Q1. An object is placed at a distance of 6cm from a convex mirror of focal length 12cm. Find the position and nature of the image. **2 Marks**

Q2. A 2.0cm tall object is placed 40 cm from a diverging lens of focal length 15cm. Find the position and size of the image. **3 Marks**

Q3. An object is placed at a distance of 4cm from a concave lens of focal length 12cm. Find the position and nature of the image. **3 Marks**

Q4. When an object is placed 20cm from a concave mirror, a real image magnified three times is formed. Find: **3 Marks**

1. The focal length of the mirror.
2. Where must the object be placed to give a virtual image three times the height of the object?

Q5. A concave mirror has a focal length of 4cm and an object 2cm tall is placed 9cm away from it. Find the nature, position and size of the image formed. **3 Marks**

Q6. Determine how far an object must be placed in front of a converging lens of focal length 10cm in order to produce an erect (upright) image of linear magnification 4. **3 Marks**

Q7. Find the position and size of the virtual image formed when an object 2cm tall is placed 20cm from: **3 Marks**

1. A diverging lens of focal length 40cm.
2. A converging lens of focal length 40cm.

Q8. A magnifying lens has a focal length of 100mm. An object whose size is 16mm is placed at some distance from the lens so that an image is formed at a distance of 25cm in front of the lens. **3 Marks**

1. What is the distance between the object and the lens?
2. Where should the object be placed if the image is to form at infinity?

Q9. An object is 24cm away from a concave mirror and its image is 16cm from the mirror. Find the focal length and radius of curvature of the mirror, and the magnification of the image. **3 Marks**

Q10. An object placed 20cm in front of a mirror is found to have an image 15cm. **3 Marks**

1. In front of it,
2. Behind the mirror.

Find the focal length of the mirror and the kind of mirror in each case.

Q11. An object is placed at a distance of 100cm from a converging lens of focal length 40cm. **3 Marks**

1. What is the nature of image?
2. What is the position of image?

A convex lens produces an inverted image magnified three times of an object placed at a distance of 15cm from it. Calculate focal length of the lens.

Q12. An object is placed 20cm from (a) a converging lens, and (b) a diverging lens, of focal length 15cm. Calculate the image position and magnification in each case. **3 Marks**

Q13. At what distance from a concave mirror of focal length 10cm should an object be placed so that: **4 Marks**

1. Its real image is formed 20cm from the mirror?
2. Its virtual image is formed 20cm from the mirror?

Q14. An object is placed 15cm from (a) a converging mirror, and (b) a diverging mirror, of radius of curvature 20cm. Calculate the image position and magnification in each case. **4 Marks**

Q15. An object 3cm high is placed at a distance of 8cm from a concave mirror which produces a virtual image 4.5cm high: **4 Marks**

1. What is the focal length of the mirror?
2. What is the position of image?
3. Draw a ray-diagram to show the formation of image.

Q16. An object 5cm high is held 25cm away from a converging lens of focal length 10cm. Find the position, size and nature of the image formed. Also draw the ray diagram. **5 Marks**

Q17. An object placed 4cm in front of a converging lens produces a real image 12cm from the lens. **5 Marks**

1. What is the magnification of the image?
2. What is the focal length of the lens?
3. Draw a ray diagram to show the formation of image. Mark clearly F and 2F in the diagram.

Q18. An object is placed at a distance of 10cm from a concave mirror of focal length 20cm. **5 Marks**

1. Draw a ray diagram for the formation of image.
2. Calculate the image distance.
3. State two characteristics of the image formed.

Q19. A camera fitted with a lens of focal length 50mm is being used to photograph a flower that is 5cm in diameter. The flower is placed 20cm in front of the camera lens. **5 Marks**

1. At what distance from the film should the lens be adjusted to obtain a sharp image of the flower?
2. What would be the diameter of the image of the flower on the film?
3. What is the nature of camera lens?

Q20. An object is placed at a distance of 10cm from a convex mirror of focal length 5cm. **5 Marks**

1. Draw a ray-diagram showing the formation of image.
2. State two characteristics of the image formed.
3. Calculate the distance of the image from mirror.