5. Light Energy

- Light is a form of energy which produces in us the sensation of sight i.e. we can see objects only when light falls on them and then reflected into our eye.
- Velocity of light in air or in vacuum is 300000 km per second.
  Or
  3×10^8 ms^{-1}
- As light passes into different mediums its speed changes and depends upon the density of medium i.e. it decreases with increase in density i.e. it is 2.25×10^8 m/s in water and 2×10^8 ms^{-1} in glass as water is denser than air (${}^{a}_{w}\mu$ = 1.33) and glass is still optically denser than water (${}^{a}_{g}\mu$ =1.5) i.e. slower in water and still slower in glass.
- Light travels in a straight line.
- As light travels from one transparent medium to other transparent medium and falls oblique at another medium, its path changes and this change in path is called REFRACTION OF LIGHT.
- When ray of light travels from RARER (less-denser) to DENSER medium, it bends TOWARD the normal AND when it travels from a DENSER to a RARER medium it bends away from NORMAL
- **ANGLE of INCIDENCE :** "The angle which incident ray makes with normal". "∠i"
- **ANGLE OF REFRACTION:** "The angle which refracted ray makes with normal" " ∠r "
  ∠i is not equal to ∠r
- LAWS OF REFRACTION or SNELL'S LAWS OF REFRACTION:
  (i) Incident ray, normal at the point of incidence and Refracted ray all lie in the same plane.
  (ii) Ratio of sine of angle of incidence to the sine of angle of refraction is constant.

$$\frac{\text{Sin}\angle i}{\text{Sin}\angle r} = \text{Constant} = \text{Refractive index}$$

$$= \mu \text{ (mew)}$$

$$\text{R.I.} = \mu = \frac{\text{Speed of light in air}}{\text{Speed of light in medium}} = \frac{\text{Real depth}}{\text{Apparent depth}}$$

-
-
- EFFECTS OF REFRACTION :
  (i) A coin placed in water appears to be raised.
  (ii) Swimming pool seen from above appears SHALOW.
  (iii) A pencil in water appears to be bent.
  (iv) MIRAGE in desert, EARLY Sunrise, LATE SUN set are all due to RFRACTION of light.
- White light is a band of seven colours-VIBGYOR. Speed of all colours of the white light in AIR or VACUUM is same, but different different transparent mediums.

- In glass or water Speed of VIOLET colour is MINIMUM and speed of RED light is MAXIMUM
- Refractive index of medium is minimum for VIOLET lightand R.I. of medium is maximum for red light.
- DISPERSION: “The spliting (breaking) of white light into seven colours is called DISPERSION OF LIGHT.
- CAUSE OF DISPERSION: Speed of different colours is different in glass or water and different colours get separated from each other on refraction at second surface of glass prism.

Test yourself

A. Objective Questions

1. Write true or false for each statement

(a) Water is optically denser than glass.
Answer. False.
Water is optically denser than air.

(b) A ray of light when passes from glass to air, bends towards the normal.
Answer. False.

(c) The speed of light is more in glass than in water.
Answer. False.

(d) The depth of a pond when seen from above appears to be less.
Answer. True.

(e) Light travels at a lower speed in water than in air.
Answer. True.

(f) Light travels in the same straight line path while passing through different media.
Answer. False.

(g) The angle formed between the normal and the refracted ray is known as the angle of incidence.
Answer. False.

(h) At the point of incidence, a line drawn at right angles to the surface, separating the two media, is called the normal.
Answer. True.

(i) Image is formed by a mirror due to refraction of light.
Answer. False.

(j) Rays of light incident parallel to the principal axis pass through the focus after reflection from a concave mirror.
Answer. True.

(k) A convex mirror is used as a shaving mirror.
Answer. False.

(l) The focal length of a convex mirror is equal to its radius of curvature.
Answer. False.

(m) A concave mirror converges the light-rays, but a convex mirror diverges them.
Answer. True.

(n) A virtual image formed by a spherical mirror is always erect and situated behind the mirror.
Answer. True.

2. Fill in the blanks

(a) Water is opitcally **denser** than air.
(b) Air is optically **rarer** than glass.
(c) When a ray of light travels from water to air, it bends **away from** the normal.
(d) When a ray of light travels from air to glass, it bends **towards** the normal.
(e) When white light passes through a prism, it **disperses**
(f) The splitting of white light into its constituent colours is called **dispersion.**
(g) A **concave** mirror is obtained on silvering the outer surface of a part of a hollow glass sphere.
(h) Radius of curvature of a spherical mirror is **two times** its focal length.
(i) The angle of incidence for a ray of light passing through the centre of curvature of a spherical mirror is **0°**
(j) A **convex** mirror always forms a virtual image.
(k) A concave mirror forms a virtual image for an object placed **between pole and focus.**

3. Match the following

Column A	Column B
(a) White light	(i) convex mirror
(b) Refraction	(ii) concave mirror
(c) Virtual images	(iii) refraction
(d) Real images	(iv) spectrum
(e) Prism	(v) ray of light from glass to air

Ans.

Column A	Column B
(a) White light	(iv) spectrum
(b) Refraction	(v) ray of light from glass to air
(c) Virtual images	(i) convex mirror
(d) Real images	(ii) concave mirror
(e) Prism	(iii) refraction

4. Select the correct alternative

(a) The speed of light in air or vacuum is

1. **3×10^8 M s^{-1}**
2. 2.25×10^8 m s^{-1}
3. 332 ms^{-1}
4. 2.0×10^8 ms^{-1}

(b) A ray of light moving from an optically rarer to a denser medium

1. bends away from the normal
2. **bends towards the normal**
3. remains undeviated
4. none of the above

(c) The angle between the normal and refracted ray is called

1. angle of deviation
2. angle of incidence
3. **angle of refraction**
4. angle of emergence.

(d) The property of splitting of white light into its seven constituent colours is known as

1. rectilinear propagation
2. refraction
3. reflection
4. **dispersion**

(e) The seven colours in the spectrum of sunlight in order, are represented as :

1. **VIBGYOR**
2. VIGYBOR
3. BIVGYOR
4. RYOBIVG

(f) A ray of light passing through centre of curvature of a spherical mirror, after reflection

1. passes through the focus
2. passes through the pole
3. becomes parallel to the principal axis
4. **retraces its own path.**

(g) If the radius of curvature of a concave mirror is 20 cm, its focal length is:

1. **10 cm**
2. 20 cm
3. 40 cm
4. 80 cm

(h) The image formed by a convex mirror is

1. **erect and diminished**
2. erect and enlarged
3. inverted and diminished
4. inverted and enlarged.

(i) The image formed by a concave mirror is of the same size as the object, if the object is placed

1. at the focus
2. between the pole and focus
3. between the focus and centre of curvature
4. **at the centre of curvature.**

(j) A convex mirror is used

1. as a shaving mirror
2. as a head mirror by a dentist
3. **as a rear view mirror by a driver**
4. as a reflector in torch.

(B) Short/Long Answer Questions

Question 1.
State the speed of light in (a) air, (b) water, and (c) glass
Answer:
Speed of light in
Air — 3×10^8 ms^{-1} or 300000 km/h
Water — 2.25×10^8 ms^{-1}
Glass — 2×10^8 ms^{-1}

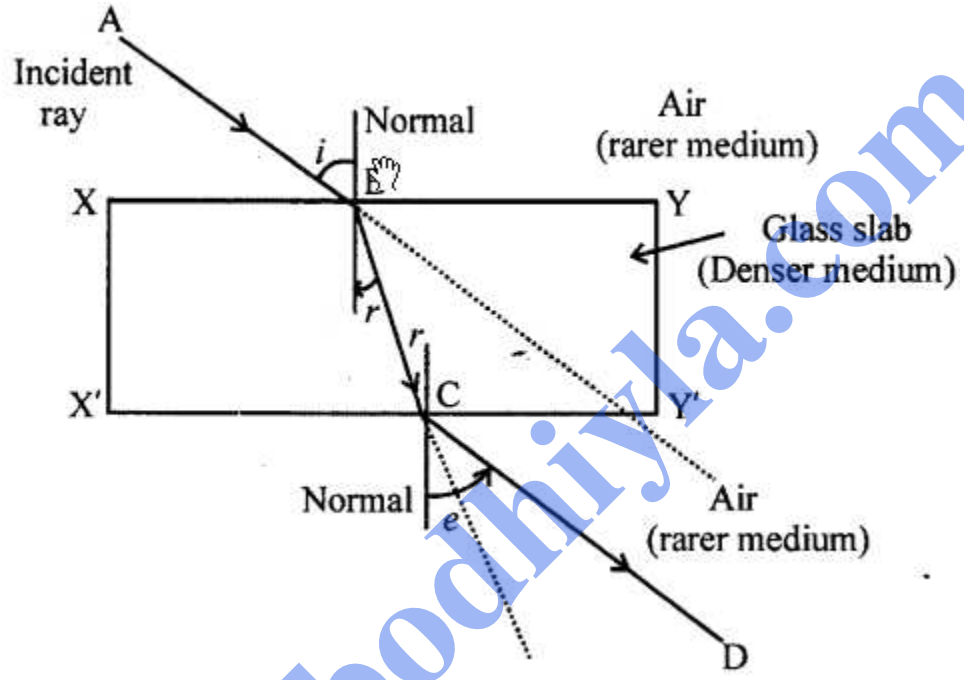
Question 2.
How does the speed of light determine the optical density of a medium ?
Answer:
If the speed of light in a medium is less than speed of light in air, this means the MEDIUM is DENSER than air.
If speed of light is more than speed of light in AIR, this means the MEDIUM is LESS DENSER than air.
i.e. speed of light is 1/density of medium

Question 3.
Which is optically denser : water or air ? Give reason.
Answer:
WATER is optically DENSER as speed of light is less in water.
2.25×10^8 ms^{-1} < 3×10^8 ms^{-1}
speed of light in Water speed of light in Air.

