Answer Key 10.3

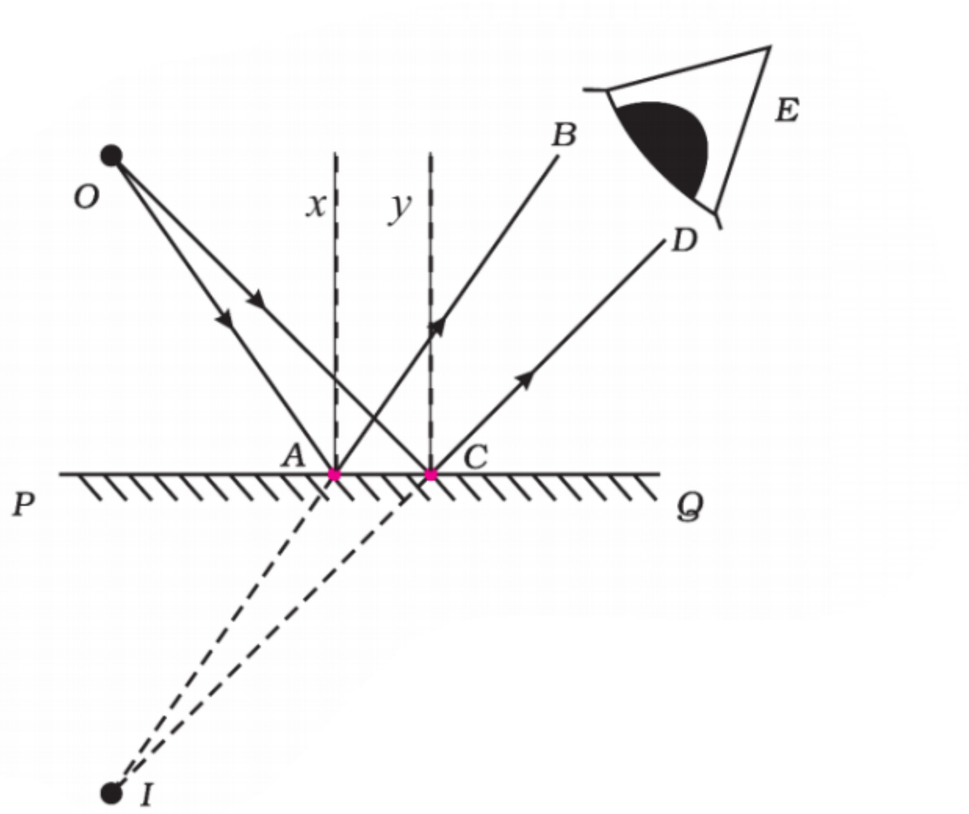
Marks - 25

Case study based questions

10th Science

Light - Reflection and Refraction

Passage - 1 **5 Marks**



Arrange a source of light at a point O in front of a plane mirror. Consider that OA and OC are two rays of light incident obliquely on the mirror. According to the laws of reflection the reflected rays AB and CD can be drawn with respect to the normals x and y. If the rays are extended backwards, they meet at a point I.

Q1. (1) YES

Q2. (1) Equal

Q3. (2) Virtual

Q4. (3) Same size as object

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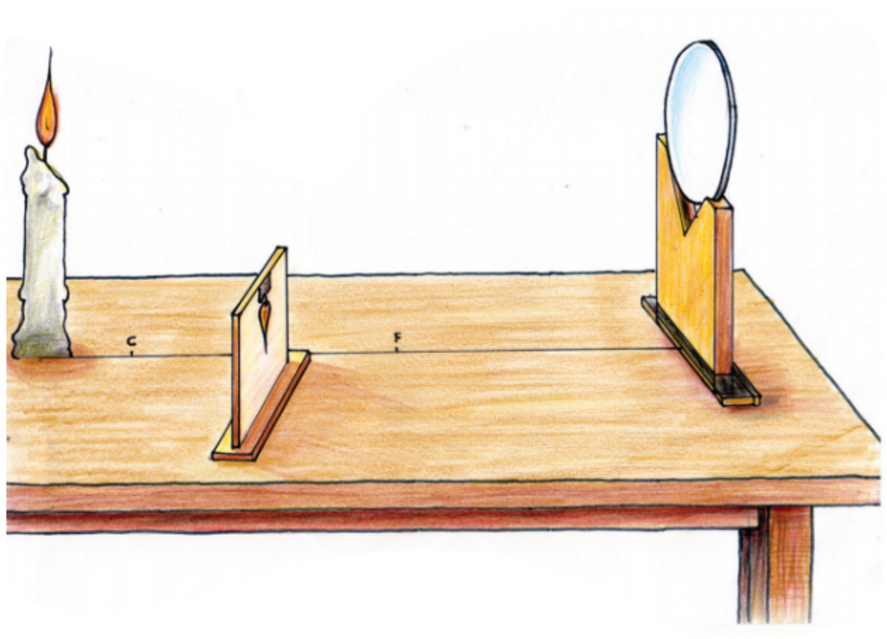
Marks - 25

