CHAPTER NO. 13
CURRENT ELECTRICITY

1. Encircle the correct answers.

i. When a pot difference of 4 volt is applied across resistance, 10 J of energy is converted. Find charge flows.

a) 0.2. C
b) 2.5 C
c) 5.0 C
d) 10.0 C

ii. If a charge Q floes through any cross section of the conductor in time t, the current I is:

a) $I = Qt$
b) $I = \frac{Q}{t}$
c) $I = \frac{t}{Q}$
d) $I = \frac{Q^2}{t}$

iii. During electrolysis process, density of $CuSO_4$ solution.

a) Remains constant
b) Decreased
c) Increased
d) None of these

iv. For non-ohmic devices, the graph between V and I is:

a) Not a straight line
b) A straight line
c) A curve
d) All of above

v. If there is no fourth band, tolerance is shoes as:

a) $\pm 10\%$
b) $\pm 20\%$
c) $\pm 5\%$
d) 10%

vi. The resistivity of _____decrease with the increase in temp.

a) Gold
b) Silver
c) Copper
d) Silicon

vii. A rheostat can be used as variable resistor as well as a _____.

a) Potential divider
b) Current divider
c) Wheat stone bridge
d) Power divider

viii. The condition for the wheat stone bridge to be balanced is given by:

a) $\frac{R_1}{R_2} = \frac{R_3}{R_4}$
b) $\frac{R_2}{R_1} = \frac{R_3}{R_4}$
c) $\frac{R_1}{R_2} = \frac{R_4}{R_3}$
d) None of above

ix. The product of resistance and conductance is:

a) 1
b) Resistivity
c) Conductance
d) Zero

x. Unit (S.I) of temperature coefficient of resistivity of a material is:

a) K
b) K^{-1}
c) ^0C
d) K^{-2}

Q.2 Write the short answers.

i. A potential difference is applied across the ends of a copper wire. What is the effect on the drift velocity of free electron by?
1. Increasing the potential difference.
2. Decreasing the length and the temperature of the wire.

ii. Do bends in a wire affect its electrical resistance? Explain.

iii. Why does the resistance of a conductor rise with temperature?

iv. What are the difficulties in testing whether the filament of a lighted bulb obeys Ohm's law?

v. Describe a circuit, which will give a continuously varying potential?

vi. What is Wheatstone bridge? How can it be used to determine an unknown resistance?

vii. Write a note on rheostat as a variables resistor.

viii. State Kirchhoff's 2nd rule.

Note: Long questions:

Q.3 **(a)** define power dissipation in resistors and also derive on expression for it.

(b) How many electrons pass through an electric bulb in one minute if the 300 mA current is passing through it?

Q,4 **(a)** Define resistivity name then units. How resistivity depends upon temperature?

(b) A rectangular bar of iron is 2.0 cm by 2.0 cm in cross-section and 40 cm long. Calculate its resistance if the resistivity of iron is 11×10^{-8} Ωm.