Question 4.
Out of air and glass, which is optically rarer ? Give reason.
Answer:
Air is RARER speed of light in air is more than speed of light in glass.
3×10^8 ms^{-1} > 2×10^8 ms^{-1}
speed of light in air speed of light in glass

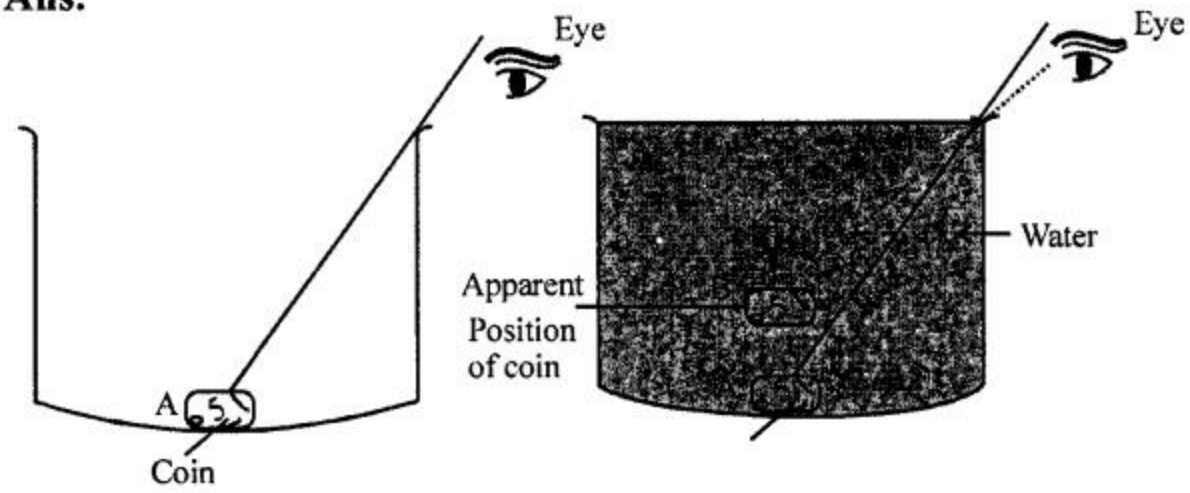
Question 5.
What do you understand by refraction of light ?
Answer:
REFRACTION OF LIGHT: “The change in direction of path of light when it passes from one transparent medium to another is called REFRACTION OF LIGHT.”

Question 6.
Describe an experiment to show that a light ray bends when it passes from one transparent medium into another transparent medium.
Answer:
EXPERIMENT : Spread and fix a sheet of whtie paper on the drawing board.
At the centre of the paper, place a glass slab XYX ' Y' and draw its boundiy.
A ray of light AB travelling from air (rarer medium) to glass slab (denser medium). Part of path BC in denser medium bends towards the normal.
∠r ∠i. This shows that when light travels from RARER to DENSER medium bends towards the normal. Ray BC travels from DENSER medium to RARER medium in air (RAY CD) bend away from normal. ∠e >∠r.
This shows that when a ray of light travels from DENSER to RARER medium bends AWAY from normal.



Question 7.
Draw a ray diagram to show that the depth of a vessel containing water when seen from above, appears to be less than its real depth.
Answer:

Ans.



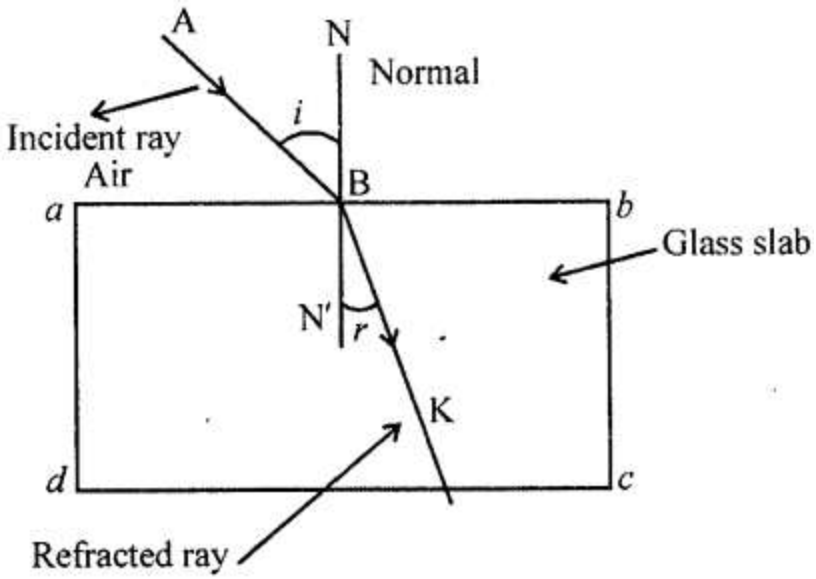
When there is no water in the vessel (a) when water is added in the vessel coin appear to be at B than actually the coin is at A. Hence, the coin appear to be raised up in water. i.e. its height appears to be less than actually it is.

Question 8.

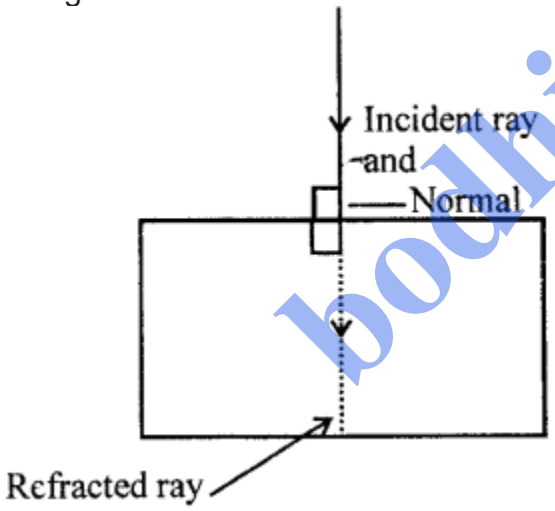
Define the following terms :
Incident ray, Refracted ray, Angle of incidence, Angle of refraction.

Answer:

INCIDENT RAY AB : The ray light AB which is in air strikes the glass slab at B.
Or
"A ray of light falling on the surface separating the two media."
REFRACTED RAY BK : A ray of light which after passing first medium is in second medium i.e. ray BK.
"A ray of light travelling in other medium in the changed direction."
ANGLE OF INCIDENCE : "The angle which the incident ray makes with the normal is called angle of incidence."
i.e. ∠i
ANGLE OF REFRACTION : "The angle which the refracted ray makes with the normal is called angle of refraction."
i.e. ∠r

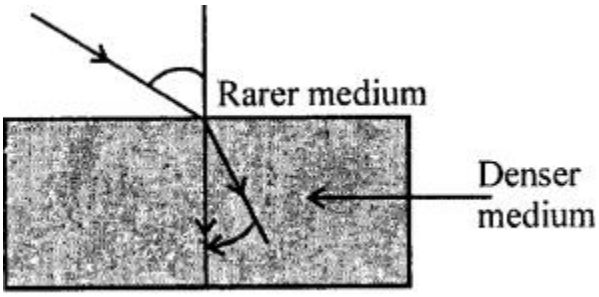


Question 9.
A ray of light falls normally on a glass slab. What is the angle of incidence ?
Answer:
When a ray of light falls on a glass slab normally, angle between normal and incident ray is zero.
∴ Angle of incidence is zero.

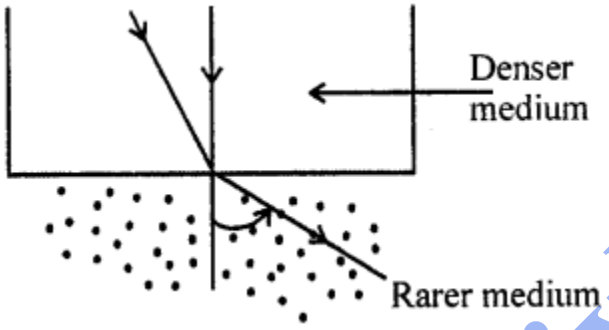


Question 10.
A ray of light travels from a rarer medium to a denser medium. How will it bend ?
Answer:
When a ray of light travels from a RARER medium to a DENSER medium, it bends

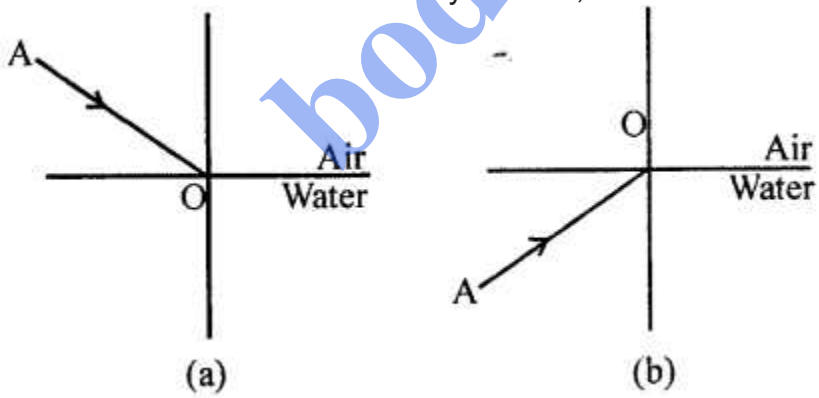
TOWARDS the normal.

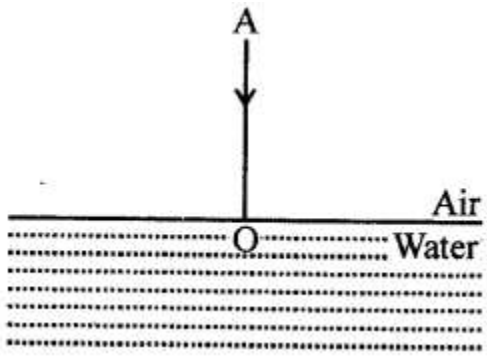


Question 11.
A ray of light travels from a denser medium to a rarer medium. How will it bend ?
Answer:
When a ray of light travels from a DENSER medium to a RARER medium it will bend AWAY from normal.



