
4.	In a medium a light ray has a medium of R.I 3/2 %, its frequ (a) increase	frequency 6×10 ¹⁴ Hz, if it enters into other lency will (b) decrease
	(c) remains same (d) b	pecomes zero
5.	A Pinhole Camera works on p (a) reflection	rinciple of (A) reflection (b) refraction
	(c) rectilinear propagation	(d) interference
6.	Shadows are formed due to (A (a) reflection	A) reflection (b) refraction
	(c) interference	(d) rectilinear propagation of light
7.	If V_w , V_A , V_G are velocities respectively, then the correct r (a) $V_A > V_W > V_G$	s of light in water, air and glass media relation is (b) $V_W > V_G > V_A$
	(c) $V_G > V_A > V_W$	(d) $V_A > V_G < V_W$

8. Snell's Law of refraction of light is

	(a) $\frac{\mu_1}{\mu_2} = \frac{\sin i}{\sin r}$	$(b) \ \frac{\mu_2}{\mu_1} = \frac{\sin i}{\sin r}$
	(c) $\frac{\mu_2}{\mu_1} = \frac{\sin r}{\cos r}$	(d) $\frac{\mu_2}{\mu_1} = \frac{\cos r}{\sin r}$
9.	The refraction of light is due to (a) velocity	sudden change in its (b) frequency
	(c) intensity	(d) phase
10.	A convex mirror always produ (a) real image	ces A) real image (b) virtual image
	(c) real & inverted	(d) phase
11.	Light wave is a (a) transverse wave	(b) longitudinal wave
	(c) stationary wave	(d) mechanical wave
12 .	The converging mirror is A) Co (a) Convex mirror	onvex Mirror
	(b) Concave mirror	
	(c) Plane mirror	
	(d) Spherical mirror with outsi	de reflector
13.	The diverging Mirror is A) Cor (a) Convex mirror	nvex Mirror
	(b) Concave mirror	
	(c) Plane mirror	
	(d) Spherical mirror with outsi	de reflector
14.	The focal length of a plane mir (a) zero	ror is (b) f

(c) infinity (d) can't be determined

15.	A mirror causes (a) reflection	(b) refraction
	(c) scattering	(d) interference
16.	If a person stands at 3m distance a distance of from him. (a) 3m	from a plane mirror his image will be at (b) 6m
	(c) 0m	(d) 9m
17.	A person approaches a plane minimage with respect to the mirror is (a) 10 ms^{-1}	rror with a speed 5ms ⁻¹ The speed of his s (b) 8 ms ⁻¹
	(c) $6 m s^{-1}$	(d) $5 m s^{-1}$
18.	A person approaches a plane min his image with which it appears to (a) 4 ms^{-1}	For with a speed of $5ms^{-1}$. The speed of p move towards himself is (b) $6ms^{-1}$
	(c) $8 m s^{-1}$	(d) $10 ms^{-1}$
19.	Two plane mirrors are inclined number of images formed by the their bisector is	at angle of 45° with each other. The m when a point sized object is placed on
	(a) 8	(b) 7
	(c) 6	(d) 5
20.	A pair of plane mirrors are incli The number of images formed by (a) 5	ned at an angle of 60° with each other. them will be (b) 6
	(c) 4	(d) 3
21.	The magnification produced by a (a) -1	plane mirror is (b) >1
	(c) <1	(d) + 1
22.	Keeping the incident ray fixed, a the reflected ray will be rotated th (a) 15°	mirror is rotated through an angle 15°, prough an angle of (b) 20°

