

**Time: (3 Hours)**

**Total Marks – 80**

Note: 1) Question No.1 is compulsory.

2) Attempt any three questions out of remaining five question.

3) Assume suitable data if required.

Q.1 (a) Differentiate between indicating and integrating instrument. (4)

(b) Explain resolution and sensitivity of digital meter. (4)

(c) Discuss the broad classification of Transducer. (4)

(d) Explain a De Sauty's bridge to measure the capacitance of capacitor. (4)

(E) Explain resistance temperature detector (RTD) and piezoelectric transducer. (4)

Q.2 (A) Explain working principle construction of moving iron instrument and hence derive the torque equation. (10)

(b) Describe construction, working principle and theory of dynamometer type wattmeter. (10)

Q.3 (a) Explain with block diagram Ramp type digital voltmeter. (10)

(b) Explain working principle of Schering bridge and hence derive the equation for unknown quantity. (10)

Q.4 (a) Explain Maxwell's Inductance bridge to measure self inductance and hence derive the equation for self inductance using above bridge, draw phasor diagram. (10)

(b) Explain the construction and working of D.C. Crompton type potentiometer. (10)

Q.5 (a) A moving coil instrument gives a full scale deflection of 10mA when the potential difference across its terminals is 100 mV. Calculate

(i) The shunt resistance for a full scale deflection corresponding to 100A

(ii) The series resistance for full scale reading with 1000V

Calculate the power dissipation in each case. (10)

(b) Explain the construction and working of LVDT. (10)

Q.6 Write a short note on **(any two)** (20)

a) PMMC instrument

b) Megger

c) Digital frequency meter

d) Ballistic galvanometer

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