Question 12.
The diagram given below in fig shows a ray of light AO falling on a surface separating two media. Draw the refracted ray in each, case.

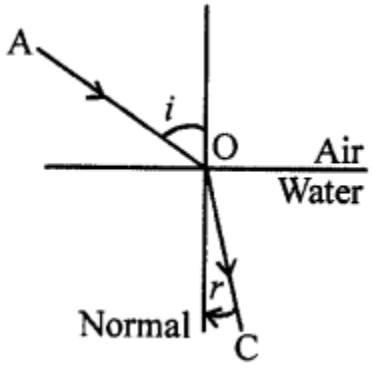




Answer:

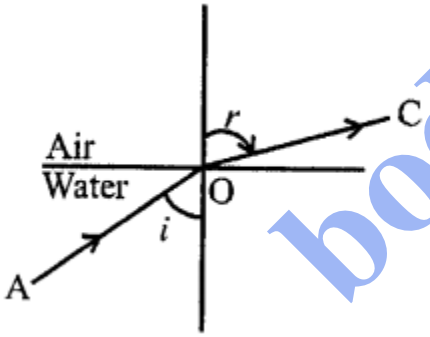
Refracted ray 0 C is shown in each case.

(a)



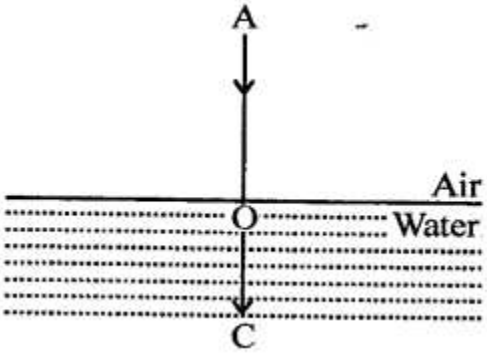
Towards the normal or ∠r < ∠i

(b)



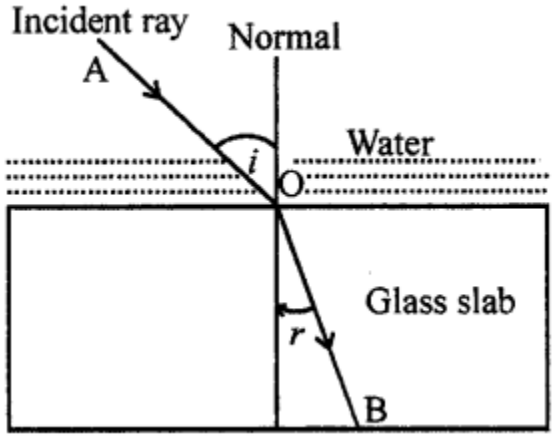
Away from the normal or ∠r > ∠i

(C)



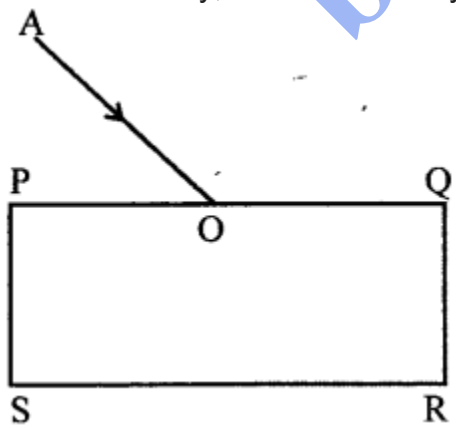
Refracted ray goes undeviated
or
∠i = 0
∠r = 0

Question 13.
Draw a diagram showing the refraction of a light ray from water to glass. Label on it the incident ray, the angle of incidence (/), and the angle of refraction (r).
Answer:
Water is rarer than glass.
Light travels from water to glass mean light travels from a rarer to a denser medium.

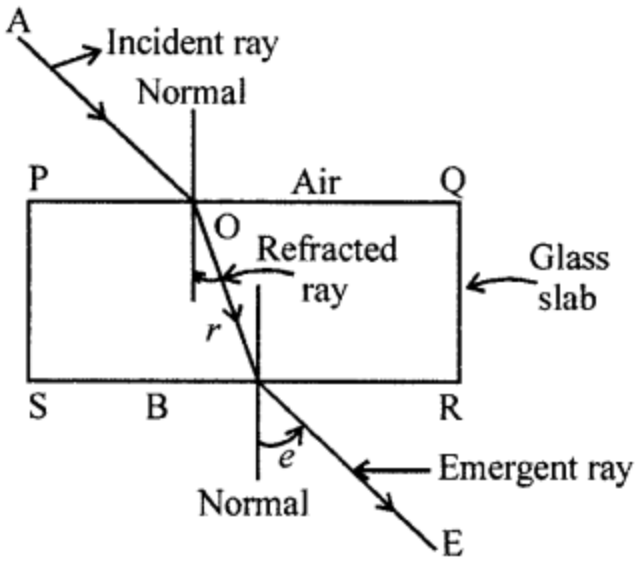


The incident ray is AO.
Angle of incidence is ∠i
Angle of refraction is ∠r

Question 14.
The diagram in figure shows a ray of light AO falling on a rectangular glass slab PQRS. Complete the diagram till the ray of light emerges out of the slab. Label on the diagram the incident ray, the refracted ray and the emergent ray.



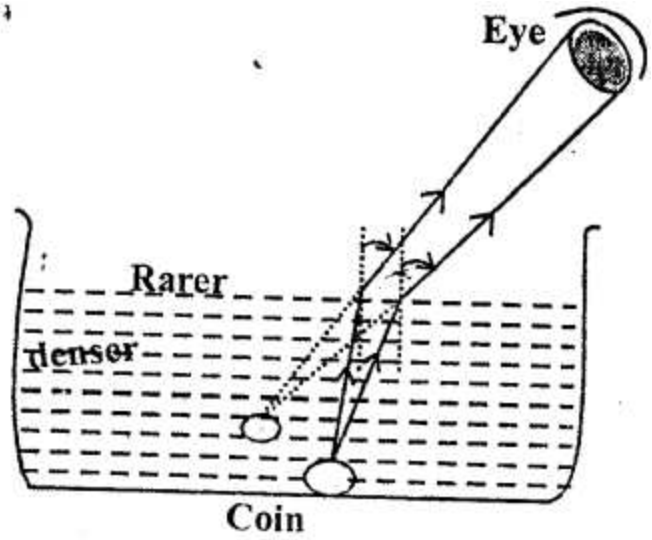
Answer:



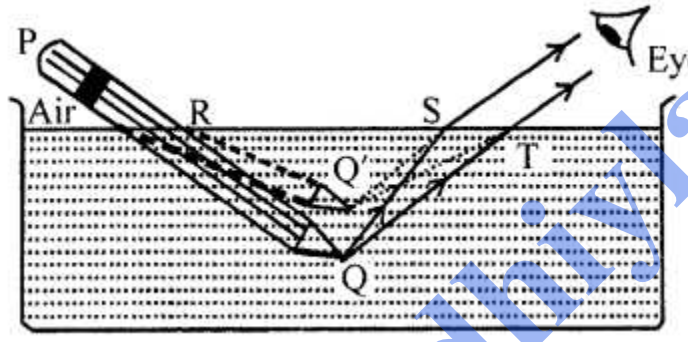
Incident ray AO
Refracted ray OB
Emergent ray BE are shown.

Question 15.
Explain the following :
(a) A coin placed at the bottom of a vessel appears to be raised when water is poured in the vessel.
(b) A straight stick partly dipped in water obliquely, appears to be bent at the surface of water.
(c) The sun is seen before the sunrise and after the sunset.

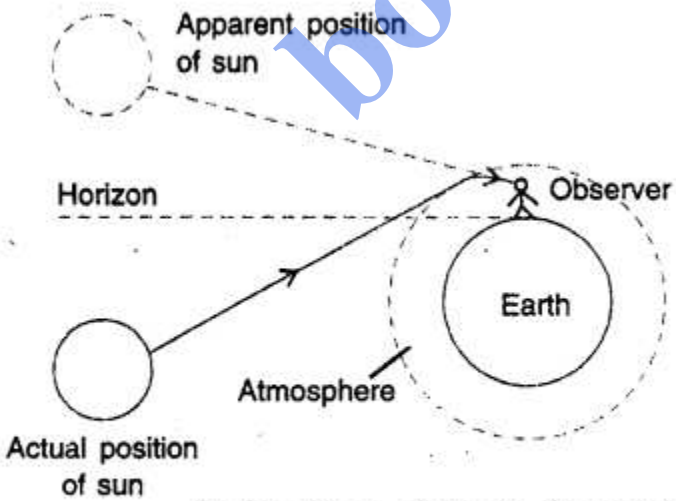
Answer:
(a) The coin at a appears to be at B i. e. depth of coin observed is less than actual depth at A.
The ray of light starting from A (denser) medium bends away from the normal. Due to Refraction oflight the coin appears at B at a lower depth. Hence in the same way the depth of water appear to be less deep.



(b) The phenomenon is due to REFRACTION OF LIGHT when light passing from denser (water) medium to (Air) rarer medium appears to come from Q' Virtual image inspite of Q. Same is true for anyother point of stick inside water. Stick appears to be raised or bent.



