UNIT 5: Ray Model of Light

Section: A

1. A	5. C	9. D	13. B	17. B
2. D	6. D	10. C	14. D	18. C
3. B	7. B	11. A	15. D	19. B
4. D	8. C	12. B	16. B	20. A

Section: B

1. (a) straight
   (b) reflected
   (c) smooth
   (d) laterally

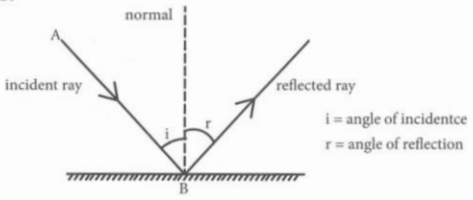
2. Light from the bottom of the pool is refracted as it moves out of the water into the air. This bending of light makes the pool appear more shallow.

3. (a) False
   (b) True
   (c) True
   (d) False

4. (a) Frosted glass
   (b) Clear glass
   (c) Mirror
   (d) Electric bulb

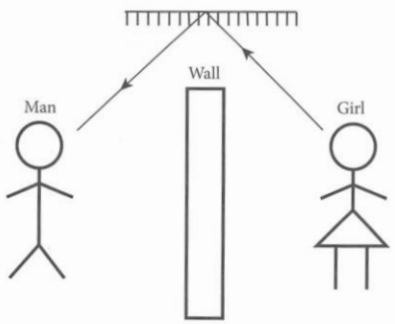
5. The moon does not give out its own light. The sun shines on the moon and the light is reflected off the moon.

6.

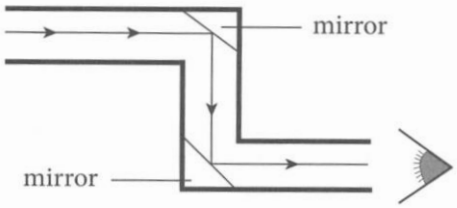


7. (i) 1.5 m + 1.5 m + 0.5 m = 3.5 m
   (ii) virtual, upright, same size, laterally inverted.

8.



9.



10. **(a)** White light can be dispersed into its components of seven colours.

(b) red, orange, yellow, green, blue, indigo, and violet

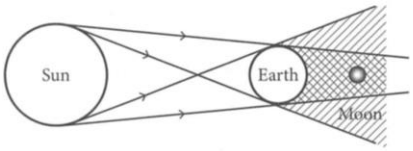
(c) Red light because it bends the least when refracted through a prism.

(d) raindrops

11. **(a)** The fish appears higher than its actual location due to the refraction of light.

(b)

12. **(a)** and **(b)**



(c) During a lunar eclipse, the Earth comes in between the Sun and the Moon. The shadow of the earth falls on the Moon and the light from the Sun does not reach the Moon, causing an eclipse.

13. **(a)** Mirror A - Concave mirror.
Mirror B - Convex mirror.

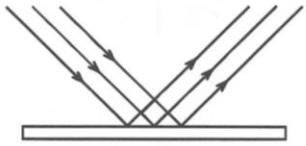
(b) Image formed by the convex mirrors gives large field of view, they are upright and small.
Images formed by the concave mirrors are upright and magnified.

(c) **Convex mirror:**
used as blind corner mirrors - help to spot things around a bend.
used as security mirrors - to provide a wide view of all the activities happening at a place.
Concave mirror:
Dentist's mirror - to provide magnified image of teeth.
Microscope - to magnify the size of objects which are too small to be seen by naked eyes.

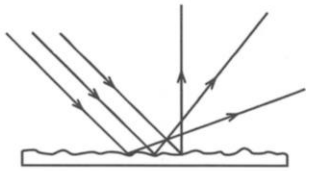
Section: C

1. **(a)** Regular reflection and diffused reflection

(b)



regular reflection



diffused reflection

When a parallel beam of light hits a smooth surface, it is reflected as a parallel beam and this reflection is said to be a regular reflection. A clear image will be formed by a regular reflection. When a parallel beam of light hits a rough surface, it reflects in all directions and no clear image will be formed. This is a diffused reflection.

(c) Plane mirror - smooth surface (regular reflection)
Cardboard - rough surface (diffused reflection)

2. **(a)** Refraction is the bending of light when it travels from one medium to another of a different optical density.

(b) An object submerged fully in water appears nearer to the surface than it really is.
An object that is half-immersed in water appears to be bent at the surface of the water.

3. **(a)** Concave and convex mirrors

(b) Convex - security mirrors, blind corner mirrors
Concave - dentist's mirror, cosmetic mirrors

(c) virtual, upright, same size as the object and laterally inverted

4. (a) A dispersion is the splitting or separation of white light into its component of colours.
   (b) A spectrum is a band of colours.
   (c) By placing another prism of the same type but inverted next to the first prism or by spinning a rainbow-coloured Newton's disc.