Reg. No. : | | | | | | | | | | | |

T 3492

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2008.

Fourth Semester

(Regulation 2004)

Textile Technology

TT 1252 — ELECTRONICS AND INSTRUMENTATION

(Common to Textile Technology (Textile Chemistry))

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Draw a functional block diagram of a general measurement system and give an example for each block.

2. Define gauge factor.

3. State any two temperature sensors.

4. Compare analog and digital meters.

5. Draw the characteristics of SCR and DIAC.

6. Sketch an op–amp inverting amplifier circuit.

7. Draw the truth table of AND gate.

8. Give example for passive and active filters.

9. Mention any four digital applications of signal conditioning.

10. What is data loggers?

PART B — (5 × 16 = 80 marks)

11. (a) (i) Sketch and explain the function of an op–amp common mode voltage gain and common mode rejection ratio. (10)

(ii) Write short notes on Semiconductor diodes and transistors. (6)

Or

(b) (i) Discuss the working principle of Succession approximation type ADC. (8)

(ii) Explain briefly decoders and encoders. (8)

12. (a) Discuss in detail the state characteristics of a system with suitable sketches.

Or

(b) Explain in detail the following :

(i) Inductive pickups (5)

(ii) Bridge circuits (5)

(iii) Capacitive transducers. (6)

13. (a) (i) A copper constantan thermocouple was found to have linear calibration between 0°c and 400°c with emf at maximum temperature equal to 20.68mv. Determine the correction which must be made to indicated emf if the cold junction temperature is 25°c. If the indicated emf is 8.92 mv in the thermocouple circuit, determine the temperature of the hot junction. (8)

(ii) Describe the construction and working principle of hotwire anemometers. (8)

Or

(b) (i) What is pH value? Describe the working of pH meter. (8)

(ii) Define humidity. Explain any one method used for the measurement of humidity. (8)

14. (a) Describe the basic components of a magnetic tape reduce used for instrumentation applications using direct recording techniques. Describe its advantages and disadvantages.

Or

(b) Write short notes on :

(i) Proximity sensors (8)

(ii) Digital printers. (8)

15. (a) (i) Explain in detail dielectric heating. (8)

(ii) Discuss servo mechanisms and their importance. (8)

Or

(b) (i) Discuss the advantages and disadvantages of a basic analog and digital meters.

(ii) With a neat diagram explain SCR and TRIAC.