Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐

R 3633

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Fourth Semester

Textile Technology

TT 1252 — ELECTRONICS AND INSTRUMENTATION

(Common to Textile Technology (Textile Chemistry))

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write two characteristics of an ideal OPAMP.

2. Write two properties of the material with which a semiconductor diode is fabricated.

3. What is the difference between a decoder and a demultiplexer.

4. How does an asynchronous counter differ from synchronous counter?

5. Mention two applications of bridge circuits.

6. Define sensitivity of an instrument.

7. What are the types of thermoelectric sensors?

8. What is the purpose of a strain gauge?

9. Draw the characteristics of a triac?

10. Write two advantages of digital meters over analog meters.

PART B — (5 × 16 = 80 marks)

11. (a) (i) With appropriate diagrams explain the functions of an OPAMP as an inverting and non inverting amplifier. (8)

(ii) Explain the principle of an OPAMP as an integrator and a differentiator. (8)

Or

(b) (i) With circuit diagram, timing diagrams and truth table explain the operation of a 4 bit ripple counter. (8)

(ii) Describe the working of a RS flipflop. How does it differ from D flipflop? (8)

12. (a) (i) Describe the constructional details and explain the operation of LVDTs. (8)

(ii) How do the stray magnetic fields affect the performance of LVDT? (4)

(iii) What are the merits of LVDTs? (4)

Or

(b) Write short notes on :

(i) resistive transducers (6)

(ii) inductive transducers (5)

(iii) capacitive transducers. (5)

13. (a) (i) Name the typical thermocouples along with their ranges of measurement. (4)

(ii) Write short notes on thermopile. (6)

(iii) Write short notes on the applications of thermopiles and thermocouples. (6)

Or

(b) (i) Define gauge factor of a strain gauge and derive an expression for gauge factor. (10)

(ii) What are the methods of temperature compensation in a strain gauge? (6)

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14. (a) (i) With a neat diagram explain the working of a CRO. (8)

     (ii) Explain the theory of a data logger. (8)

Or

     (b) (i) Discuss an instrumentation system to control the speed of spindle used in textile process. (8)

     (ii) Explain the principle of event counting using photoelectric pick up and magnetic pick up. (8)

15. (a) (i) Discuss the advantages and disadvantages of a open loop control system. (6)

     (ii) With a neat diagram explain the principle of a feedback control system. (10)

Or

     (b) Explain the implementation of a complete data acquisition control in textile process industry on a digital computerised basis. (16)