Q5. (1) TRUE

Passage - 2 **5 Marks**



Febin is doing an experiment as shown above. He draws a straight line on table. At one end of the line, he placed a concave mirror of focal length 20 cm. Marked principle focus (F) and centre of curvature (C) on the line. He fixed a burning candle on the principle focus in such a way that it is at a slight distance from the centre of curvature. Arranged a screen in such a way that a clear image is obtained on the screen.

Q1. (3) Between F and C

Q2. (2) Real and inverted

Q3. (3) Same size as object

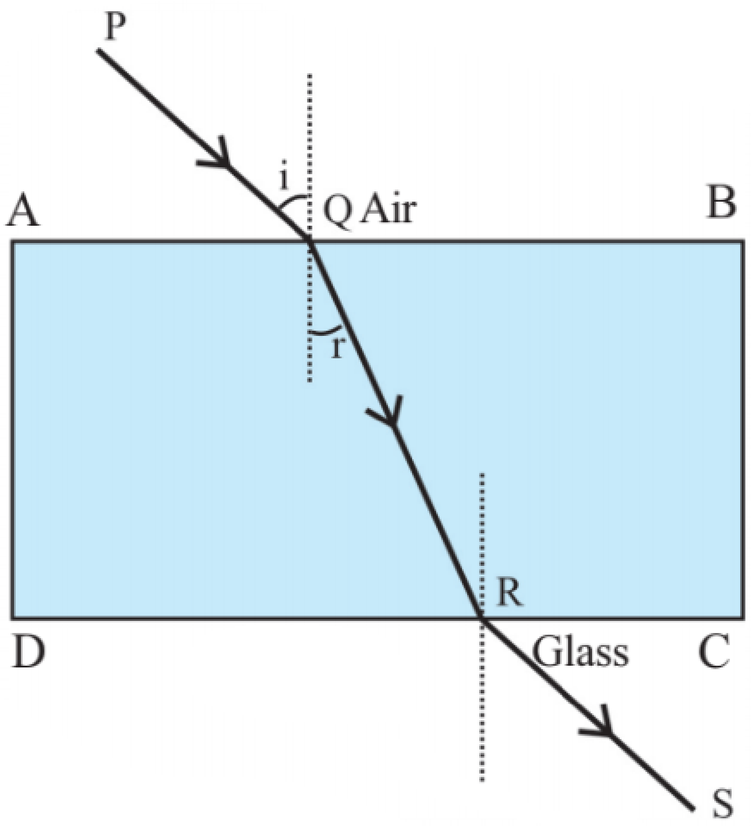
Q4. (3) Virtual and erect

Q5. (3) Virtual and erect

Passage - 3 **5 Marks**

Answer Key 10.3

Marks - 25



Aravind placed a glass slab on a drawing sheet and marked its boundary as ABCD. Then he removed the glass slab and drew a line PQ on the side AB. He placed the glass slab in position, passed light from a laser torch through it along PQ. He observed the path of light through the glass slab and marked the points Q, R and S. AB is the surface of seperation of air and glass and that CD is the surface of seperation of glass and air.

