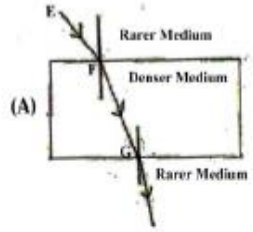
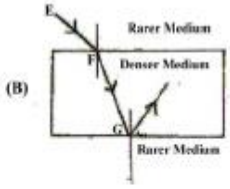
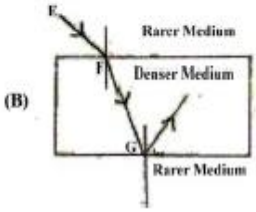
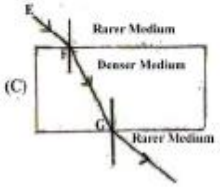
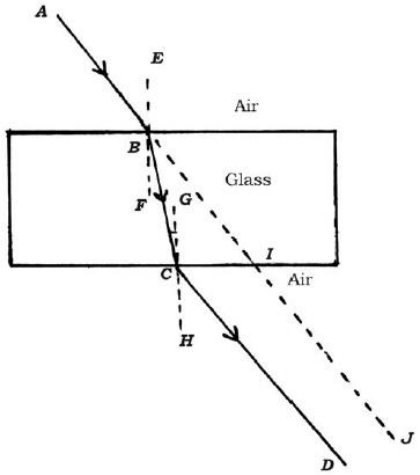
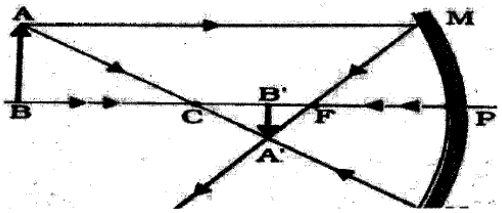
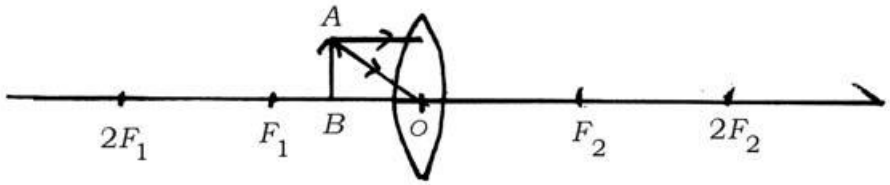
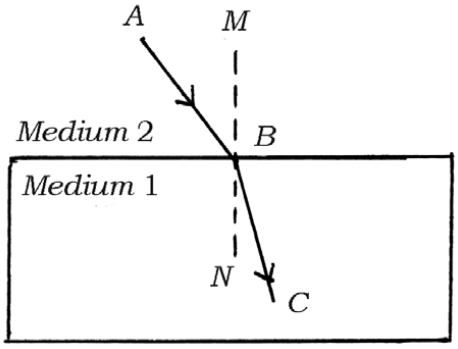
CHAPTER 10 – LIGHT – REFLECTION & REFRACTION		
01.	Observe the figure. The correct figure indicating the direction of the light ray FG after refraction is:      	MQP1
02.	The object distance of a lens is $-30cm$ and image distance is −10cm. Find the magnification of the lens. With the help of this, decide whether the size of the image is smaller or bigger than the size of the object.	MQP1 – 1
03.	Draw the ray diagram showing the formation of image when the object is kept beyond centre of curvature (C) of a concave mirror.	MQP1 – 2
04.	State the laws of refraction. What is the meaning of "the refractive index of crown glass is 1.52"? **OR** Define the power of a lens. What is the meaning of "The power of a lens is 1 diaptor". If the power of a lens is -2.0 D, then what type of lens is that? When an object is kept at infinity from this type of lens, what is the size of the image formed?	MQP1 – 3
05.	One of the effects of refraction among the following is A) Formation of image in a mirror B) Appearance of flowers in different colours C) The sky appears blue in colour D) The pencil immersed in water appears to be bent	MQP2 – MCQ
06.	To obtain a diminished image of an object from a concave mirror, position of the object should be (P = principal focus, C = centre of curvature, P = pole) (A) between C and F (B) beyond C (C) between P and F (D) at F	A2019 MCQ
07.	Convex mirror is commonly used as rear–view mirror in vehicles. Why?	A2019–1
08.	The focal length of a concave lens is 30 cm. At what distance should the object be placed from the lens so that it forms an image at 20 cm from the lens?	A2019–2
09.	Draw the ray diagrams for the image formation in a convex lens when an object is placed (i) at focus F1 (ii) beyond 2F1.	A2019–3
10.	Identify the emergent ray in the given figure.	J2019 – MCQ

	 (A) CD (B) BC (C) AB (D) IJ.	
