

Roll No.....

Bc-24

Q9.a) A strain gauge has a gauge factor of 4. If the strain gauge is attached to a metal bar that stretches from 0.25m to 0.255m when strained what is the percentage change in resistance? If the unstrained value of gauge is 120W, what is the resistance value of gauge after application of strain?

b) Explain the construction and principle of working of a linear voltage differential transformer (L.V.D.T)

Total No. Of Questions :9

Total No. Of printed Pages: 4

**EC-203**

Electronic Measurement & Instrumentation

B.Tech. 3rd Semester, 2125

Time: 3 Hrs

Max Marks: 60

Note: Section A is compulsory. Attempt five questions from section A and B, taking at least two questions from each section

Section A

2*10=20

- 1.a) What are the factors for deciding selection of a voltmeter?
- b) Name materials for making a thermocouple to work at 400 °C And 1400°C.
- c) What are the display devices used in digital instruments.

EC-203**EC-203**

Turn Over

- d) Give three basic requirements of a transducer.
- e) Explain the purpose of multiplexer demultiplexer in telemetry system.
- f) What are the uses of Data Acquisition system.
- g) What is digitiser?
- h) What is spectrum analyzer. Categorize it.
- i) What are the advantages of TVM over VTVM?
- j) Compare AM versus FM Telemetry.

Section B

5*4=20

- Q2. What is multiplexing in telemetering system? Explain the principle of frequency division multiplexing.
- Q3. Explain the basic constructional features and principle of working of a strip chart recorder.
- Q4. A moving coil instrument, whose resistance is 5W and whose working current is 0.015 A, is to be used, with a manganin shunt, to measure 100 A. Calculate the error caused by a 10°C rise in temperature, if the temperature coefficient of copper and manganin are 0.004 ohm/ohm/°C and 0.00015 ohm/ohm/°C respectively.

- Q5. A single phase potential transformer has a turns ratio of 3810/63. The nominal secondary voltage is 63 V and the total equivalent resistance and leakage reactance referred to the secondary side are 2Ω and 1Ω respectively. Calculate the ratio and phase angle errors when the transformer is supplying a burden of 100+j200Ω.
- Q6. Explain the construction of wire wound strain gauges and derive the expression for the gauge factor.

Section C

10*2=20

- Q7. What are capacitive transducers? What are their advantages and disadvantages? Explain the use of capacitive transducers for the measurement of liquid level.
- Q8. a) A electro statically deflected cathode ray tube has plane parallel deflecting plates which are 2.5cm long and 0.5cm apart, and the distance from their centre to the screen is 20 cm. The electron beam is accelerated by a potential difference of 2500V and is projected centrally between the plates. Calculate the deflecting voltage required to cause the beam to strike a deflecting voltage and find the corresponding deflection of the screen.
- b) Explain the principle of electrostatic focusing of electron beam in a CRO.