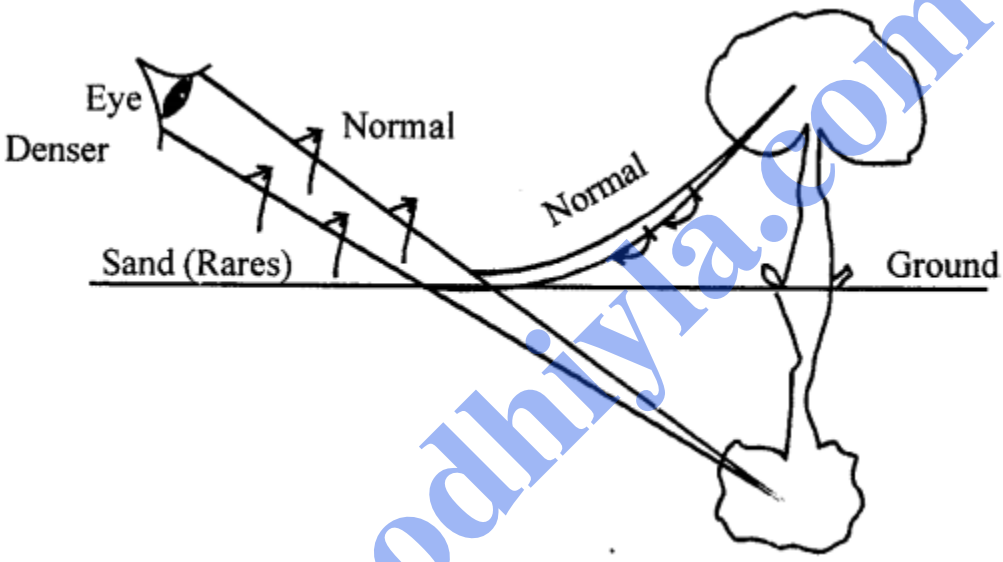
(c)



Refraction of light from the sun in the atmosphere

EARLY SUNRISE and SUNSET: At sun Rise : When the Sun is just below the horizon, the light from the Sun suffers refraction from RARE to DENSER medium (As atmosphere is warmer than layers near the earth at that time) bends towards the normal at each refraction. Due to continuous bending oflight rays, the Sun can be seen even when its actual positionis just below the Horizon. As a result the Sun is seen in advance, two minutes before it rises above the horizon in the morning.
Similarly, in the evening Sun is seen delayed by 2 minutes longer above the horizon after the Sun set.

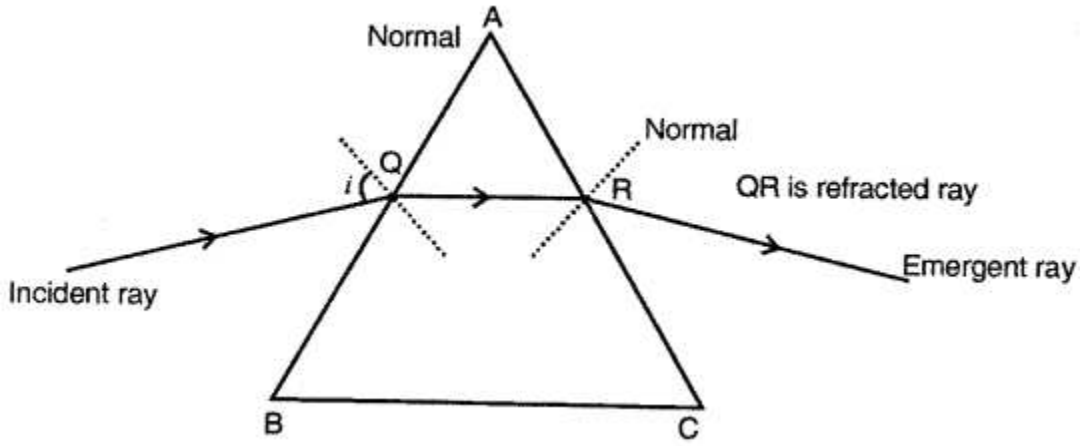
Question 16.
What is mirage ? Give a reason for its formation ?
Answer:
Hot sand (Rarer medium)
MIRAGE : When it is very hot, an inverted image of tree is seen which is 'illusion of eye' (gives a false impression) of water under the tree. This is called a MIRAGE."



REASON: Sand becomes very hot during hot noon, the layers of air in contact become rarer (expand) while upper layers of air are still at comparatively low temperature and are denser medium.
When rays of light from DENSER to RARER medium (starting from tree) are bent away from normal when refracted from Rarer to Denser medium (going towards eye) bend towards normal and a tree appears INVERTED.

Question 17.
What is a prism ? Draw a ray diagram to show7 the refraction of a light ray through a prism.
Answer:
PRISM "is a transparent refracting medium bounded by two plane surfaces inclined at some angle."

REFRACTING EDGE and BASE are shown in figure.

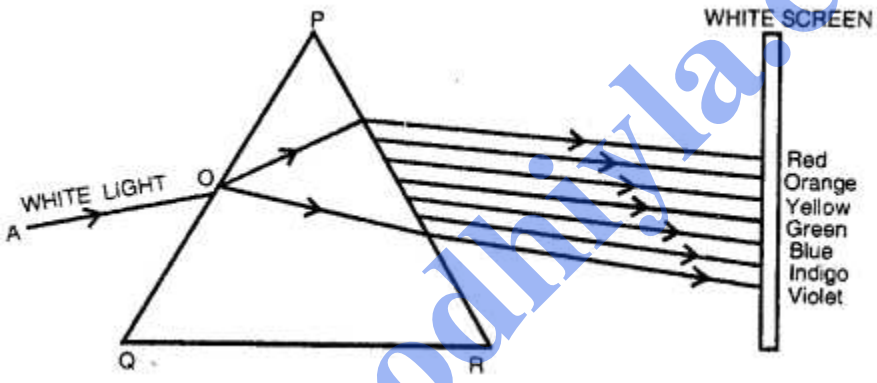


Question 18.

What do you mean by the term dispersion ?

Answer:

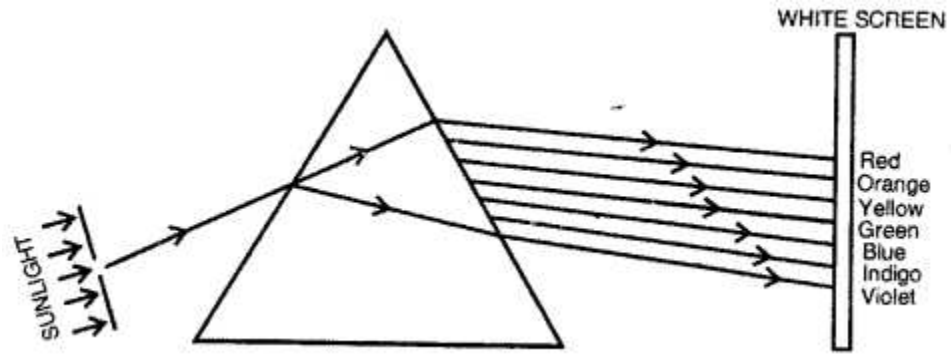
The splitting or breaking up of the white light into its constituent colours as it passes through a refracting medium such as prism is known as dispersion.



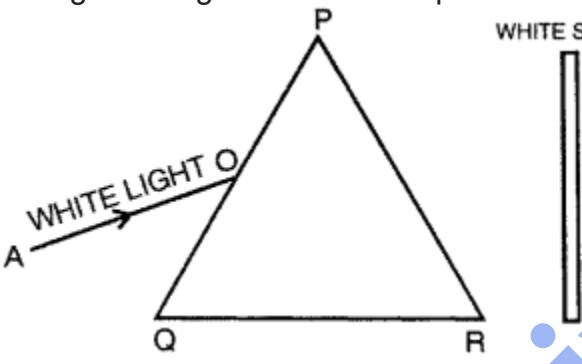
Question 19.

A ray of white light falls on a prism. Draw a ray diagram to show that the prism disperses the white light.

Answer:



Question 20.
In figure AO is the ray of white light falling on a prism PQR. Complete the diagram till the light emerges out from the prism and falls on the screen.



Answer:

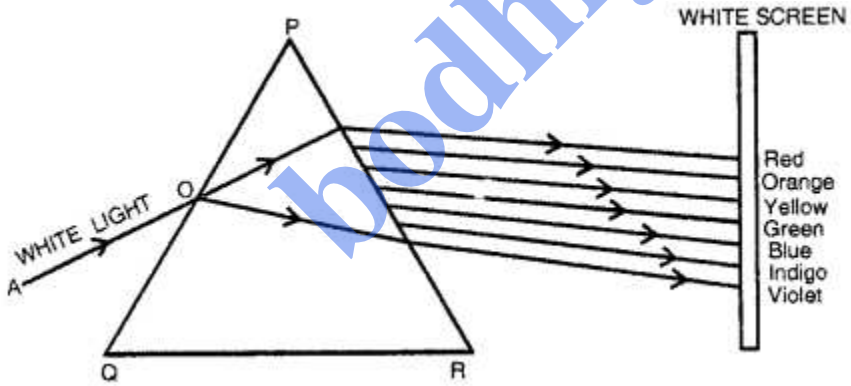


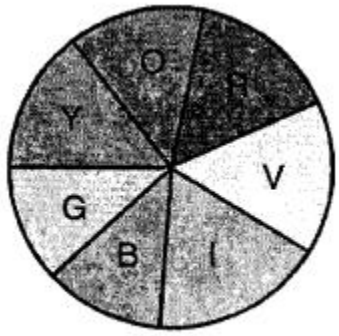
Diagram is completed:
'The white light splits up into seven colours which are seen on the screen and arrangement of colours from bottom to top is
given by the word 'VIBGYOR'.

Question 21.
What do you understand by the term spectrum ? Name the various colours present in the spectrum of sunlight.

Answer:

Spectrum is the band of colours obtained on a screen when white light passes through a prism and splits into its constituent colours. The colours of the spectrum are violet (V), indigo (1), blue (B), green (G), yellow (Y), orange (O), and red (R).
The order of the spectrum is VIBGYOR.

