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Question 1. Define the principal focus of a concave mirror?
Answer: Light rays that are parallel to the principal axis of a concave mirror converge at a specific point on its principal axis after reflecting from the mirror. This point is known as the principal focus of the concave mirror.

Question 2. The radius of curvature of a spherical mirror is 20 cm. What is its focal length?
Answer: Radius of curvature, R = 20 cm
Radius of curvature of a spherical mirror = 2 x Focal length (f)
f = R/2 = 20/2 =10cm

Question 3. Name the mirror that can give an erect and enlarged image of an object.
Answer: When an object is placed between the pole and the principal focus of a concave mirror, the image formed is virtual, erect, and enlarged.

Question 4. Why do we prefer a convex mirror as a rear-view mirror in vehicles?
Answer: Convex mirrors give a virtual, erect, and diminished image of the objects placed in front of them. They are preferred as a rear-view mirror in vehicles because they give a wider field of view, which allows the driver to see most of the traffic behind him.

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Question 1. Find the focal length of a convex mirror whose radius of curvature is 32 cm.
Answer: Radius of curvature, R = 32 cm
Radius of curvature = 2 x Focal length (f)
R = 2f
f = R/2 = 32/2 = 16cm
Hence, the focal length of the given convex mirror is 16 cm.

Question 2. A concave mirror produces three times magnified (enlarged) real image of object placed at 10 cm in front of it. Where is the image located?
Answer: Given, u = - 10 cm
Since image is real inverted so, m = -3
m = -v / u
=> -3 = -v/ -10
v= - 30 cm
Negative sign indicates the image will be real and image is formed at 30 cm in front of the mirror.

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Question 1. A ray of light travelling in air enters obliquely into water. Does the light ray bend towards the normal or away from the normal? Why?
Answer: The light ray bends towards the normal. When a ray of light travels from an optically rarer medium to an optically denser medium, it gets bent towards the normal. Since water is optically denser than air, a ray of light travelling from air into the water will

bend towards the normal.

Question 2. Light enters from air to glass having refractive index 1.50. What is the speed of light in the glass? The speed of light in vacuum is 3×10^8 m/s.
Answer: Refractive index of a medium nm is given by,

$$\text{We know that, Refractive index of glass} = \frac{\text{Speed of light in air}}{\text{Speed of light in glass}}$$

$$1.50 = \frac{3 \times 10^8}{\text{Speed of light in glass}}$$

$$\text{Speed of light in glass} = \frac{3 \times 10^8}{1.50} = 2 \times 10^8 \text{ m/s}$$

Thus the speed of light in glass is 2×10^8 m/s.

********** END **********