	(c) 25°	(d) 30°
23.	The correct relation between glar (a) $d = G/2$	nce angle and angle of deviation is (b) d= G/3
	(c) $2G = d$	(d) $3G = d$
24.	For a concave mirror of focal leng (a) – 40 cm	gth 20 cm, the radius of curvature is. (b) – 80 cm
	(c) 10 cm	(d) 40 cm
25.	An object is placed at a distance Mirror whose focal length is 10 cm (a) 10 cm, behind the mirror	e of 30 cm, from the pole of a Concave m, the position of the image would be (b) 10 cm, infront of the mirror
	(c) 15 cm, behind the mirror	
	(d) 15 cm, on the same side as th	at of object
26.	An object is placed at a distance of 20 cm from the pole of a concave mirror of focal length 10 cm, the position & nature of image will be (a) 20 cm, from pole, same side as that of object, real & inverted, m = 1	
	(b) 10 cm, from pole, same side o	as that of object, real & inverted, $m>1$
	(c) image at infinity, virtual, erect	& m > > 1
	(d) image at focus, virtual, erect &	km < < 1
27.	An object is placed at a distance length 10 cm, the position of ima (a) 5 cm	of 5 cm from a concave mirror of focal ge would be (b) 10 cm
	(c) 15 cm	(d) -15 cm
28.	A real image is formed by a condition size of object, when an object is mirror, the focal length and position $(a) f = 10.07 \text{ cm}; V = 32 \text{ cm}$ before the second size of the second secon	cave mirror, whose size is twice as that of s placed at 16 cm from the pole of the ion of the image will be hind mirror
	(b) $f = 9.67$ cm; $V = 16$ cm same	e side as that of object
	(c) $f = 10.67$ cm; $V = 32$ cm sam	ne side as that of object
	(d) $f = 10.07$ cm; $V = 32$ cm beh	nind mirror

29.	The speed of light, in a medium c (a) $2 \times 10^8 m s^{-1}$	of R.I. $3/2$ will be (b) $2.25 \times 10^8 m s^{-1}$
	(c) $2.5 \times 10^8 m s^{-1}$	(d) $2.75 \times 10^8 m s^{-1}$
30.	The speed of light, in medium of (a) $2 \times 10^8 m s^{-1}$	R.I. 4/3 will be (b) $2.25 \times 10^8 m s^{-1}$
	(c) $2.5 \times 10^8 m s^{-1}$	(d) $2.75 \times 10^8 m s^{-1}$
31.	A concave mirror produces five a placed at 10 cm infront of it. Whe (a) 50 cm	times magnified real image of an object re is the image located? (b) 40 cm
	(c) 30 cm	(d) 20 cm
32.	An object is placed at 15 cm in f 20 cm. Find the position, nature c (a) 45 cm; $m=+4$	Front of a concave mirror of focal length and size of the image. (b) 60 cm; $m = +4$
	(c) 75 cm; $m = +2$	(d) 30 cm; $m = +2$
33.	An object 2 cm high is placed of mirror which produces a real im image. Also calculate the focal len (a) 30 cm; 10 cm	at a distance of 15 cm from a concave age 4 cm high. Find the position of the agth of the mirror. (b) 40 cm; 20 cm
	(c) 20 cm; 30 cm	(d) 10 cm; 40 cm
34.	A man walks towards a plane min what speed does he approach his (a) $2 ms^{-1}$	rror with a uniform speed of $4ms^{-1}$. With image? (b) $4 ms^{-1}$
	(c) $6 m s^{-1}$	(d) $8 m s^{-1}$
35.	Find the deviation suffered by horizontal mirror at an angle of 6 (a) 45°	a ray which is incident on a plane 0°. (b) 60°
	(c) 120°	(d) 90°
36.	Find out the number of images f	formed by two plane mirrors if they are

inclined at an angle of 720 from each other. (a) 3 (b) 4

(c) 5 (d) 6

Find out the angle between the two plane mirrors, if a ray after successive reflections from them becomes parallel to itself.
(a) 45°
(b) 65°

(c) 120° (d) 90°

38. Two plane mirrors are inclined to each, other. A ray of light is incident at an angle of 45° on one of them. The ray, After reflection falls on second mirror and finally retraces its path. Find the angle between the mirrors.
(a) 30°
(b) 45°

39. A spherical mirror, concave jn shape has a focal length of 18 cm. Find its power.

(a) +5.5 D	(D) – 5.5 D
(c) – 4.5 D	(d) +4.5 D

40. A concave mirror of focal length f produces a real image 'n' times the size of the object. Find the distance of the object from the mirror.