Question 22.
You are given a disc divided into seven sectors with colours violet, indigo, blue, green, yellow, orange and red in them. What would be its colour when it is rotated rapidly ?
Answer:



Newton's colour disc

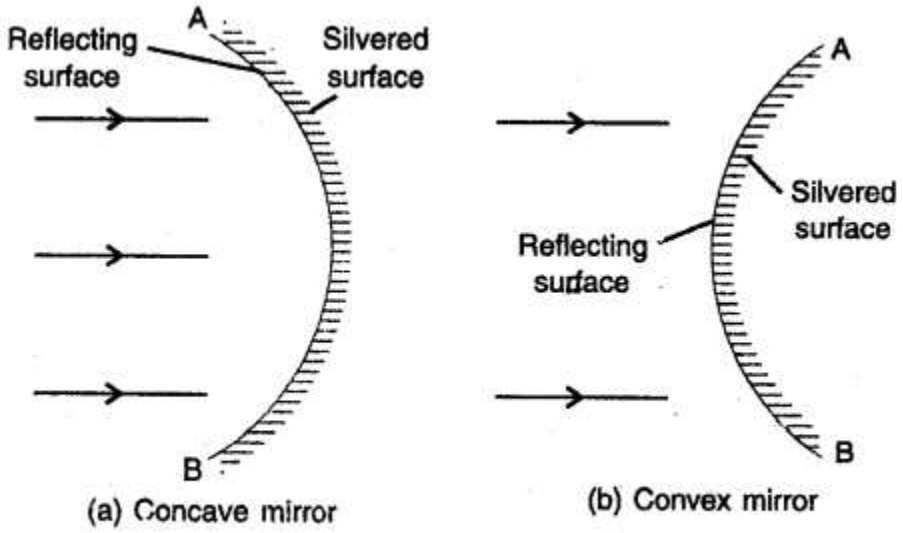
Newton's colour disc— It is a circular disc taken by Newton to demonstrate that the recombination of seven colours produce white light. A circular card board disc which is divided into seven sectors and they were painted with the seven colours of VIBGYOR. The disc when rotated at a very high speed appears WHITE.

Question 23.
State the two laws of reflection of light. Ans. Laws of reflection :
Answer:
(1) The incident ray, the reflected ray and the normal ray at the point of incidence, lie in the same plane.
(2) The angle of incidence i is equal to the angle of reflection r
i.e. $\angle i = \angle r$

Question 24.
What is a spherical mirror ?
Answer:
Spherical mirror. "A mirror which is made from a part of a hollow sphere is called SPHERICAL MIRROR.

Question 25.
State the two kinds of spherical mirror and distinguish them with the aid of proper diagrams.
Answer:
The kinds of SPHERICAL MIRRORS are :
(i) CONCAVE MIRROR

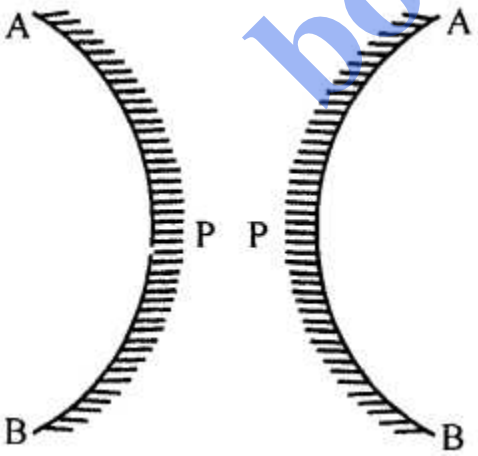
(ii) CONVEX MIRROR



Concave and convex mirrors

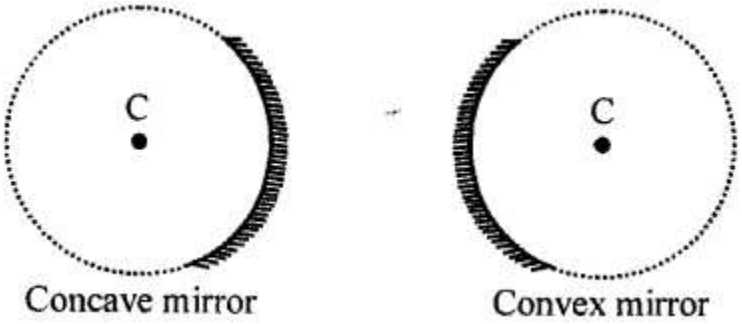
IN CONCAVE MIRROR: Silvered surface is away from centre of curvature and focal length is negative, i.e. reflecting surface is towards centre of curvature.
IN CONVEX MIRROR: Silvered surface is towards the centre of curvature and focal length is positive i.e. reflecting surface is away from thecentre of curvature. It alway forms diminished (small) image which is VIRTUAL.

Question 26.
Explain the following terms :
Pole, Centre of curvature, Radius of curvature, Principal axis. Show them on separate diagrams for each of the concave and convex mirrors.
Answer:
POLE: “The geometric centre of spherical mirror is called POLE.”

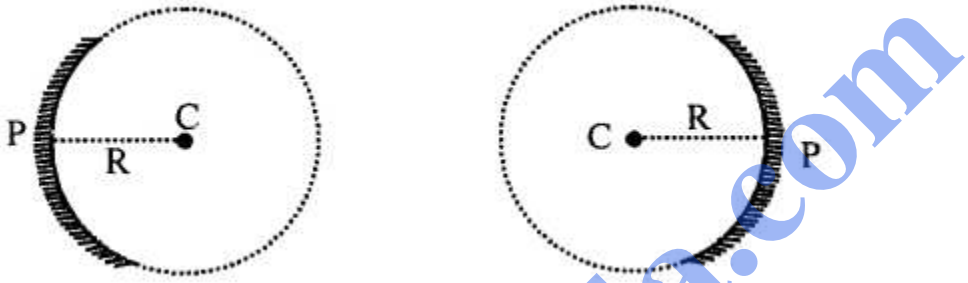


Or
“The mid point of aperture AB of mirror is called pole.”
P is pole of mirror.

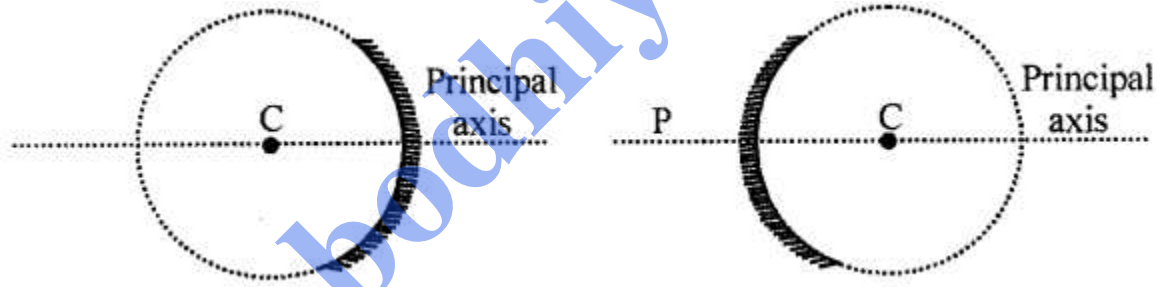
CENTRE OF CURVATURE : “Is the centre of hollow sphere of which the mirror forms a part.” It is represented by the symbol ‘ C ‘



RADIUS OF CURVATURE : “Is the radius of hollow sphere of which the mirror is a part”. It is represented by ‘R’



PRINCIPAL AXIS: “Is a straight line joining the pole of the mirror to its centre of curvature and extended further.”

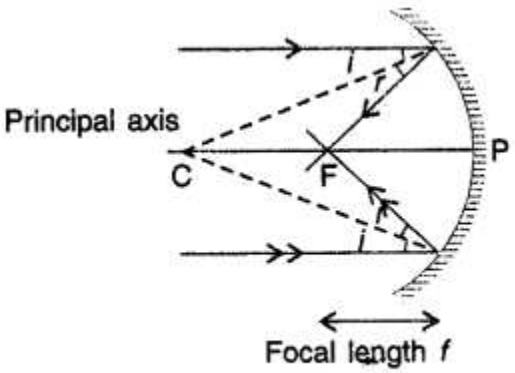


Question 27.

What do you understand by the focus and focal length of a spherical mirror ? Show them on the separate diagrams for each of a concave mirror and a convex mirror.

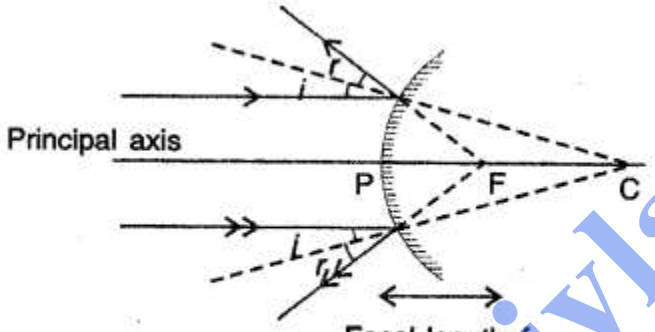
Answer:

FOCUS : For concave mirror



(a) Concave mirror

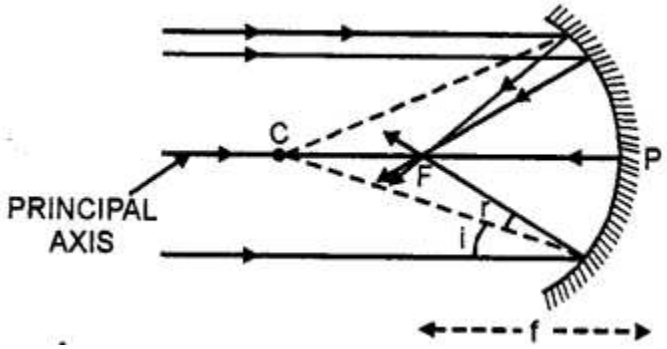
"Is a point on the principal axis at which the light rays incident parallel to the principal axis meet after reflection from the mirror.
FOCAL LENGTH: "The distance between focus and pole". FP is focal length for CONVEX MIRROR:



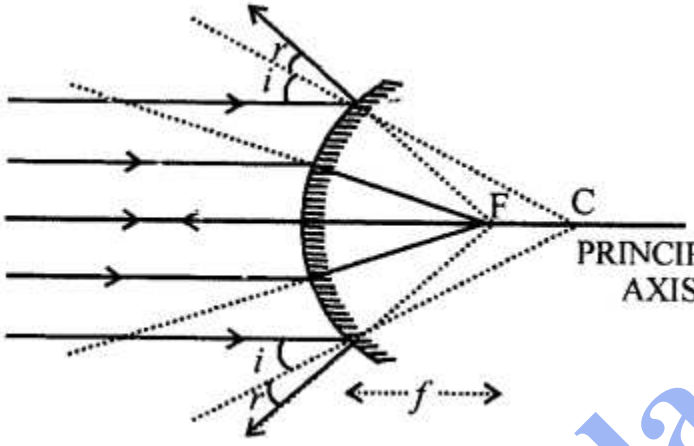
(b) Convex mirror

FOCUS: "of a convex mirror is a point on its principal axis at which the light rays incident parallel to the principal axis appear to meet after reflection from the mirror".
FOCAL LENGTH: "The distance between P and F is F.L."

