11 Light

Multiple Choice Questions

1. Observe the picture given in Fig. 11.1 carefully.

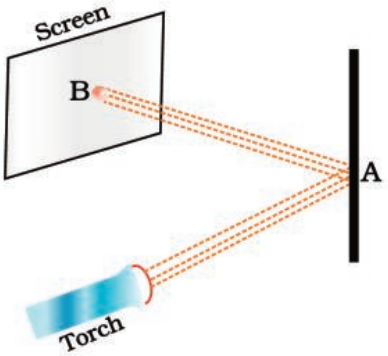


Fig. 11.1

A patch of light is obtained at B, when the torch is lighted as shown. Which of the following is kept at position A to get this patch of light?

(a) A wooden board

(b) A glass sheet

(c) A mirror

(d) A sheet of white paper,

2. 

A student observes a tree given in Fig. 11.2 through a pin hole camera. Which of the diagrams given in Fig. 11.3 (a) to (d), depicts the image seen by her correctly?

Fig. 11.2

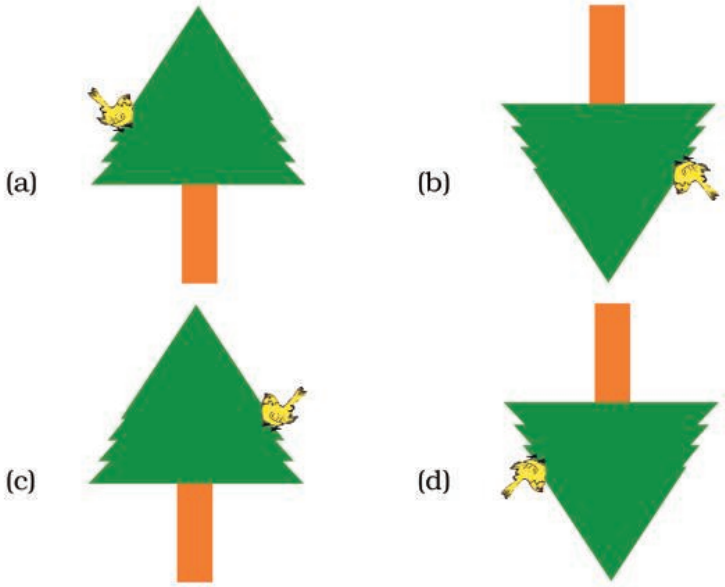


Fig. 11.3

3. Four students A, B, C and D looked through pipes of different shapes to see a candle flame as shown in Fig. 11.4.

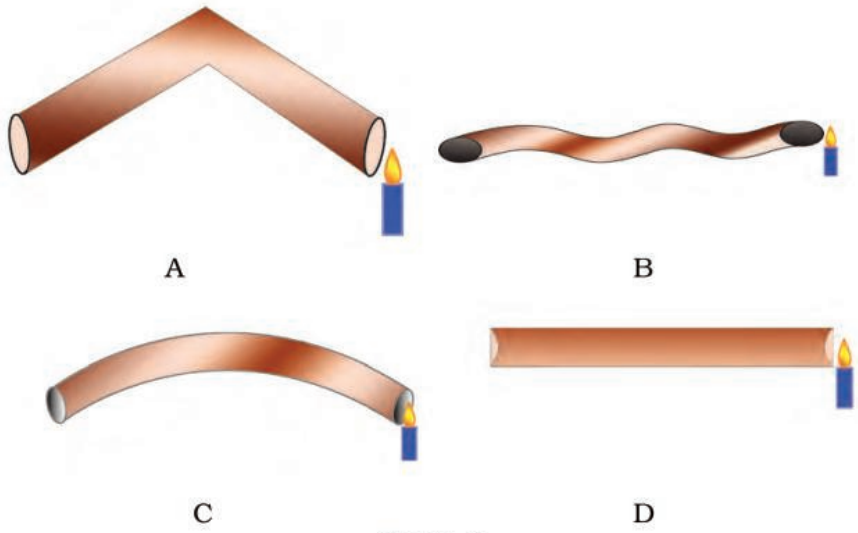


Fig. 11.4

Who will be able to see the candle flame clearly?

(a) A (b) B

(c) C (d) D

4. Which of the following is/are not always necessary to observe a shadow?

(a) Sun (b) Screen

(c) Source of light (d) Opaque object

5. Paheli observed the shadow of a tree at 8:00 a.m., 12:00 noon and 3:00 p.m. Which of the following statements is closest to her observation about the shape and size of the shadow?

(a) The shape of the shadow of the tree changes but the size remains the same.

(b) The size of the shadow of the tree changes but the shape remains the same.

(c) Both the size and shape of the shadow of the tree change.

(d) Neither the shape nor the size of the shadow changes.

