E 321

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2003.

Third Semester

Textile Technology

EE 251 — BASIC INSTRUMENTATION

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Discuss the advantage and disadvantage of null and deflection type of measuring instrument.

2. Write down the difference between systematic and random error.

3. Why is it necessary to use a reference junction when making a temperature reading with a thermocouple?

4. Define transducer with an example.

5. Define the term apparent viscosity and absolute viscosity.

6. Write down the difference between LED and LCD.

7. Differentiate between Analog and Digital transducer.

8. What are active filters? Draw a circuit of low pass active filter.

9. Define the term specific humidity and relative humidity.

10. A platinum thermometer has a resistance of 100 Ω at 25°C. Find the resistance at 65°C if the platinum has a resistance temperature coefficient of 0.00392/°C. If the thermometer has a resistance of 150 Ω calculate the temperature.

PART B — (5 × 16 = 80 marks)

11. Define and explain all the static characteristics of measuring instruments.

12. (a) (i) Explain the construction and principle of working of a linear variable differential transformer.

(ii) Describe the construction and working of turbine flow meter.

Or

(b) (i) Describe the construction and working of electromagnetic flow meter.

(ii) Explain how fiber optic sensor is used for level measurement.

13. (a) Describe one method in digital to analog conversion technique and in analog to digital conversion technique.

Or

(b) Write short notes on multiplexing unit and data acquisition unit.

14. (a) Explain in detail the following methods which are used for level measurement.

(i) float system

(ii) ultrasonic level gauge

(iii) capacitive devices.

Or

(b) Explain the working principle of fiber optic temperature sensor, optical pyrometer and thermal expansion thermometer

15. (a) (i) Draw the block diagram of a CRO and explain the function of each block.

(ii) Explain a method for pH measurement.

Or

(b) Explain how viscosity and moisture can be measured with suitable diagrams.

———————