Question 28.
Draw suitable diagrams to illustrate how a beam of light incident parallel to the principal axis is reflected by:
(a) a concave mirror, and (b) a convex mirror
Answer:
(a) Concave mirror



(b) Convex mirror

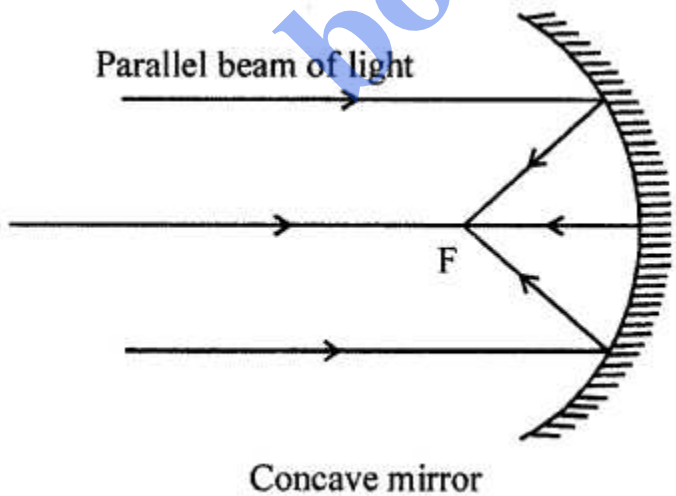


Question 29.

How is a spherical mirror used to converge a beam of light at a point ? Name the type of mirror used.

Answer:

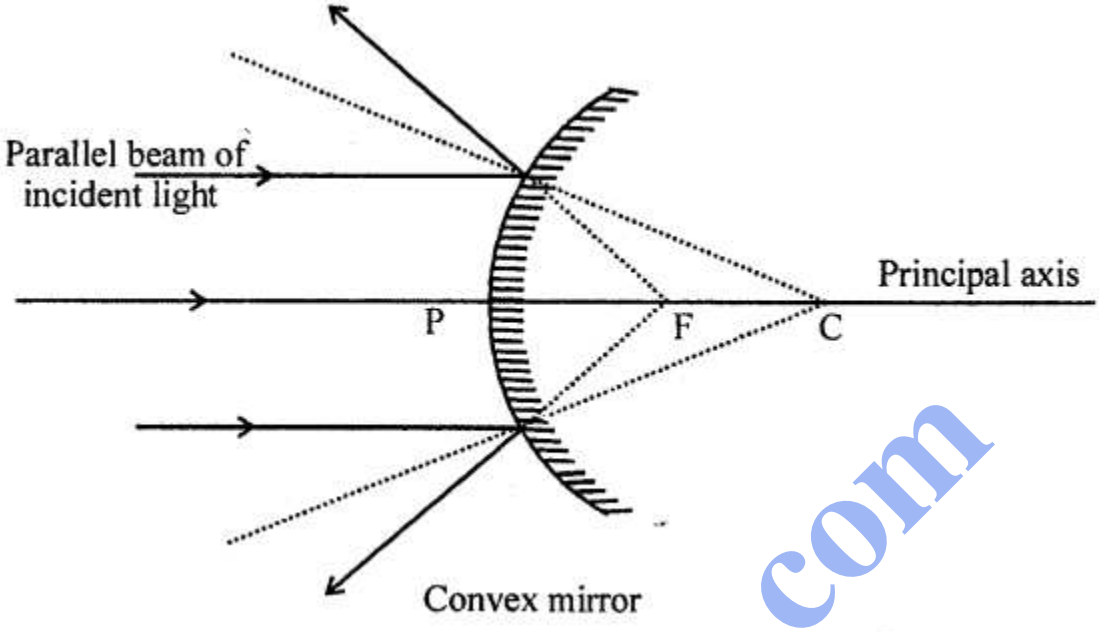
If a parallel beam of light is incident on a concave mirror, it converges the beam to a point called focus.



Concave mirror

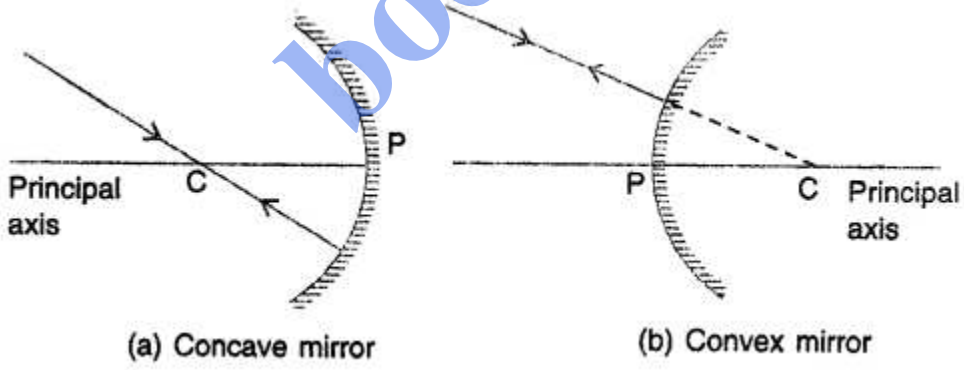
Type of mirror used is CONCAVE.

Question 30.
How is a spherical mirror used to diverge a beam of light from a point ? Name the type of mirror used.
Answer:



In case of convex mirror, the reflected rays diverge and donot meet at a point after reflection. They appear to come from a point'F on the principal axis.
The type of mirror used is CONVEX mirror.

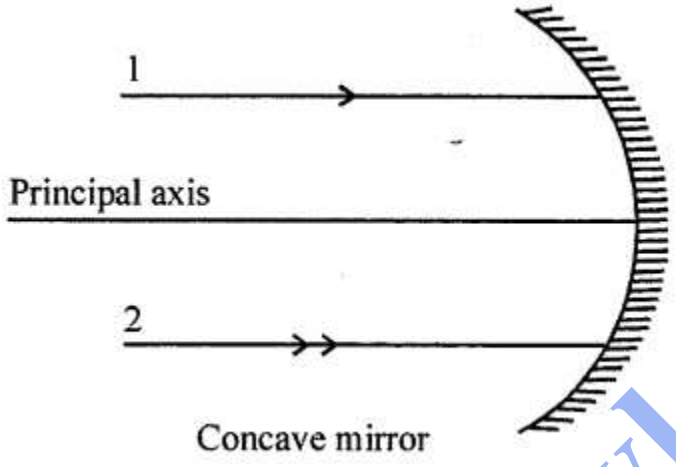
Question 31.
State the direction of incident ray which after reflection from a spherical mirror gets reflected along its own path. Give a reason.
Answer:



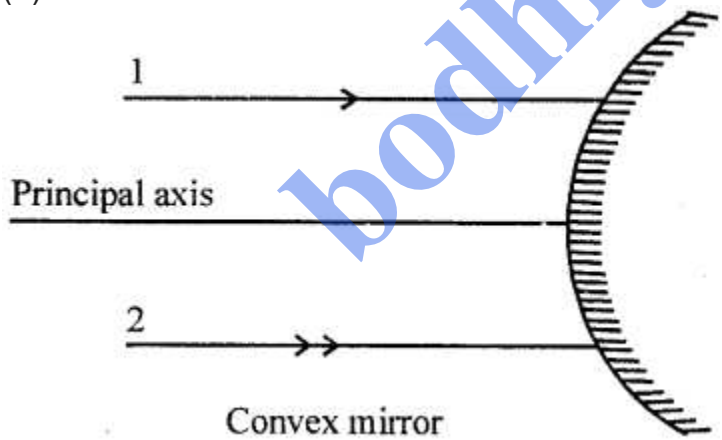
A ray passing through THE CENTRE OF CURVATURE is incident normally on the spherical mirror, gets reflected back along its own path.
A ray passing through the centre of curvature is reflected along its own path

Question 32.
How is the focal length of a spherical mirror related to its radius
Answer:
Focal length = Radius of curvature / 2
Or 2 F = R

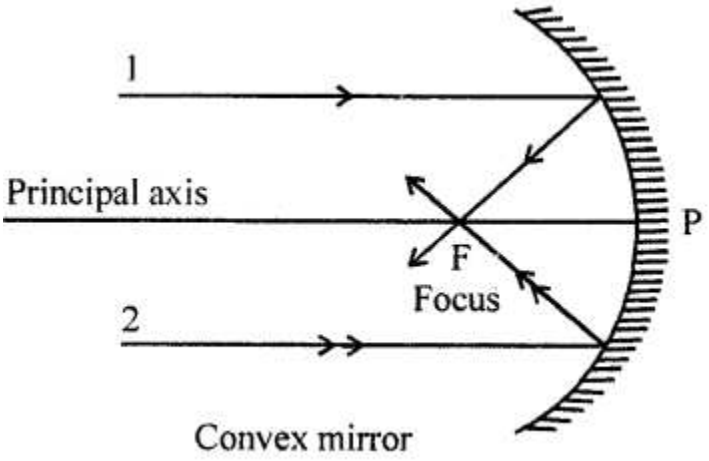
Question 33.
The diagram (figure) given below shows two parallel rays 1 and 2 incident on (a) a concave mirror, (b) a convex mirror. Draw the reflected rays and mark the focus by the symbol F.
(a)