6. Which of the following can never form a circular shadow?

(a) A ball

(b) A flat disc

(c) A shoe box

(d) An ice cream cone

7. Two students while sitting across a table looked down on to its top surface. They noticed that they could see their own and each other's image. The table top is likely to be made of:

(a) unpolished wood

(b) red stone

(c) glass sheet

(d) wood top covered with cloth

VERY SHORT ANSWER QUESTIONS

8. You have 3 opaque strips with very small holes of different shapes as shown in Fig. 11.5. If you obtain an image of the sun on a wall through these holes, will the image formed by these holes be the same or different?

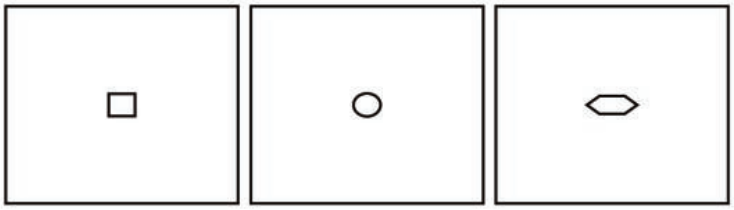


Fig. 11.5

9. Observe the picture given in Fig. 11.6. A sheet of some material is placed at position 'P', still the patch of light is obtained on the screen. What is the type of material of this sheet?

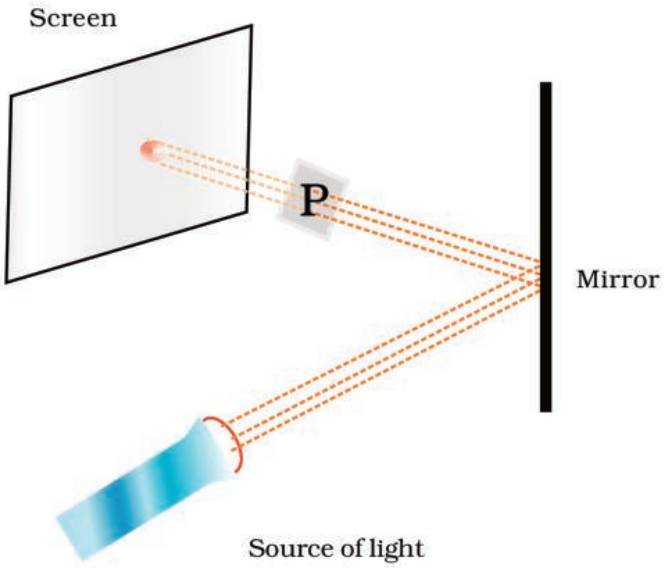


Fig. 11.6

10. Three torches A, B and C shown in Fig. 11.7 are switched on one by one. The light from which of the torches will not form a shadow of the ball on the screen.

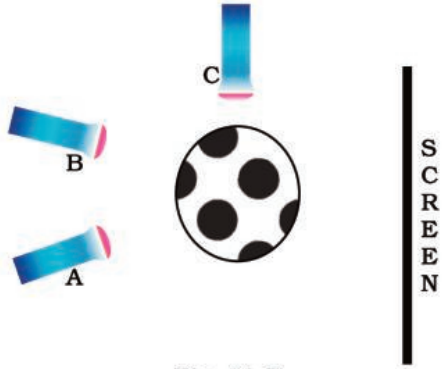


Fig. 11.7

11. Look at the figure given in Fig. 11.8.

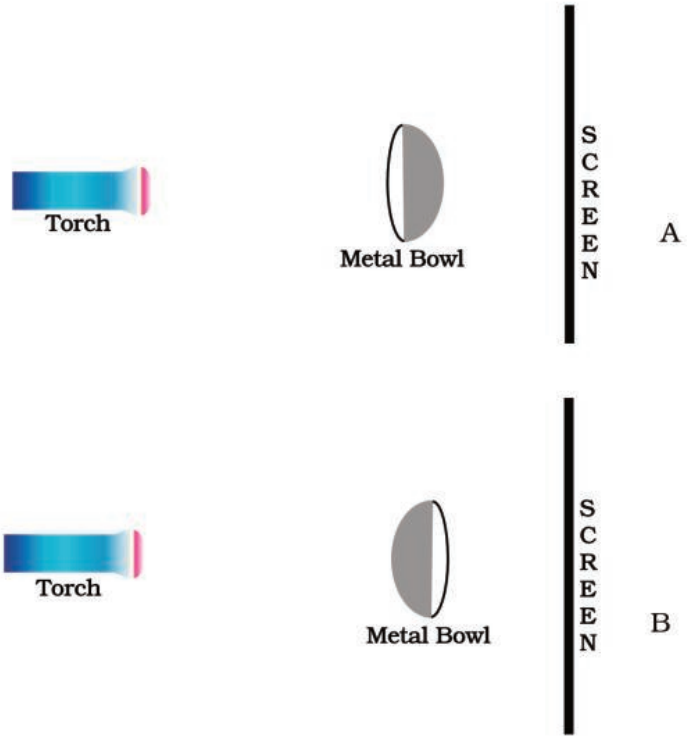


Fig. 11.8

Will there be any difference in the shadow formed on the screen in A and B.

