B.E. / B.Tech. Electrical (Electronics & Power) Engineering (Model Curriculum) Semester-IV

SE204 - Measurements and Instrumentations

P. Pages : 2 **GUG/S/25/13859**

Time : Three Hours * 2 2 9 4 * Max. Marks : 80

Notes :
1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Illustrate your answers wherever necessary with the help of neat sketches.
5. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.
6. Non programmable calculator is permitted.

1. a) Explain different types of measuring instruments. **8**

b) State and explain the operating principle of Electrodynamometer type instrument. **8**

OR

2. a) Explain PMMC type measuring instrument. **8**

b) The coil of a moving coil voltmeter is 40mm long and 30mm wide and has 100 turns on it. The control spring exert a torque of $0.24\times10^{-3}\,\text{N}-\text{m}$ when the deflection is 100 divisions on full scale. If the flux density of the magnetic field in the air gap is $1.0\,\text{Wb}/\text{m}^2$ estimate the resistance that must be put in series with the coil to give one volt per division. The resistance of voltmeter coil may be neglected. **8**

3. a) Explain the block diagram of instrumentation system. **8**

b) State and explain the types of transducers. **8**

OR

4. a) State and explain static and dynamic characteristics of instruments. **8**

b) Explain Thermocouple. **8**

5. a) Explain creeping in Energy meter. **8**

b) State and Explain the effect of power factor with Resistive, Inductive and capacitive load in Power measurement. **8**

OR

6. a) Discuss Maximum Demand Indicator. **8**

b) Explain the working of Energy meter. **8**

7.	a)	State different methods used for measurement of medium resistances and explain any one method of medium resistances measurement.	**8**
	b)	Write a short note on Megger and Earth tester.	**8**

OR

8.	a)	Explain Schering bridge with neat diagram.	**8**
	b)	Explain Anderson's Bridge with suitable diagram.	**8**
9.	a)	Explain in detail Instrument transformer.	**8**
	b)	Explain the working principle of thermocouple in detail.	**8**

OR

10.	a)	Explain in brief about LVDT.	**8**
	b)	Explain Bourdon tube with its various applications with neat suitable diagram.	**8**

****