11.	What is the centre of curvature of a spherical mirror?	J2019 – 1
12.	Draw the ray diagram to show the formation of image by a convex lens when the object is at 2F1. [F1:Principal focus]	J2019 – 2
13.	A concave lens has focal length 30 cm. At what distance should the object be placed from the lens so that it forms an image at 20 cm from the lens? Also, find the magnification produced by the lens.	J2019 – 3
14.	Observe the following figure. Ab is light ray travelling from liquid to air. BC and BD are refracted rays. i) which is the refracted ray if the liquid taken is benzene? ii) which is the refracted ray if the liquid taken in water? Justify your answer. (The absolute refractive index of water and benzene are 1.33 and 1.5 respectively) OR An object 2cm tall is kept on the principal axis of a converging lens of focal length 8cm. Find the position, nature and size of the image formed if the object is at 12cm from the lens. Also find the magnification produced by the lens.	MQP2020–3
15.	Observe the figure. The image formed in the figure is:  A) Real, inverted, diminished B) Virtual, erect, diminished C) Virtual, erect, enlarged D) Real, inverted, enlarged	MQP2020–MCQ
16.	Write the formula to calculate the magnification produced by a spherical mirror.	MQP2020–1
17.	Draw the ray diagram showing the position of the object and image to get the real inverted image whose size is same as the object using a convex lens.	MQP2020–2
18.	An object is kept at the centre of curvature of a concave mirror. The position and nature of the image formed is (A) between F and C and inverted (B) behind the mirror and erect (C) between F and P and erect (D) at the centre of curvature and inverted.	M2020 - MCQ
19.	A 2cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 10cm. If the object distance is 15cm, then calculate the image distance and height of the image.	MQP2020–2

20.	Draw the ray diagram showing the image formation by a convex lens, when the object is kept between principal focus and optic centre. With the help of the diagram mention the nature of the image formed.	MQP2020–3
21.	a) An object is kept between centre of curvature and principal focus of a concave mirror. Write the nature of the image formed. b) Define focal length of a convex mirror. Write the relationship between focal length and radius of curvature of a convex mirror. **OR** a) Give any two examples for refraction of light in daily life. State the laws of refraction of light. b) The power of a lens is -2.5D. Which type of lens is this?	MQP2020–3
22.	An object is kept on the principal axis of a concave mirror of focal length 12 cm. If the object is at a distance of 18 cm from the mirror, calculate the image distance. Determine the nature of the image formed by calculating the magnification produced by the mirror. **OR** A doctor prescribes a corrective lens of power – 0·5 D to a person. Find the focal length of the lens. Is this lens diverging or converging? Give reason. How does the property of this lens can be used to correct eye defects?	M2020 – 3
23.	Draw the ray diagram when the object is kept between F1 and 2F1 of the convex lens. With the help of the diagram mention the position and nature of the image formed. [F1: Principal focus of the lens]	M2020 – 3
24.	The image of the English letter  in convex mirror looks like: (A)  (B)  (C)  (D) 	S2020 – MCQ
25.	Observe the given incomplete diagram. 	S2020 – 1
26.	Object distance and image distance of a lens are –30 cm and –10 cm respectively. Find the magnification and decide the type of lens used and nature of the image.	S2020 – 2
27.	a) State the laws of refraction of light. b) In the given figure, *AB* is the incident ray, *BC* is the refracted ray and *MN* is the normal at the point of incidence. Which medium is more denser? Why?  **OR** a) Differentiate between convex mirror and concave mirror. b) Define the principal focus of a convex lens.	S2020 – 3

28.	Draw the diagram to show the recombination of the spectrum of white light and label the following parts. a) The ray of light that bends the most b) The ray of light that bends the least.	S2020 – 3
29.	The focal length of a lens is + 0.50 m. The power of the lens and type are (A) + 2.0 D and convex lens (B) + 2.0 D and concave lens (C) – 2.0 D and concave lens (D) – 2.0 D and convex lens	J2021–1
30.	A doctor prescribes a corrective lens of power −0.5D to a person. The focal length of lens and the type is A. −2m and concave lens B. +2m and convex lens C. +2m and concave lens D. −2m and convex lens	MQP2021–MCQ
31.	The nature and the size of the image formed when the object is kept between the principal focus 'F1' and optical centre 'O' of a convex lens is A. virtual, erect and enlarged B. real, inverted and small size C. virtual, inverted and small size D. real, inverted and enlarged	MQP2021–MCQ
32.		