(a)
$$\frac{(n-1)}{n}f$$
 (b) $\frac{(n+1)}{n}$
(c) $\frac{(n+1)}{n}f$ (d) $\frac{(n-1)}{n}$

- **41.** The refractive index of glass is 2 and refractive index of water is 3. Find the refractive index of water with respect to glass.
 - (a) $\frac{8}{9}$ (b) $\frac{9}{8}$ (c) $\frac{7}{8}$ (d) $\frac{8}{7}$
- **42.** An object is placed 21 cm. from a concave mirror of curvature 10 cm. A glass slab of thickness 3 cm and R.I. 3/2 is then placed between the object and mirror. Find the position of the final image formed. (the distance of

⁽c) 60° (d) 90°

the near surface from the mirror to be 1 cm)		
(a) 5.67 cm	(b) 6.67 cm	
(c) 7.67 cm	(d) 8.67 cm	

43. A concave and a convex mirror each 30 cm in radius are placed opposite to each other 60 cm apart on the same axis an object 5 cm in height is placed midway between them. Find the size of the image formed by reflection, first at convex and then at the concave mirror.

(a)
$$\frac{5}{11}$$
 (b) $\frac{11}{5}$
(c) $\frac{3}{5}$ (d) $\frac{5}{3}$

44. There is a fish at a depth of 'h' in clear water of R.I. 4/3. The fish sees the water surface as a mirror except a circular patch, Find the radius of the circular patch.

(a)
$$\frac{2h}{\sqrt{7}}$$
 (b) $\frac{3h}{\sqrt{5}}$
(c) $\frac{2h}{\sqrt{5}}$ (d) $\frac{3h}{\sqrt{7}}$

- **45.** A ray of light from a denser medium strikes a rarer medium at an angle of incidence. The reflected and refracted rays make an angle of 90° with each other. The angles of reflection and refraction are r and r¹. Find the critical angle.
 - (a) $c = \tan^{-1}(\sin r)$ (b) $c = \cos^{-1}(\tan r)$

(c)
$$c = \sin^{-1}(\tan r)$$
 (d) $c = \tan^{-1}(\cos r)$

- 46. To obtain a real inverted image of the same size as that of the object by a thin convex lens of focal length 25 cm, where should the object be placed? Find the power of lens.
 (a) 50 cm; +4D
 (b) 50 cm; +2D
 (c) 25 cm; +4D
 (d) 25 cm; +2D
- **47.** An object of size 5 cm, is placed at 27cm infront of a convex lens of focal length 18 cm. At what distance from the lens should a screen be placed

so that a sharp focused im	age can be obtained?
(a) 45 cm	(b) 54 cm
(c) 60 cm	(d) 66 cm

48. A concave mirror produces four times magnified real image of an object placed at 10 cm infront of it. Find the position of image located.
(a) 20 cm; infront of mirror
(b) 40 cm; behind mirror

(c) 40 cm; infront of mirror (d) 20 cm; behind mirror

49. An object is placed at 25 cm infront of a concave mirror of focal length 20 cm. Find the position nature and size of the image.
(a) 100 cm; infront of mirror
(b) 75 cm; behind of mirror
(c) 75 cm; behind of mirror
(d) 100 cm; behind of mirror

50. An object 5 cm high is placed at a distance of 15 cm from a concave mirror which produces a real image 15 cm high. Find the position of the image. Also calculate the focal length of the mirror.
(a) 25 cm infront of mirror; f=11.00 cm

- (b) 45 cm infront of mirror; f = 11.25 cm
- (c) 45 cm behind mirror; f = 11 cm
- (d) 25 cm behind mirror; f = 11 cm
- **51.** A plane mirror is moved towards an object with a speed of 3 ms⁻¹. Find the relative speed of image with which it approaches the object.

