

VIVA QUESTIONS

1. Resistance per unit length

a. What is an electrical resistance?

Ans: It is the opposition to the flow of current or it is the ratio of potential difference to the current through it

b. What is the unit for resistance per unit length?

Ans. Ohm per meter

c. On what factors does resistance depends

Ans: Resistance depends on length of conductor l , area of cross section, nature of conductor and temperature.

d. What is the purpose of Rheostat in the experiment?

Ans : To vary the current in the circuit

e. State ohms law.

Ans: At constant temperature and other physical conditions remains constant, current through a conductor is directly proportional to potential difference between the ends of conductor

f. What happens to resistance of wire if length of the wire is increased?

Ans : If length l of conductor is increased Resistance of conductor increases.

2. Resistivity of material

a. Define resistivity.

Ans: Resistivity of material of wire is numerically equal to resistance of wire of unit length $1m$ and unit area of cross section $1m^2$

b. Mention the SI unit of resistivity.

Ans: Ωm (ohm meter)

c. On what factors does Resistivity of Material of wire depends.

Ans: Nature of material and temperature.

3. Figure of merit of galvanometer

a. Define figure of merit of Galvanometer.

Ans: Current required to produce unit deflection in the galvanometer is called figure of merit of galvanometer

b. Mention the unit of Figure of merit of galvanometer

Ans: ampere per division (A/div)

c. What is a galvanometer?

Ans: It is a device to detect current in the circuit

d. On what principle does galvanometer work?

Ans: It works on mechanical effect of current. When electric current flows in a rectangular coil, torque acts on coil due to which coil rotates and hence pointer moves on the scale

4. Conversion of Galvanometer into ammeter and voltmeter

a. What is an ammeter?

Ans: It is a device to measure electric current.

b. What is a Voltmeter?

Ans: It is a device to measure potential difference between two points

a. How is a galvanometer is converted into ammeter?

Ans: Galvanometer is converted into ammeter by connecting a low resistance in parallel with given galvanometer

b. How is a galvanometer is converted into voltmeter?

Ans: Galvanometer is converted into voltmeter by connecting a high resistance in series with given galvanometer

c. How is an ammeter is connected in a circuit?

Ans: Ammeter is connected in series in the circuit

d. How is a voltmeter is connected in a circuit?

Ans: Voltmeter is connected in parallel across a component in a circuit

e. Why is an ammeter connected in series in a circuit?

Ans: Because ammeter should read current in a circuit, therefore whatever the current flows in a circuit that should flow in the ammeter. Hence ammeter should be connected in series in a circuit

f. Why is a voltmeter connected in parallel across a component?

Ans: Because voltmeter should read potential difference across a resistor. Hence a voltmeter should be connected in parallel across a resistor

g. What is the resistance of ammeter, is it less or large?

Ans: Resistance of ordinary ammeter is less

h. What is the resistance of voltmeter, is it less or large?

Ans: Resistance of ordinary voltmeter is large

i. What is the resistance of an ideal ammeter?

Ans: The resistance of an ideal ammeter zero

j. What is the resistance of ideal voltmeter?

Ans: The resistance of an ideal voltmeter is infinity.

5. Frequency of AC

a. Define frequency of AC. Mention its unit

Ans: The number of cycles made by AC in one second is called frequency of AC. Unit of Frequency of AC is hertz(Hz)

b. What is called electrical resonance?

Ans: It is the electrical state of an ac circuit at which current becomes maximum and impedance becomes minimum. It happens when inductive reactance is equal to capacitive reactance.

c. What is called tension in the string?

Ans: It is the stretching force on the string due to load in the hanger ($T = mg$)

d. How does fundamental frequency of a stretched string depend on tension in the string

Ans: Fundamental frequency of a stretched string is directly proportional to square root of tension T

e. What is the value frequency of AC in India

Ans: 50Hz

6. Focal length of concave mirror

a. Define focal length of mirror.

Ans: It is the distance between center of curvature and pole of mirror

b. What is called principal Focus?

Ans: When a parallel beam of light is incident on a concave mirror, after reflection all the light rays converges to a point on the principal axis. This point is called principal focus

c. What is a concave mirror?

Ans: It converges all the light rays after reflection

d. Define pole of mirror

Ans: It is a midpoint on the surface of spherical mirror

e. What is radius of curvature of mirror?

