Electrical Measurements and Sensors

UNIT-II: Potentiometers & Instrument Transformers

1. The working principle of a DC potentiometer is based on:

A) Ohm's Law
B) Electromagnetic induction
C) Comparison of unknown voltage with a known voltage drop
D) Electrostatic attraction
Answer: C) Comparison of unknown voltage with a known voltage drop

2. Crompton's DC potentiometer is primarily used for measuring:

A) Power factor
B) Unknown voltage without drawing current from the source
C) Frequency
D) Capacitance
Answer: B) Unknown voltage without drawing current from the source

3. Standardization of a DC potentiometer is carried out using:

A) Unknown voltage source
B) Standard cell (known EMF)
C) Ammeter
D) Transformer
Answer: B) Standard cell (known EMF)

4. A DC potentiometer can be used to measure:

A) Resistance only
B) Current only
C) Voltage, current, and resistance
D) Frequency only
Answer: C) Voltage, current, and resistance

5. Which of the following is NOT a type of AC potentiometer?

A) Polar type
B) Coordinate type
C) Crompton type
D) None of the above
Answer: C) Crompton type

6. AC potentiometers are mainly used for measuring:

A) Resistance only
B) Magnitude and phase angle of AC voltage
C) Temperature
D) Capacitance only
Answer: B) Magnitude and phase angle of AC voltage

7. A Current Transformer (CT) is used to:

A) Increase current for measurement

B) Measure high currents safely by reducing them to a standard value
C) Increase voltage
D) Measure resistance
Answer: B) Measure high currents safely by reducing them to a standard value

8. A Potential Transformer (PT) is primarily used to:

A) Step up voltage for transmission
B) Measure high voltages by reducing them to a standard value
C) Measure current only
D) Measure frequency
Answer: B) Measure high voltages by reducing them to a standard value

9. The difference between the actual transformation ratio and the nominal ratio of an instrument transformer is called:

A) Calibration error
B) Phase angle error
C) Ratio error
D) Zero error
Answer: C) Ratio error

10. Phase angle error in CTs and PTs refers to:

A) Difference between actual and rated current
B) Difference between primary and secondary voltage magnitudes
C) Angular difference between the primary and secondary quantities
D) Error caused by temperature variation
Answer: C) Angular difference between the primary and secondary quantities