(a)	$2 ms^{-1}$	(b) $4 ms^{-1}$
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(c) $6 m s^{-1}$ (d) $8 m s^{-1}$

- **52.** Find out the number of images formed if two mirrors are inclined at an angle of 30° to other.
 - (a) 7 (b) 9
 - (c) 5 (d) 11
- **53.** A convex mirror has a focal length f. A real object is placed at a distance If infront of it. Find the position of the image.

(a)
$$\frac{f}{4}$$
 (b) $\frac{f}{2}$

(c)
$$\frac{f}{3}$$
 (d) $\frac{2f}{3}$

54. Using a certain concave mirror, the magnification is found to be 4 times as great when the object was 25 cm from the mirror as it was when the object is at 40 cm from the mirror. In each case the magnification is real. Find the focal length of the mirror.
(a) 20 cm
(b) 40 cm
(c) 10 cm
(d) 30 cm

55. An object is placed 42 cm from a concave mirror of curvature 16 cm. A glass slab of thickness 6 cm and R.I. 3/2 is then placed between the object and mirror. Find the position of the final image formed (The near surface of the slab from the mirror is 1 cm).
(a) 10 cm
(b) 12 cm

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(c) 14 cm (d) 16 cm
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56. While a moving picture is being screened, a boy introduced a glass slab of thickness 18 cm and R.I. 3/2 between the projector and the screen. In order to have a clear picture on the screen, how much distance should the screen be moved away?

(a) 2 cm (b) 4 cm

57. A fish looking up through water sees the outside world contained in a circular horizon. If the refractive index of water is 4/3 and fish is 8 cm below the surface, the radius of the circle?

(a)
$$\frac{21}{\sqrt{7}}$$
 cm
(b) $\frac{24}{\sqrt{7}}$ cm
(c) $\frac{27}{\sqrt{7}}$ cm
(d) $\frac{29}{\sqrt{7}}$ cm

58. The bottom of a beaker containing a liquid appears to rise by 4 cm. On increasing the depth of the liquid by 12 cm, the bottom appears to rise by 7 cm. Find the refractive index of the liquid.

(a)
$$\frac{2}{3}$$
 (b) $\frac{4}{5}$

(c)
$$\frac{4}{3}$$
 (d) $\frac{3}{4}$

59. A glass cube of edge 1 cm and R.I. $\frac{3}{2}$ has a small spot at the centre. What area of the cube face must be covered to prevent the spot from being seen, no matter what the direction of viewing?

(a)
$$\frac{\pi}{2} cm^2$$
 (b) $\frac{\pi}{3} cm^2$

(c)
$$\frac{\pi}{4} cm^2$$
 (d) $\frac{\pi}{5} cm^2$

60. Glycerine (μ = 1.4) is poured into a large jar of radius 0.2 m to a depth of 0.1 m. There is a small source of light at the bottom, find the area of the surface of glycerine through which light passes.
(a) 0.031 m²
(b) 0.0327 m²

(c) $0.0329 m^2$ (d) $0.0331 m^2$

61. Find the R.I. of glass with respect to water if μ of glass = $\frac{3}{2}$ and μ of

water = $\frac{4}{3}$ (a) 121.1 (b) 1.121 (c) 1.125 (d) 125.1

- **62.** At what angle, must a ray fallon a glass plate of R.I. $\sqrt{3}$ so that the reflected and refracted rays may be at right angles to each other. (hint : $\tan i = \mu$) (a) 30° (b) 60°
 - (c) 45° (d) 90°
- 63. An object of size 3 cm is placed at 15 cm infront of a convex lens of focal

