C 3414

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

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. Sketch the forward and reverse characteristics of semi conductor diode.

2. Draw the summing amplifier circuit diagram using operational amplifier.

3. Write the truth table of S.R flip-flop and mention its application.

4. List the merits of Microprocessor based instrument.

5. Define Rise time and Time constant of measurement system.

6. Draw a wheat stone bridge circuit and write its balancing equation.

7. Illustrate the principle of inductive proximity pickup.

8. What are the international standards for length and time?

9. Sketch the firing characteristic of DIAC.

10. Differentiate open loop and closed loop control systems.

PART B — (5 × 16 = 80 marks)

11. (a) (i) What are the ideal characteristics of operational amplifier. (6)

(ii) Explain its application as Integrator and Differentiator. (10)

Or

(b) Draw the block diagram of 4-bit binary counter and explain its operation with wave forms at all the output points. (16)

12. (a) (i) Explain the working of following input circuits.

(1) Ballast

(2) Voltage divider. (8)

(ii) Discuss the effect of loading in each circuit. (8)

Or

(b) (i) Describe the construction of capacitive transducer. (8)

(ii) Discuss its any two textile applications. (8)

13. (a) (i) Determine the expression for the gage factor of strain gage. (8)

(ii) Explain the application of strain gage for force measurement. (8)

Or

(b) Discuss the sensors used for following measurement.

(i) Flow velocity of liquids

(ii) Humidity

(iii) Viscosity

(iv) pH. (4 × 4)

14. (a) Explain the photo electric and inductive reluctance principles with an application for each in textile industry. (8 + 8)

Or

(b) Write note on two indicating devices and two recording devices. (4 × 4)

15. (a) (i) Describe the working of electronic relay using SCR. (6)

(ii) Discuss a textile application using dielectric heating technique. (10)

Or

(b) Explain the following types of process controllers.

(i) Chopper based

(ii) PID

(iii) On-Off

(iv) Self balancing relayed. (4 × 4)