SHORT ANSWER QUESTIONS

12. Correct the following statements.

    (i) The colour of the shadow of an object depends on its colour of the object.

    (ii) Transparent objects allow light to pass through them partially.

13. Suggest a situation where we obtain more than one shadow of an object at a time.

14. On a sunny day, does a bird or an aeroplane flying high in the sky cast its shadow on the ground? Under what circumstances can we see their shadow on the ground?

15. You are given a transparent glass sheet. Suggest any two ways to make it translucent without breaking it.

16. A torch is placed at two different positions A and B, one by one, as shown in Fig. 11.9.

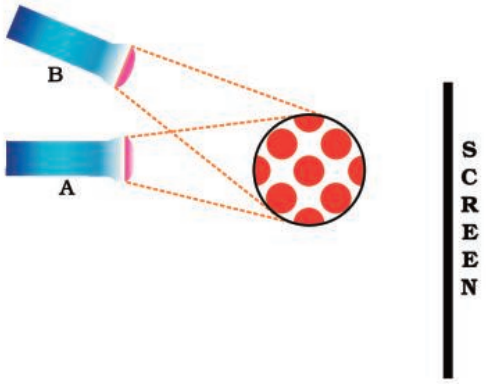


Fig. 11.9

The shape of the shadow obtained in two positions is shown in Fig. 11.10.

Fig. 11.10

Match the position of the torch and shape of the shadow of the ball.

17. A student covered a torch with red cellophane sheet to obtain red light. Using the red light she obtains a shadow of an opaque object. She repeats this activity with green and blue light. Will the colour of the light affect the shadow ? Explain.

18. Is air around us always transparent? Discuss.

19. Three identical towels of red, blue and green colour are hanging on a clothes line in the sun. What would be the colour of shadows of these towels?

20. Using a pinhole camera a student observes the image of two of his friends, standing in sunlight, wearing yellow and red shirt respectively. What will be the colours of the shirts in the image?

21. In Fig. 11.11, a flower made of thick coloured paper has been pasted on the transparent glass sheet. What will be the shape and colour of shadow seen on the screen?

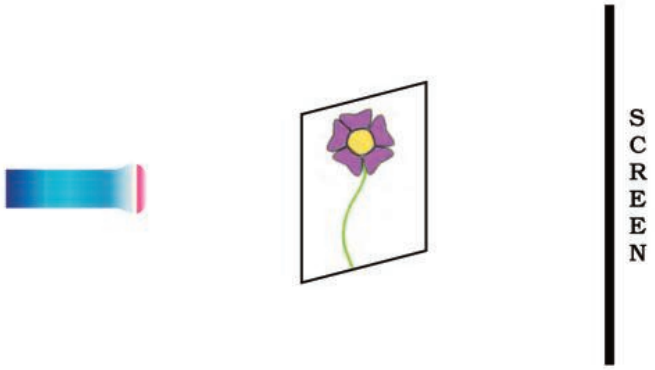


Fig. 11.11

LONG ANSWER QUESTIONS

22. A football match is being played at night in a stadium with flood lights ON. You can see the shadow of a football kept at the ground but cannot see its shadow when it is kicked high in the air. Explain.

23. A student had a ball, a screen and a torch in working condition. He tried to form a shadow of the ball on the screen by placing them at different positions. Sometimes the shadow was not obtained. Explain.

24. A sheet of plywood, a piece of muslin cloth and that of a transparent glass, all of the same size and shape were placed at A one by one in the arrangement shown in Fig. 11.12. Will the shadow be formed in each case. If yes, how will the shadow on the screen be different in each case? Give reasons for your answer.

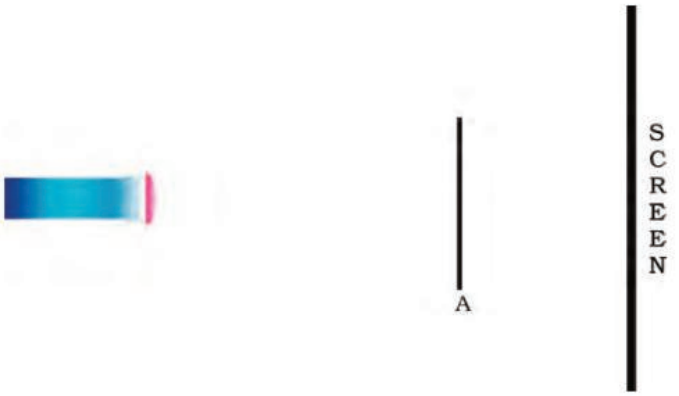


Fig. 11.12