	length 10 cm. At what distance f so that a sharp focussed image ca (a) 30 cm from optic centre	rom the lens should a screen be placed n be obtained? (b) 15 cm from optic centre
	(c) 45 cm from optic centre	(d) 60 cm from optic centre
64.	The power of a concave lens is -2 (a) 0.3 m	D. Find its focal length (b) 0.4 m
	(c) 0.5 cm	(d) 0.6 cm
65.	Two thin lenses of power $+5D$ of power and nature of the combination (a) $+1$ D	and -3D are placed in contact. Find the tion. (b) +2D
	(c) +3D	(d) +4D
66.	Two thin lenses of focal lengths concave in nature. If they are p axis find the power of the combin $(a) + 5 D$	5 cm and 10 cm and are convex and laced in contact along the same optical ation. (b) + 10 D
	(c) -5 D	(d) -10 D
67.	A convergent beam of light passes 0.2m and comes to focus 0.3 m point at which the beam would co (a) 0.1 m	s through a diverging lens of focal length behind the lens. Find the position of the onverge in the absence of the lens. (b) 0.12 m
	(c) 0.2 m	(d) 0.22 m
68.	A concave mirror of radius of cu placed in front of it at a distance of image is.	rvature 42 cm. An object of site 2 cm is of 21 cm from its pole. The nature of the
	(a) virtual areat and diminished	(d) virtual areast and magnified
60	(c) on taal, erect and annihished	(a) ontaal, erect and magnified
09.	A concave mirror of radius of curvature 16 cm. An object of size 3 ci placed in front of it at a distance of 5 cm from its pole. The nature of image is	
	(a) real, erect and magnified	(b) real, inverted and magnified
	(c) virtual, erect and diminished	(d) virtual, inverted and magnified

- 70. An object is placed at 20 cm in front of a concave mirror of focal length 25 cm. The position, nature and size of the image is(a) 5 times magnified, erect and virtual
 - (b) 5/9 times magnified, erect and virtual
 - (c) 3 times magnified, erect and real
 - (d) magnified, inverted and virtual
- **71.** An object 2 cm high is placed at a distance of 16 cm from a concave mirror which produces a real image 3 cm high, the position of the image is
 - (a) -20 cm (b) -22 cm(c) -24 cm (d) -26 cm
- 72. Two plane mirrors are inclined at some angle. An object is placed on the bisector of the mirrors. If 3 images are formed the angle between the mirrors is

 (a) 60°
 (b) 72°
 - (c) 90° (d) 120°
- **73.** The angle of incidence of a light ray is i with respect to normal. The angle of deviation after reflection is
 - (a) 2 i (b) i (c) 180° - 2i (d) 3 i
- **74.** A light ray retraces its path after reflection from the surface of a plane mirror, then the difference of angle of incidence and angle of reflection is

(a)
$$\frac{\pi}{4}$$
 (b) $\frac{\pi}{3}$
(c) $\frac{\pi}{2}$ (d) zero

- **75.** Keeping the incident ray fixed if a plane mirror is rotated through an angle ' θ ', about an axis lying in its plane, then the reflected ray turns through an angle.
 - (a) 2θ (b) θ

(c)
$$\frac{\theta}{2}$$
 (d) $\frac{\theta}{4}$

76. A concave mirror of focal length 'f' produces an image 'n' times the size of the object. If the image is real then the distance of the object from the mirror is

(a)
$$(n + 1) f$$
 (b) $\frac{(n+1)f}{n}$

(c)
$$\frac{(n-1)f}{n}$$
 (d) $(n-1)f$

77. Reflection of a light wave at a fixed point results in a phase difference between the incident and reflected wave of

(a)
$$\frac{3\pi}{2}$$
 rad (b) 2π rad

(c)
$$\pi$$
 rad (d) $\frac{\pi}{2}$ rad

78. The refractive index of diamond is 5/2. The refractive index of glass is 3/2. The refractive index of glass w.r.t. to diamond is
(a) 3/5
(b) 5/3

- 79. A glass slab of thickness 18 cm and refractive index 3/2 is placed on a printed matter. The normal shift of the printed matter is
 (a) 3 cm
 (b) 6 cm
 - (c) 9 cm (d) 12 cm
- **80.** When light passes from vacuum into a medium which of the following remains unchanged.
 - (a) phase(b) frequency(c) wavelength(d) velocity
- 81. The focal length and magnification of a plane mirror is
 (a) finite and -1
 (b) infinite and +1