Q1. (2) QR

Q2. (2) Lower

Q3. (1) Greater

Q4. (2) Glass

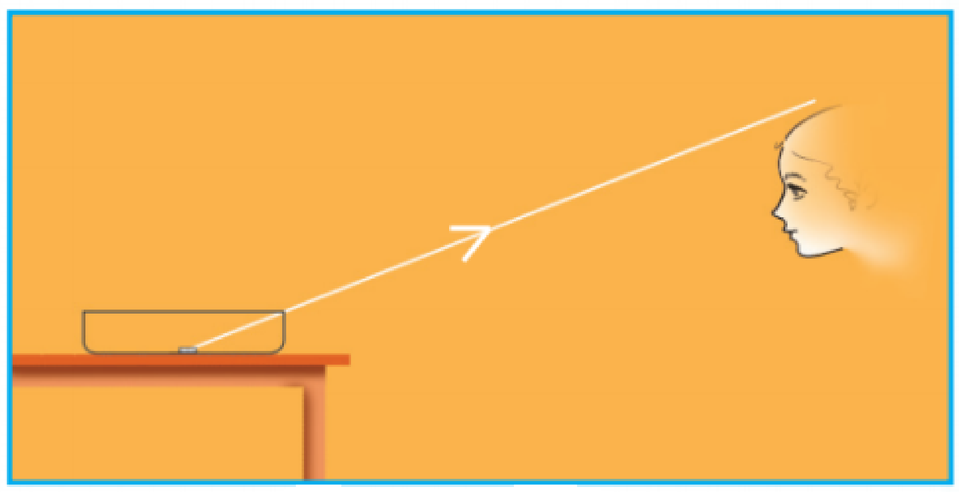
Q5. (2) Towards the normal

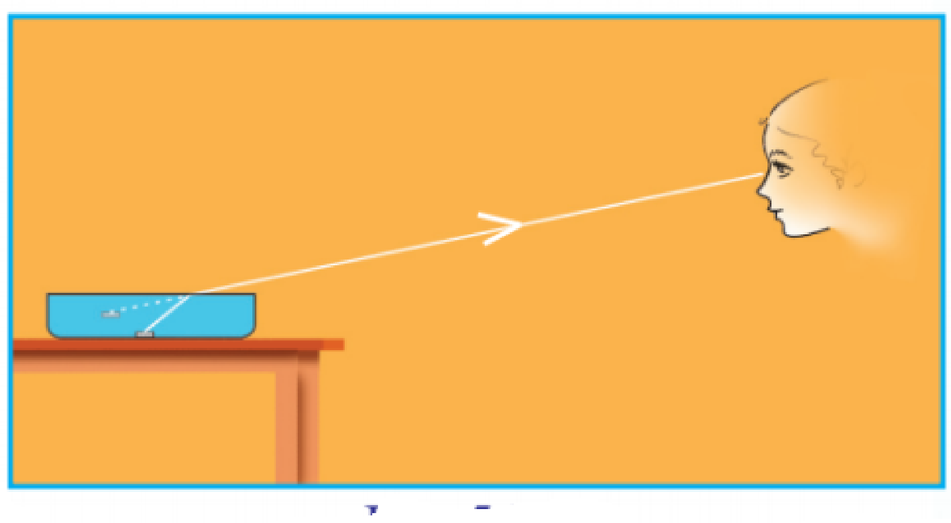
Passage - 4

5 Marks

Answer Key 10.3

Marks - 25





Saritha took an opaque vessel. Placed a coin at its bottom. She asked Neenu to walk backwards looking at the coin. Saritha asked Neenu to stop at the place where the coin disappers. Now saritha added water into the vessel without moving the coin.

Q1. (1) The coin seems to be lifted up.

