

EINSTEIN'S ACADEMY

10th STANDARD

MATHS 2ND CHAPTER

PART – I

50 marks

1 x 10 = 10

Choose the correct answer

1. If V_B , V_G , V_R be the velocity of blue, green and red light respectively in a glass prism, then which of the following statement gives the correct relation?

- a) $V_B = V_G = V_R$
- b) $V_B > V_G > V_R$
- c) $V_B < V_G < V_R$
- d) $V_B < V_G > V_R$

2. A small bulb is placed at the principal focus of a convex lens. When the bulb is switched on, the lens will produce

- a) a convergent beam of light
- b) a divergent beam of light
- c) a parallel beam of light
- d) a coloured beam of light

3. The refractive index of four substances A, B, C and D are 1.31, 1.43, 1.33, 2.4 respectively. The speed of light is maximum in

- a) A
- b) B
- c) C
- d) D

4. Where should an object be placed so that a real and inverted image of same size is obtained by a convex lens

- a) f
- b) $2f$
- c) infinity
- d) between f and $2f$

5. A convex lens forms a real, diminished point sized image at focus. Then the position of the object is at

- a) focus
- b) Infinity
- c) at $2f$
- d) between f and $2f$

6. Magnification of a convex lens is

- a) positive
- b) negative
- c) either positive or negative
- d) zero

7. The eye defect 'presbyopia' can be corrected by

- a) convex lens
- b) concave lens
- c) convex mirror
- d) bi focal lens

8. Power of a lens is $-4D$, then its focal length

- a) 4m
- b) -40m
- c) -0.25m
- d) -2.5m

9. In myopic eye, the image of the object is formed

- a) Denina the reuina b) in front of the retina
- c) on the retina d) on the blind spot

10. Which of the following lens would you prefer to use while reading small letters found in a dictionary?

- a) A convex lens of focal length 5 cm
- b) A concave lens of focal length 5 cm
- c) A convex lens of focal length 10 cm
- d) A concave lens of focal length 10 cm

PART - II

Answer the question (any 7)

7 x 2 = 14

- 12. Draw a ray diagram to show the image formed by a convex lens when the object is placed between F and 2F.
- 13. State Snell's law.
- 14. Why does the sky appear in blue colour?
- 15. Why are traffic signals red in colour?
- 16. The eyes of the nocturnal birds like owl are having a large cornea and a large pupil. How does it help them?
- 17. Differentiate convex lens and concave lens.
- 18. What is power of accommodation of eye?
- 19. Define dispersion of light
- 20. An object of height 3cm is placed at 10cm from a concave lens of focal length 15cm. Find the size of the image.

PART - IV

5 X 5 = 25

Answer the following (any 5)

- 21. Explain the construction and working of a 'Compound Microscope.
- 22. Explain the rules for obtaining images by a convex lens with the help of ray diagram.
- 23. Differentiate the eye defects: Myopia and Hypermetropia
- 24. An object is placed at a distance 20cm from a convex lens of focal length 10cm. Find the image distance and nature of the image
- 25. An object of height 3cm is placed at 10cm from a concave lens of focal length 15cm. Find the size of the image.
- 26. The eyes of the nocturnal birds like owl are having a large cornea and a large pupil. How does it help them?
- 27. List any five properties of light