Ans: It is the distance between center of curvature of mirror and pole of mirror

7. Focal length of convex lens

a. Define focal length of lens.

Ans: The distance between principal focus and optic center of lens is called focal length of lens

b. What is called principal Focus?

Ans: When a parallel beam of light is incident on a lens, after refraction all the light rays converges to a point in the case of convex lens or appears to diverge from a point on the principal axis. This fixed point on the principal axis is called principal focus.

a. What is a convex lens?

Ans: It converges all the light rays to one point on the principal axis

b. What is optic center of lens?

Ans: It is the point inside the lens through which light ray passes straight without any deviation.

c. What is radius of curvature?

Ans: It is the distance between center of curvature of one surface of lens and optic center of lens

d. What is called equiconvex lens?

Ans: If radius of curvature of two surfaces of lens are equal then it is called equiconvex lens

8. Angle of minimum deviation

a. What is a prism?

Ans: It is an optical medium bounded by two triangular faces and three rectangular faces.

b. What is called angle of deviation?

Ans: The angle between emergent ray and incident ray produced is called angle of deviation

c. How does angle of deviation varies with angle of incidence

Ans: As the angle of incidence increases, the angle of deviation first decreases, takes minimum value and then increases

a. What is called angle of minimum deviation?

Ans: For a particular angle of incidence the angle of deviation becomes minimum, This angle of deviation is called angle of minimum deviation

9. Refractive index of glass

a. Define refractive index

Ans: The ratio of sine of the angle of incidence to the sine of the angle of refraction is constant for a given pair of media and for a given wavelength. This constant is called refractive index.

OR The ratio of real depth to the apparent depth is also called refractive index of medium

b. What is real depth and apparent depth?

Ans: Actual distance between object and surface of medium is called real depth.

The distance between surface of medium and apparent position of object is called apparent depth.

c. What is normal shift

Ans: The apparent shift in the position of object along the normal is called normal shift

d. Why saw dust is sprinkled on the glass slab while taking R3 reading?

Ans: It is just for reference on glass surface. We can easily identify the surface of slab if some saw dust powder is sprinkled on surface of glass,

e. Mention any one factor on which refractive index of medium depends

Ans: RI depends on nature of medium, nature of surrounding medium and wavelength of light

10. Refractive index of water

a. Define refractive index

Ans: The ratio of sine of the angle of incidence to the sine of the angle of refraction is constant for a given pair of media and for a given wavelength. This constant is called refractive index.

b. What is radius of curvature of mirror?

Ans: The distance between center of curvature and pole of mirror is called radius of curvature

c. What happens to radius curvature if water is taken on concave surface?

Ans: Radius of curvature decreases if water is taken on concave surface.

d. Name the quantity obtained when pin focused on convex lens kept in contact with plane mirror

Ans : It gives focal length of convex lens

e. Mention any one factor on which refractive index of medium depends

Ans: RI depends on nature of medium, nature of surrounding medium and wavelength of light

f. What type of lens is formed between plane mirror and lens when small amount of water is taken between plane mirror and convex lens?

Ans : Plano concave liquid lens

11. Diode characteristics

a. What is a semiconductor diode?

Ans: It is a pn junction made of germanium or silicon

b. What is forward bias and reverse bias?

Ans: Forward bias: When p type of diode is connected to positive terminal and n type is connected to negative terminal of battery it is said to be forward bias

Reverse bias: When p type of diode is connected to negative terminal and n type is connected to positive terminal of battery it is said to be reverse bias.

c. Define cut in voltage of diode

Ans: It is the forward voltage at which current increases linearly with voltage. Or it is the forward voltage at which potential barrier is eliminated completely. It is 0.3 V in Ge and 0.7V in silicon

a. Why the current is very small in the beginning of applying voltage?

Ans: When forward bias is given to diode, in the beginning there exists a potential barrier across the junction which offers some resistance to the flow of current, hence current in the beginning is small. As the applied voltage increases the width of potential barrier gradually decreases and at a particular voltage potential barrier is altogether eliminated. This voltage is called cut in voltage or junction pd or contact pd. It is 0.3V for Ge and 0.7V for Si

b. Why diode does not conduct in the reverse bias?

Ans: In the Reverse bias the width of potential barrier increases and hence resistance to the flow of current increases or practically does not conduct current practically

c. What is the value of cut in voltage in Germanium diode and silicon diode?

Ans: It is 0.3V for Germanium and 0.7V for silicon