C 3206

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Sixth Semester

Mechatronics Engineering

EC 1364 — SENSORS AND SIGNAL PROCESSING

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the two parts of transducer?

2. List the advantages of ultrasonic sensor?

3. What is magneto resistive effect?

4. What do you meant by block body radiation?

5. What is baud rate and what factors affect it?

6. What is the difference between DCS and smart sensors?

7. List the advantages of smart sensor

8. List the advantages of using a anti-aliasing filter.

9. Why is a plug in data acquisition board so cost-effective?

10. What is SCADA?

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the advantages, disadvantages and applications of capacitive type transducer.

Or

(b) Give the basic principle of operation, types and characteristics of Resistive transducer.

12. (a) Explain the construction and working principle of resistive thermometer with neat diagram.

Or

(b) With aid of neat diagram briefly explain the working principle of Block body tipped fiber optic radiation thermometer.

13. (a) Write shorts notes on :

(i) The sub-system of smart sensors

(ii) Nano sensors

Or

(b) Briefly explain the working principle of transducer that is used to monitor the Environmental conditions

14. (a) Briefly explain the operation of ramp type A/D converter with diagram and also give its merits and demerits

Or

(b) Explain how the sampling rate, band width and sampling times related.

15. (a) Briefly explain the data logging system with typical block diagram

Or

(b) What are the six basic subsystems that are included in most data-acquisition system and explain any two sub systems with neat diagram.