Q2. (2) Due to refraction

Q3. (1) Away from the normal

Q4. (2) Water

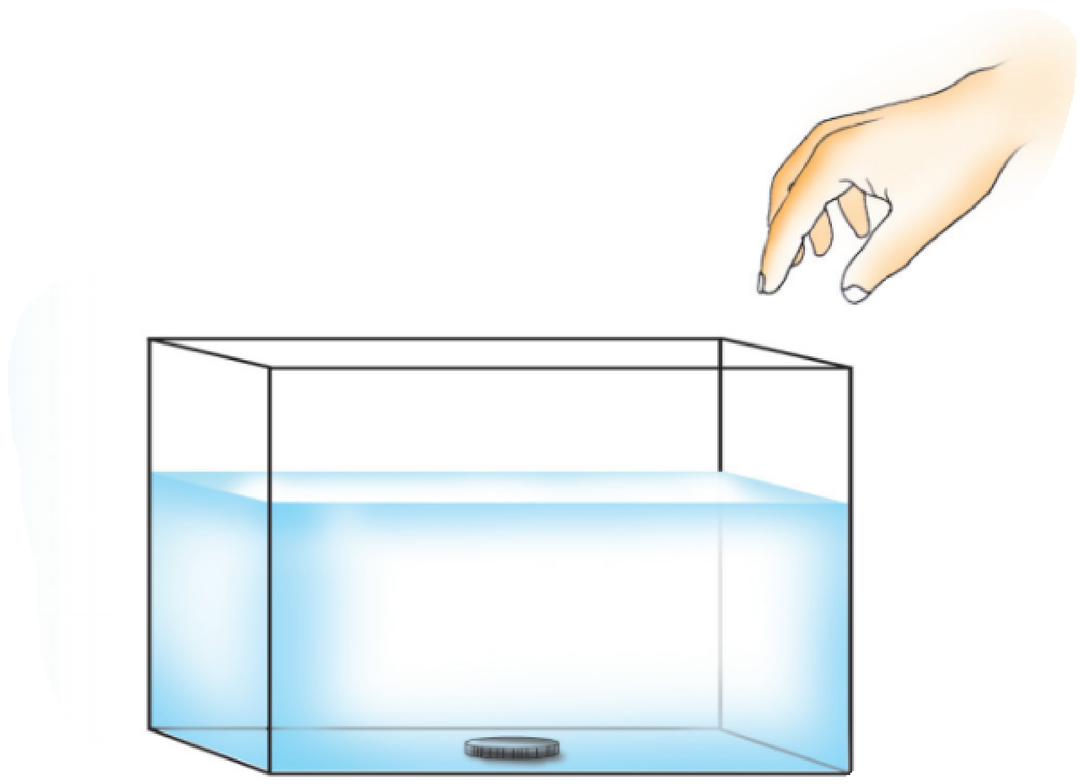
Q5. (2) 0.89

Answer Key 10.3

Marks - 25

Passage - 5

5 Marks



John is trying to take out a coin from the bottom of a trough filled with water by viewing it from one side.

Q1. (2) NO

Q2. (1) Denser to rarer medium

Q3. (1) Away from the normal

Q4. (3) 48.59°

Q5. (3) n = $\frac{c}{v}$

Answer Key 10.4

Marks - 25

Case study based questions

10th Science

Light - Reflection and Refraction

Passage - 1 **5 Marks**

Arjun is a student of class VIII. During summer vacation, his parents planned a visit to Pondicherry by their car. During the journey from Chennai to Pondicherry, Arjun sat on the front seat and his father was driving the car. Arjun observed that the road ahead on the highway appears to be wet as in figure. But when the car reached the spot, road is found to be dry. He was perplexed by this observation. He asked his father. His father advised Arjun not to disturb him during driving and said that he will discuss the problem on reaching Pondicherry. In the evening, when they were settled in a hotel at Pondicherry, Arjun's father told him that the illusion observed by Arjun was on account of atmospheric refraction. Now, Arjun was happy as he knew the real explanation of his observation.

Q1. (2) Greater than 1

Q2. (2) Law of refraction

Q3. (1) TRUE

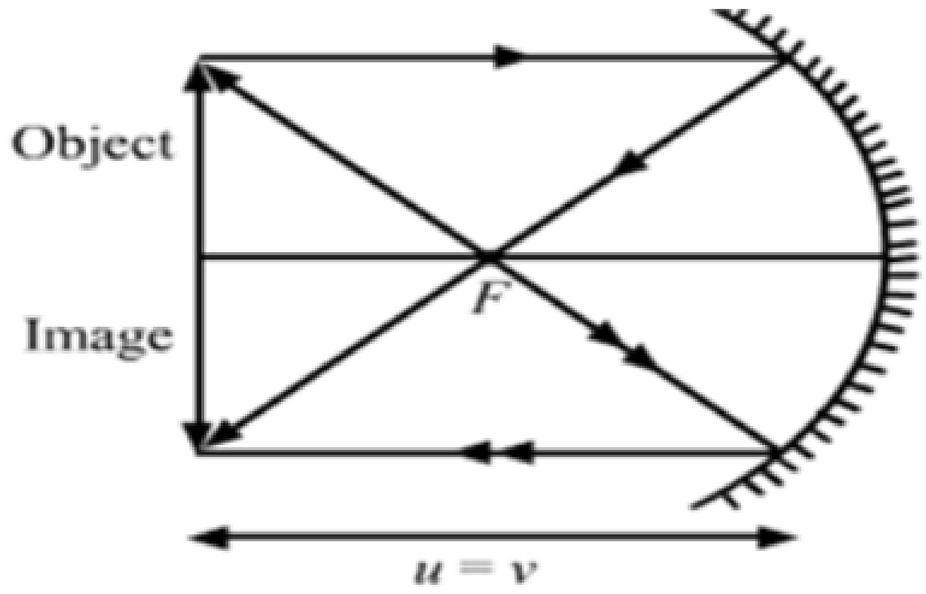
Answer Key 10.4

Marks - 25

Q4. (2) Denser medium

Q5. (3) Atmospheric refraction

Passage - 2 **5 Marks**



A spherical mirror produces an image of magnification -1 on a screen placed at a distance of 50 cm from the mirror.