33.	The diameter of the circular outline of a spherical lens is A. optical centre B. centre of curvature C. aperture D. principal axis	MQP2021–MCQ
34.	Object distance and image distance of a lens are −60 cm and −20 cm respectively, then the magnification of lens will be A. − 0.33 B. + 3.0 C. + 0.33 D. + 4.0	MQP2021–MCQ
35.	The position of the image obtained by a convex lens when an object is kept between F1 and 2F1 (F: principal focus of the convex lens) A. between F2 and 2F2 B. at 2F2 C. beyond 2F2 D. at infinity	MQP2021–MCQ
36.	Observe the following table. In which material medium speed of light is very high? **Material medium** / **Refractive index** P / 1.52 Q / 1.44 R / 2.42 S / 1.33 A. Q B. S C. R D. P	MQP2021–MCQ
37.	One of the properties of concave lens is, it A. diverges the light rays B. forms real and inverted image C. is thinner at the edges and thicker at the middle D. converges the light rays	MQP2021–MCQ
38.	The phenomenon of bending of light as it passes from one transparent medium to another is A. refraction of light B. reflection of light C. internal reflection of light D. lateral inversion of light	MQP2021–MCQ
39.	The nature and the size of the image formed when an object is kept between the principal focus *F1* and optical centre *O* of a convex lens are (A) virtual, erect and enlarged (B) real, inverted and small size (C) virtual, inverted and small size (D) real, inverted and enlarged	J2021–1
40.	One property of a convex lens among the following is that, it (A) diverges the light rays (B) is thicker at the edges and thinner at the middle (C) forms real and erect image (D) is thinner at the edges and thicker at the middle	J2021–1
41.	If the power of a lens is − 2.5 D, the focal length of the lens and type is (A) + 0.40 m and convex lens (B) − 0.40 m and convex lens (C) + 0.40 m and concave lens (D) − 0.40 m and concave lens	S2021–1

42.	One property of concave lens among the following is, that (A) it converges the light rays (B) is thicker at the edges and thinner at the middle (C) is thinner at the edges and thicker at the middle (D) it forms real and inverted image	S2021–1
43.	If an image is to be formed between F2 and 2F2 in a convex lens, then the object should be placed [F : principal focus of a lens] (A) beyond 2F1 (B) at 2F1 (C) between F1 and 2F1 (D) at focus F1	S2021–1
44.	The distance between the principal focus and the optical centre of a lens is (A) principal axis (B) object distance (C) image distance (D) focal length	S2021–1
45.	The diameter of the reflecting surface of spherical mirror is A) Optical Centre B) Centre of Curvature C) Aperture D) Principal axis	MQP2022–MCQ
46.	If the focal length of a spherical mirror is 15cm. Find the radius of curvature?	MQP2022–1
47.	Draw the ray diagram of image formed when the object is kept beyond 2F1 of the convex lens. With the help of the diagram, mention the position and nature of the image formed. (F1 : principal focus of the lens) **OR** Draw the ray diagram when of image formed the object is kept beyond C of the concave mirror. With the help of the diagram mention the position and nature of the image formed. (C : Centre of curvature of mirror).	MQP2022–3
48.	An object is kept at a distance of 30cm from a diverging lens of focal length 15cm. At what distance the image is formed from the lens? Find the magnification of the image.	MQP2022–3
49.	a) List the uses of Convex mirror and Concave mirror. b) Define principal focus and radius of curvature of a convex mirror.	MQP2022–4
50.	To get diminished and real image of an object from a convex lens, the object should be placed (A) at principal focus F1 (B) between principal focus F1 and 2F1 (C) beyond 2F1 (D) between principal focus F1 and optical centre O.	A2022–1