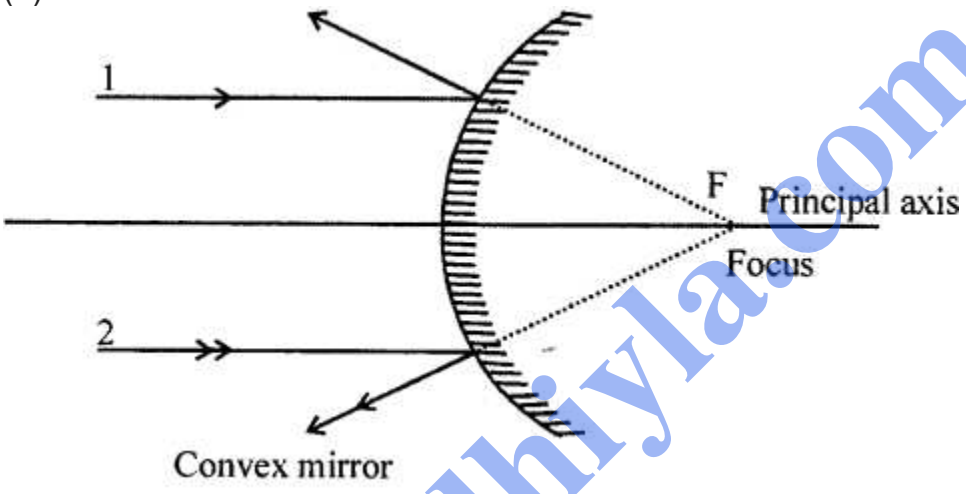
(b)



Answer:
(a) A concave mirror:



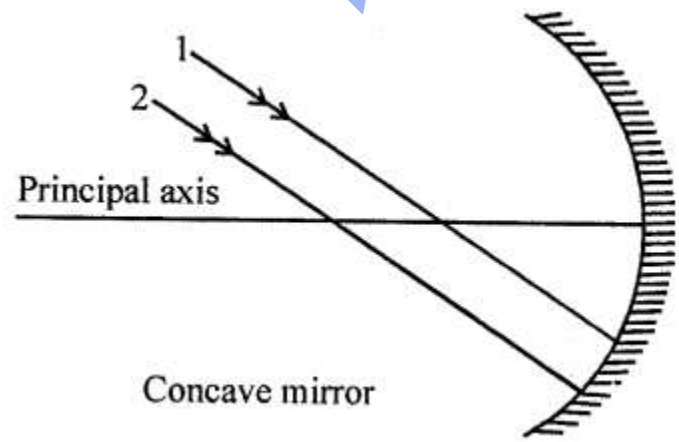
(b) A convex mirror:



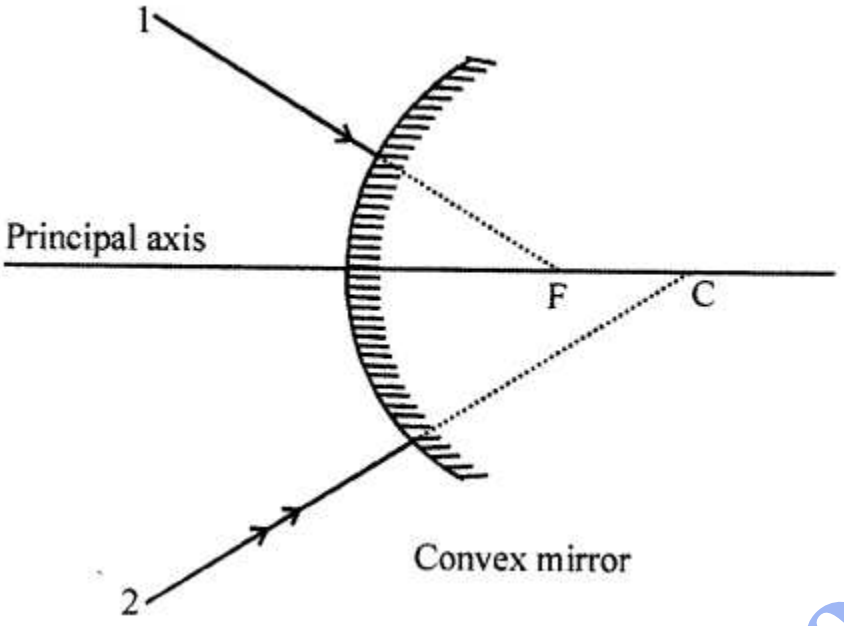
Question 34.

Complete the following diagrams in figure by drawing the reflected rays for the incident rays 1 and 2 if F is the focus and C is the centre of curvature.

(a)

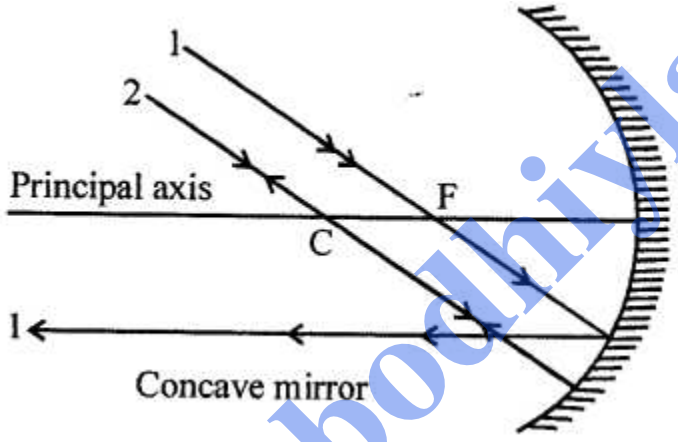


(b)



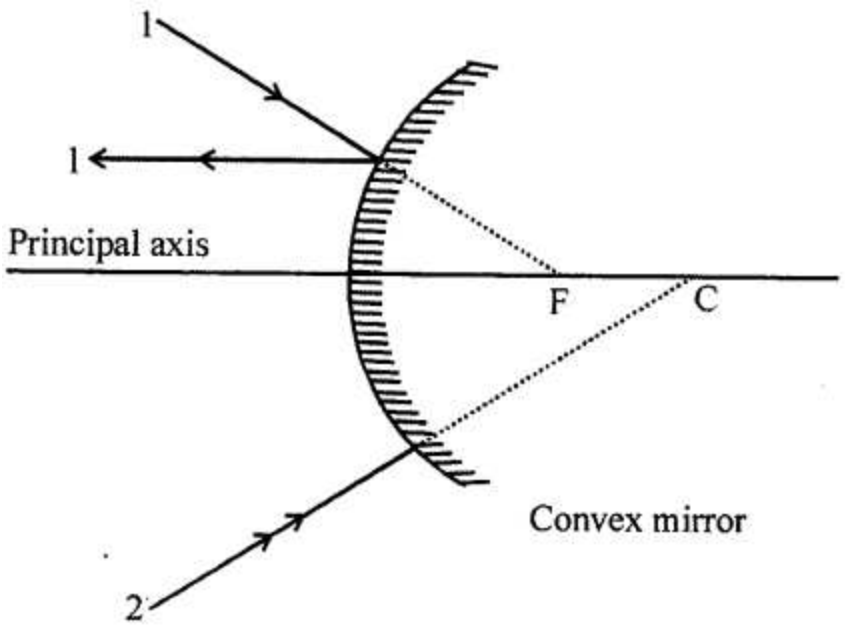
Answer:

For concave mirror:



1. Ray passing through F after reflection becomes parallel to principal axis.
Ray (2) passing through centre of curvature travels back (retraces its path) i.e. reflected back along its own path.

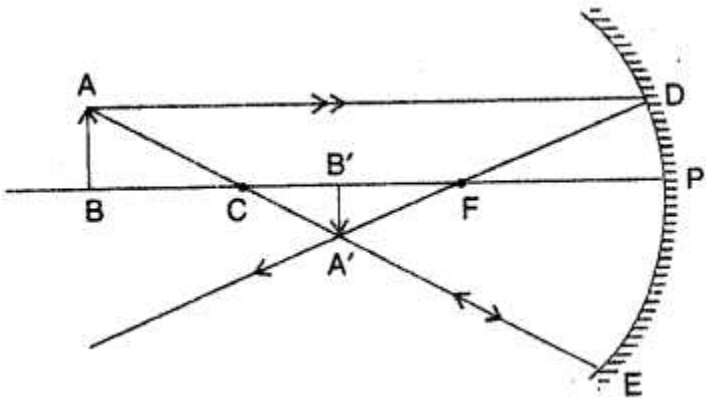
For convex mirror:



Ray 1 becomes parallel to principal axis.
Ray 2 replaces its path i.e. reflected back along its own path.

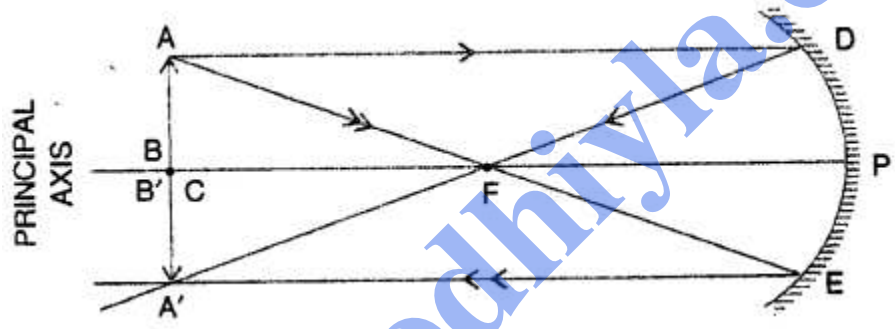
Question 35.
Which are the two convenient rays that are chosen to construct the image by a spherical mirror for a given object ? Explain with the help of suitable ray diagrams.
Answer:
Two convenient rays choosen to construct the image by a spherical mirror are:
(i) A ray parallel to the principal axis which after reflection passes or appears to pass through focus.
(ii) A ray passing through the centre of curvature or appears to pass through centre of curvature which retraces its path after reflection.