(c) infinite and
$$-1$$
 (d) finite and $+1$

82. A beam of light is converging towards a point I on a screen. A plane parallel plate of glass whose thickness is 't' is introduced in the path of the beam. The point of convergence is shifted by

(a)
$$t\left(1-\frac{1}{\mu}\right)$$
 away
(b) $t\left(1+\frac{1}{\mu}\right)$ away
(c) $t\left(1-\frac{1}{\mu}\right)$ nearer
(d) $t\left(1+\frac{1}{\mu}\right)$ nearer

83. The minimum distance between an object and its real image formed by a convex lens is

(a)
$$\frac{3}{2}f$$
 (b) $2f$
(c) $\frac{5}{2}f$ (d) $4f$

84. A real object is placed in front of a concave lens of focal length 'f' at its principal focus. Then the image is formed at (a) zero
(b) infinity

(c) at a distance 2f (d) at a distance f/2

- 85. The shape of U-V graph in case of a convex lens is(a) a straight line(b) a parabola
 - (c) an ellipse (d) a rectangular hyperbola
- **86.** The maximum image distance in case of a concave lens of focal length If is
 - (a) 2f (b) f (c) 3f (d) 4f
- 87. Sky appears blue due to A) reflection
 (a) reflection
 (b) refraction
 (c) scattering
 (d) interference
- **88.** Two thin convex lenses of focal lengths f_1 and f_2 are kept in contact coaxially. The power of the combination is

(a)
$$\frac{f_1 + f_2}{f_1 f_2}$$
 (b) $\frac{f_1 f_2}{f_1 + f_2}$
(c) $f_1 + f_2$ (d) $\frac{f_1}{f_2}$

89 .	The shape of $\frac{1}{u} - \frac{1}{v}$ graph for a convex lens will be		
	(a) a straight-line	(b) parabola	
	(c) ellipse	(d) rectangular hyperbola	
90.	The focal length of a lens depends on (a) refractive index of lens material		
	(b) radii of curvature of lens		
	(c) refractive index of the surrounding medium		
	(d) all the above factors		
91.	The focal length of convex len (a) UV rays	s is maximum for (b) violet	
	(c) yellow	(d) red	
92.	When the moon is near the ho (a) optical illusion	prizon, it appears big. This is due to (b) diffraction	
	(c) scattering	(d) reflection	

Section - II

Assertion - Reason Questions

This section contains certain number of questions. Each question contains STATEMENT-1 (Assertion) and STATEMENT - 2 (Reason). Each question has 4 choices (a), (b), (c) and (d) out of which ONLY ONE is correct. Choose the correct option.

93. STATEMENT-1: A concave mirror always gives a real image. because

STATEMENT - 2: it is a converging mirror.

(a) Statement - 1 is True, Statement - 2 is True; Statement - 2 is a correct

explanation for statement - 1

(b) Statement - 1 is True, Statement - 2 is True; Statement - 2 is NOT a

correct explanation for Statement - 1

(c) Statement - 1 is True, Statement - 2 is False

(d) Statement - 1 is False, Statement - 2 is True

94. STATEMENT-1: A convex mirror is used as a rear view mirror. because

STATEMENT - 2: convex mirror gives a broader field view.

(a) Statement - 1 is True, Statement - 2 is True; Statement - 2 is a correct

explanation for statement - 1

(b) Statement - 1 is True, Statement - 2 is True; Statement - 2 is NOT a

correct explanation for Statement - 1

- (c) Statement 1 is True, Statement 2 is False
- (d) Statement 1 is False, Statement 2 is True
- **95.** STATEMENT-1: A plane mirror produces a virtual and erect image for any position of the object. because

STATEMENT - 2: Plane mirror has finite focal length.