51.	Mention the SI unit of power of lens.	A2022–1
52.	An object is placed at 25 cm in front of a concave mirror of focal length 15cm. At what distance from the mirror should a screen be placed in order to obtain a sharp image ? **OR** A concave lens has focal length of 15 cm. At what distance should the object from the lens be placed so that it forms an image at 10 cm from the lens ?	A2022–2
53.	Draw the ray diagram to show the image formation by a convex lens, when the object is kept at 2F1 of the lens. With the help of the ray diagram mention the position and nature of the image formed. [F1:Principal focus of the lens]	A2022–3
54.	a) What is refraction of light ? State two laws of refraction of light. b) What is refractive index of light ? "The refractive index of diamond is 2·42." What is the meaning of this statement ?	A2022–5
55.	The correct statement among the following related to the Concave lens is, (A) Converges the light rays (B) forms inverted image (C) forms real image (D) diverges the light rays	MQP–2023–MCQ
56.	What is 'Optic centre' of spherical lens?	MQP–2023–1
57.	Ray of light travelling in air enters obliquely into water. Does the light ray bend towards the normal or away from the normal? Why? OR Convex mirror is commonly used as a rear-view mirror in vehicles. Why? Write the relationship between the focal length and radius of curvature of a convex mirror.	MQP–2023–2

58.	Draw the ray diagram of image formation when the object is kept at 'C' of the concave mirror. With the help of the ray diagram mention the position and the nature of the image formed. (F: Principal focus of the mirror, C: Centre of curvature of mirror)	MQP–2023–3
59.	A light ray enters to rarer medium from a denser medium. Then the speed of that light ray (A) decreases and bends towards the normal (B) increases and bends away from the normal (C) decreases and bends away from the normal (D) increases and bends towards the normal	A2023–MCQ
60.	Light enters from air to benzene having refractive index 1·50. Calculate the speed of light in benzene. (Speed of light in air : 3×10^8 ms^{-1}) OR A concave lens has focal length of 12 cm. At what distance should the object from the lens be placed so that it forms an image at 9 cm from the lens ?	A2023–2
61.	Draw the ray diagram for the image formation in a convex lens when the object is placed beyond 2F1 . Mention the position and nature of the image formed. [F1: Principal focus of the lens]	A2023–3
62.	A mirror forms an erect and enlarged image of an object. Then the type of the mirror and the nature of the image respectively are (A) convex mirror and virtual image (B) concave mirror and real image (C) plane mirror and real image (D) concave mirror and virtual image.	J2023–MCQ
63.	What is meant by the 'aperture' of a spherical mirror? Mention the four uses of a concave mirror. **OR** a) What is meant by the power of a lens ? Write the formula used to find the power of a lens. What is the SI unit of power of a lens ? b) If the focal lengths of two lenses A and B are + 0·50 m and – 0·40m respectively. Mention the types of these lenses in the same order.	J2023–3
64.	Draw the ray diagram for the image formation by a convex lens, when the object is placed at 2F1. With the help of the ray diagram mention the position and the nature of the image formed. [*F1* : Principal focus of the lens] OR Draw the ray diagram for the image formation in a convex lens when the object is placed beyond 2F1 . With the help of the ray diagram mention the position and the nature of the image formed. [F1 : Principal focus of the lens]	J2023–3