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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, April / May 2014

Bio Medical Engineering,

III Semester

BM8302- Sensors and Measurements

Time : 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Draw and mention the functional blocks of a Measurement system.
2. Define: Resolution
3. Compare thermistor and RTD
4. What are the different principles used in capacitive transducer?
5. What is the principle of phototubes?
6. Mention the spectro photometric applications of photo electric transducer
7. What is the need of signal conditioning circuits?
8. Name the bridge used to measure the high Q coils.
9. Mention the features of LCD.
10. What is the need of Photographic recorder?

PART-B (5 x 16 = 80 Marks)

11. (i) Draw the block diagram of CRO and explain the function of each blocks. (10)
(ii) Write the principle of Ramp type Analog to Digital converter. (6)
12. (a) Explain the different type of errors in measurement systems. (16)
(OR)
12. (b) Discuss the static and dynamic characteristics of transducers (16)
- 13 (a) Explain the construction, working, characteristics and applications of Strain gauges. (16)
(OR)
13. (b) Explain the principle of following transducer and mention its medical applications
(i) Thermocouple (8)
(ii) LVDT (8)
14. (a) (i) Explain the construction, characteristics and application of Photovoltaic cell. (10)
(ii) Describe the principle of photo electric pulse transducer. (6)
(OR)
14. (b) Explain the principle and bio medical application of the following
(i) Photo Conductive cell (8)
(ii) Ultrasound Transducers (8)
- 15.(a) (i) Discuss briefly how the Hay bridge can be used for measurement of inductance. (10)
(ii). Write short note about the Isolation amplifier (6)
(OR)
15. (b) (i) Draw the Schering bridge and derive the balance condition. (10)
(ii) What is Notch Filter? Why it is important in design of Bio signal measurement. (6)