(a) Statement - 1 is True, Statement - 2 is True; Statement - 2 is a correct explanation for statement - 1

(b) Statement - 1 is True, Statement - 2 is True; Statement - 2 is NOT a correct explanation for Statement - 1

(c) Statement - 1 is True, Statement - 2 is False

(d) Statement - 1 is False, Statement - 2 is True

96. STATEMENT-1: Refraction oflight is due to the sudden change in velocity of light. because

STATEMENT - 2: Refraction occurs at the boundary separating two

media.

(a) Statement - 1 is True, Statement - 2 is True; Statement - 2 is a correct explanation for statement - 1

(b) Statement - 1 is True, Statement - 2 is True; Statement - 2 is NOT a

correct explanation for Statement - 1

(c) Statement - 1 is True, Statement - 2 is False

(d) Statement - 1 is False, Statement - 2 is True

Section - III

Linked Comprehension Type

This section contains paragraphs. Based upon each paragraph multiple choice questions have to be answered. Each question has 4 choices (a), (b), (c) and (d), out of which ONLY ONE is correct. Choose the correct option.

A light ray makes an angle of incidence 60° , when it falls on a plane reflecting sheet

97. The glance angle of reflection will be (a) 60° (b) 30° (c) 45° (d) 90°

98.	The angle of reflection will be (a) 60° (b) 30°	
	(c) 45°	(d) 90°
99 .	The angle of deviation will be (a) 60°	(b) 30°
	(c) 45°	(d) 90°

Paragraph for questions 100 to 102

An object is placed on the principal axis of a Concave Mirror at a distance of 15 cm from the pole of the mirror. The focal length of the concave mirror is 10 cm.

100.	The position of ((a) 30 cm	the image will be	(b) – 30 cm	
	(c) 45 cm		(d) – 45 cm	
101.	The nature of the image is (a) real & inverted		(b) erect & virtual	
	(c) real & erect		(d) virtual & inverted	
1 02 .	The magnification (a) m < 1	on m is (b) m≥1	(c) m>1	(d) <i>m</i> ≤ 1

Paragraph for questions 103 to 105

A real image is formed by a Concave Mirror of focal length 9 cm with magnification 3 times.

103.	The radius of curvature of the mirror is		
	(a) 9 cm	(b) 27 cm	
	(c) 18 cm	(d) 36 cm	
104.	The position of the object is		
	(a) 9 cm	(b) 12 cm	
	(c) 24 cm	(d) 36 cm	

105.	The position of the image is		
	(a) 9 cm	(b) 12 cm	
	(c) 24 cm	(d) 36 cm	

SECTION - IV Matrix - Match Type

This section contains Matrix-Match type questions. Each question contains statements given in two columns which have to be matched. Statements (a, b, c, d) in Column I have to be matched with statements (p, q, r, s) in Column II. The answers to these questions have to be appropriately bubbled as illustrated in the following example.

If the correct matches are a-p, a-s, b-q, b-r, c-p, c-q and d-s, then the correctly bubbled 4 x 4 matrix should be as follows:

	р	q	r	S
A	$ \mathbf{\Theta} $	9	\bigcirc	\odot
В	P	•	\odot	\bigcirc
С	P		\bigcirc	\bigcirc
D	(P)	(P)	(\mathbf{r})	\odot

106. Column I

(a) Plane mirror

- (b) converging mirror
- (c) i = r

(*d*) i > R

107. Column I (a) Diverging mirror

(b) i < r

(c) Refractive index

(d) Always virtual image

Column II

(p) Ray passing from rarer to denser

medium

(q) reflection

(r) refraction

(s) concave mirror

Column II

(p) If object is placed between pole &

focus of Concave mirror

(q) Refraction

(r) Reflection

(s) Convex mirror

108.	Column I

(a) focal length

(b) Radius of curvature

Column II

(p) 2f (q) R/2

(c) Magnification

(r) $\frac{Size \ of \ image}{Size \ of \ object}$

(d) $-\frac{V}{u} \frac{\text{Distance of image}}{\text{Distance of object}}$

(s) Infinite for plane mirror