Answer on Question #51842-Physics-Optics

4 Which of the following is correct about tracing ray diagrams with curved mirrors?

a) rays incident at the center of the mirror are reflected through the center of curvature b) rays passing through the center of curvature are reflected through the principal focus c) rays passing through the principal focus are reflected on themselves d) rays parallel and close to the principal axis are reflected through the principal focus

Solution

Rays parallel and close to the principal axis are reflected through the principal focus.

It is one of the rules for constructing ray diagrams:

Any light ray traveling parallel to the principal axis is reflected by the curved mirror through the principal focus. It either actually passes (for a concave mirror) or appears to pass (for a convex mirror) through the principal focus.

Answer: d) rays parallel and close to the principal axis are reflected through the principal focus.

5 The null condition in potentiometer experiment shows that?

a)the potential difference under test is zero b) current is varying in the circuit c) current is increasing in the circuit d) potential differences are balanced

Solution



With switch 'S' in the "operate" position and the galvanometer key K open, the battery supplies the "working current" through the rheostat R and the slide wire. The working current through the slide wire may be varied by changing the rheostat setting. The method of measuring the unknown voltage, E, depends upon finding a position for the sliding contact such the galvanometer shows zero deflection, i.e., indicates null condition, when the galvanometer key, K, is closed. Zero galvanometer deflection or a null means that the unknown voltage, E, is equal to the voltage drop El' across portion ac of the slide wire. Answer: d) potential differences are balanced.

9 The potentiometer wire plays equivalent role of which of these devices in a circuit?

a) rheostat b)thermostat c) galvanometer d) ammeter

Solution

Rheostat is a type of potentiometer. Therefore, in the circuit it will play the same role as potentiometer wire. Thermostat used to stabilize temperature. Galvanometer and ammeter to detect and measure electric current.

Answer: a) rheostat.