Q1. (1) Real

Q2. (2) Concave mirror

Q3. (2) 0 cm

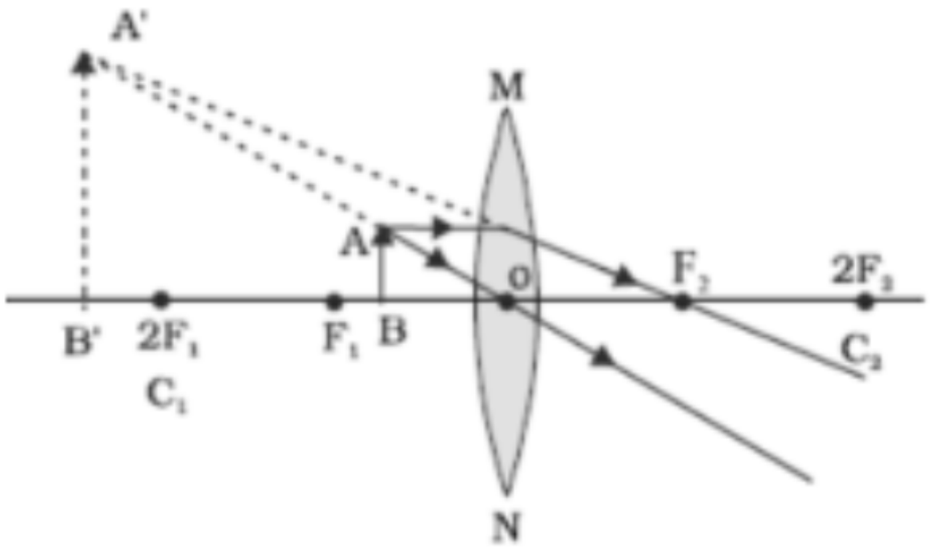
Q4. (1) -25

Q5. (4) Concave mirror

Passage - 3 **5 Marks**

Answer Key 10.4

Marks - 25



A student has focused the image of a candle flame on a white screen using a concave mirror. The situation is as given below:
Length of the flame= 1.5cm, Focal length of the mirror = 12cm, Distance of flame from the mirror= 18cm.

Q1. (4) - 36 cm

Q2. (3) 3 cm

Q3. (1) Nothing will be observed on the screen.

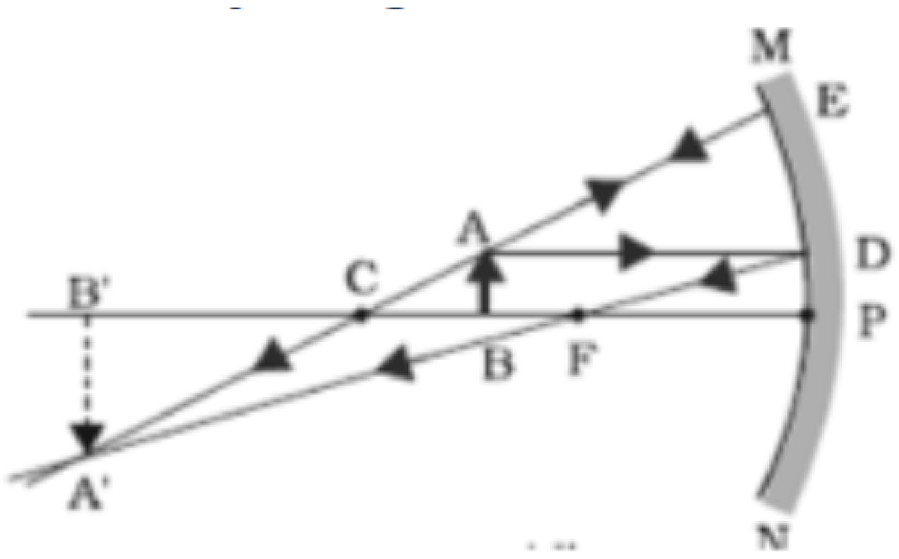
Q4. (3) Virtual and erect

Q5. (3) Between P and F

Passage - 4 **5 Marks**

Answer Key 10.4

Marks - 25



A student wants to project the image of a candle flame on a screen 90 cm in front of a mirror by keeping the flame at a distance of 15 cm from its pole.

Q1. (4) Concave mirror

Q2. (3) m = -6

Q3. (2) 75 cm

Q4. (4) Concave mirror

Q5. (1) Negative

Passage - 5 **5 Marks**

Answer Key 10.4

Marks - 25

The wing and rear-view mirrors of a car are made of a convex and a plane mirror respectively. The two wing mirrors enable the driver to see objects on both sides of the car. The rear-view mirror enables the driver to see things behind the car.

Q1. (1) Less than one

Q2. (3) Convex mirror

Q3. (2) Reflection

Q4. (1) It enables the driver to view much larger area than plane mirror.

Q5. (1) Less than the size of object