Question 36.
Draw a ray diagram to show the formation of image of an object placed beyond the centre of curvature of a concave mirror. State the position, size and nature of the image.
Answer:
OBJECT PLACED BEYOND C : Image is formed :



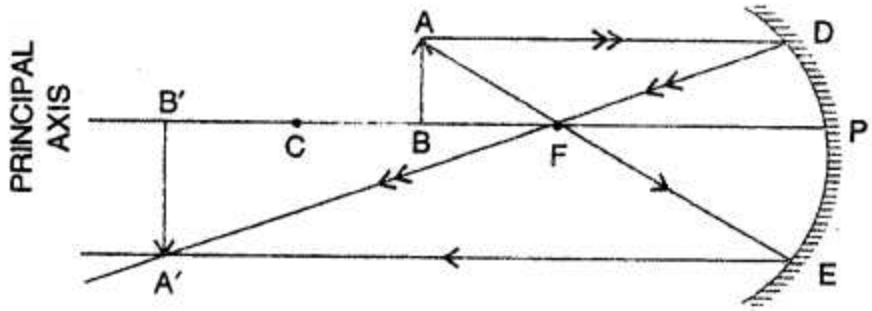
A real, inverted and smaller image is formed between centre of curvature and focus
Position : between C and F.
Size smaller than object.

Question 37.
Draw a ray diagram to show the formation of image of an object placed at the centre of curvature of a concave mirror. State the position, size and nature of the image.
Answer:
Object placed at C :



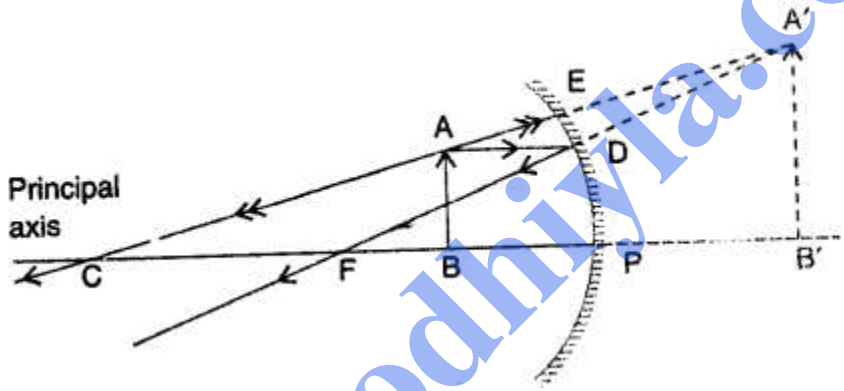
A real, inverted image of the same size is formed at the centre of curvature
Image formed
A 'B' is at C the centre of curvature.
Size is equal to the size of object AB.
It is inverted and real.

Question 38.
Draw a ray diagram to show the formation of image of an object placed between the focus and centre of curvature of a concave mirror. State the position, size and nature of the image.
Answer:
OBJECT PLACED BETWEEN C and F :



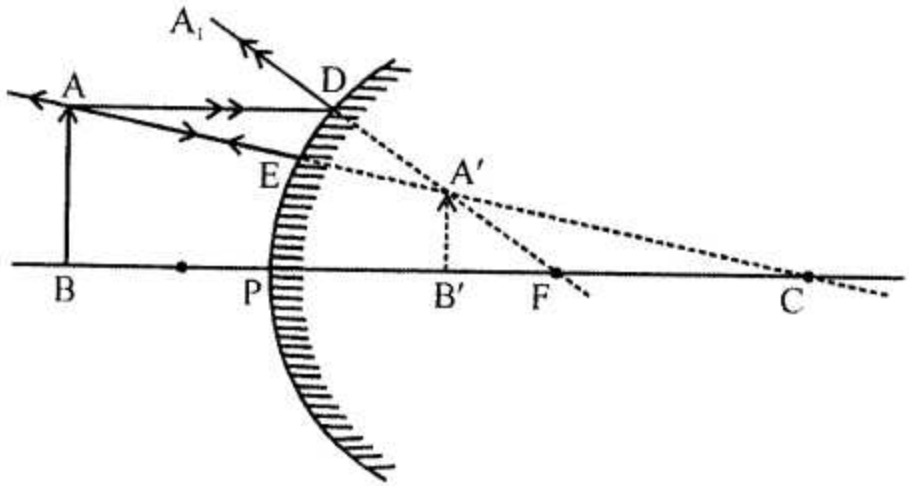
A real, inverted and magnified image is formed beyond the centre of curvature
The image formed A'B' is beyond C ← position
Enlarged ← size
inverted and real ← nature.

Question 39.
Draw a ray diagram to show the formation of image of an object placed between the pole and focus of a concave mirror. State the position, size and natu re of the image.
Answer:
OBJECT LIES BETWEEN FOCUS AND POLE :



A virtual erect and bigger image is formed behind the mirror
Image formed A'B' is on the other side of mirror on producing ← position
Enlarged (magnified) ← size
Virtual and erect ← nature

Question 40.
Draw a ray diagram to show the formation of image of an object placed on the principal axis of a convex mirror. State the position, size and nature of the image. What happens to the image as the object is moved away from the mirror ?
Answer:
OBJECT PLACED IN FRONT OF CONVEX MIRROR :



Place the object any where infront of convex mirror image formed is
(i) Between pole and focus ← position.
(ii) Diminished ← size.
(iii) Upright (erect) and virtual ← nature.
As the object is moved away from the mirror, the image shifts towards the focus and decreases in size but is (diminished).

Question 41.
Draw separate diagrams for the formation of virtual image of an object by (a) concave mirror and (b) convex mirror.
State the difference in the two images.
Answer:
(a) See Q. No. 44, page 109. (b) See Q. No. 40, page 108.

Question 42.
Name the mirror which always forms an erect and virtual image. What is the size of the image as compared to that of the object ?
Answer:
It is CONVEX MIRROR. The size of image is smaller than-the size of object, but when the object is at infinity the size of image is POINT size.

Question 43.
Name the mirror which forms an erect, virtual and enlarged image of an object. What is the position of object relative to the mirror ?
Answer:
Concave mirror forms an erect, virtual and enlarged image of an object. Since convex mirror always forms virtual, diminished, erect image.
The position of object is between focus and pole of mirror as shown in figure ans. 39.

Question 44.
What is a real image ? Name the mirror which can be used to obtain the real image of

an object. What should be the position of the object relative to the mirror ?

Answer:

REAL IMAGE. “When rays of light after reflection or refraction actually meet at some other point” the image is real. Concave mirror.

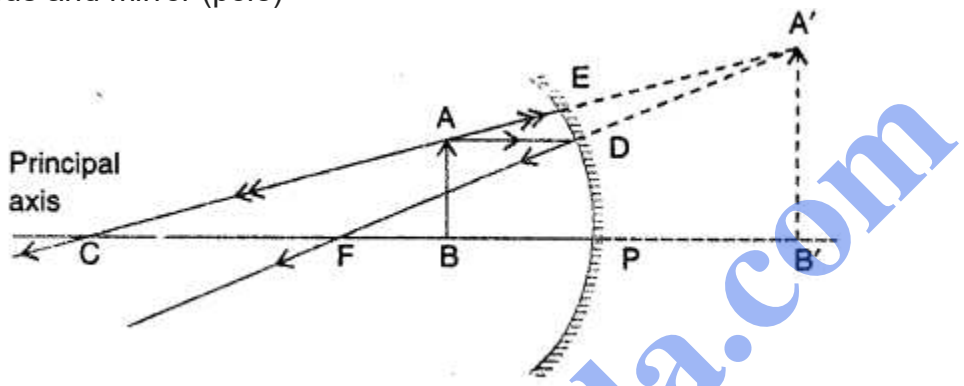
Except between pole and focus, the image formed is REAL.

Question 45.

How can a concave mirror be used to obtain a virtual image of an object ? Draw a diagram to illustrate your answer.

Answer:

A concave mirror forms a virtual image of an object, when object is placed between focus and mirror (pole)



A virtual, erect and bigger image is formeddrehind thei mirror

Question 46.

State two uses of a concave mirror.

Answer:

Two uses of concave mirror are :

(1) Concave mirror is used as AREFLECTOR in head lights of cars and in search light. The source of light (bulb) is placed at the principal focus and the reflector forms parallel beam of light.

(2) For doctors to examine throat, ear, nose and eyes, light is focused with the help of concave mirror.

Question 47.

State two uses of a convex mirror.

Answer:

Two USES OF CONVEX MIRROR:

(i) It is used as A REAR VIEW MIRROR.

(ii) It is used as a VIGILANCE MIRROR

(iii) It is used as a REFLECTOR IN STREET LAMPS.

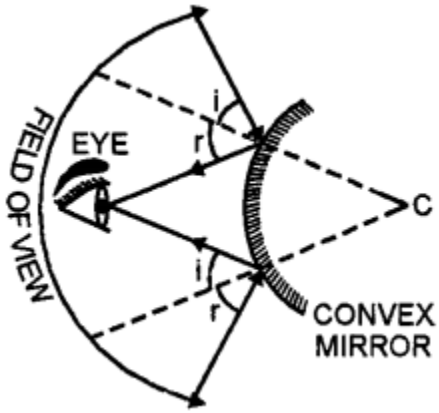
Question 48.

A driver uses a convex mirror as a rear view mirror. Explain the reason with the help of

a ray diagram.

Answer:

A convex mirror always forms a small and upright image between pole and focus. That means in small area of mirror driver can see all the traffic coming from behind.



Question 49.

State the kind of mirror used
(a) by a dentist, and
(b) as a street light reflector.

Answer:

(a) A dentist uses CONCAVE MIRROR.
(b) Convex mirror.

Question 50.

Name the kind of mirror used to obtain
(a) a real and enlarged image
(b) a virtual ard enlarged image
(c) a real and diminished image, and
(d) a virtual and diminished image.

Answer:

(a) CONCAVE
(b) CONCAVE
(c) CONCAVE
(d) CONVEX.