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B.Sc. (Applied Science) DEGREE EXAMINATION, MAY/JUNE 2006.

First Year

Apparel and Fashion Technology

FT 1.6 — BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1.   State Ohm's law.

2.   Define the average value of a signal.

3.   State Fleming's right hand rule.

4.   What do you mean by all day efficiency in a transformer?

5.   What is doping?

6.   How do you bias a transistor?

7.   Define transformer utilisation factor.

8.   What is the need for voltage regulator in a power supply?

9.   Define the bandwidth of an amplifier.

10. List the advantages of negative feedback.

11. (i) Define active, reactive and apparent power. (6)

    (ii) Determine the equivalent impedance and equivalent admittance for the circuit shown below. (10)
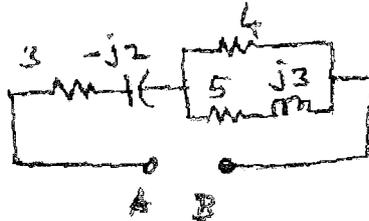
12. (a) (i) Discuss the operating characteristics of a d.c. shunt generator. (8)

    (ii) Explain the methods of starting of a synchronous motor. (8)

Or

    (b) (i) Draw and explain the operating characteristics of a 3ϕ induction motor. (12)

    (ii) Discuss briefly the losses in a transformer. (4)

13. (a) (i) Explain the principle of operation of a zener diode and its V-I characteristics with neat sketches. (8)

    (ii) Explain the principle of operation of JFET with neat sketch. (8)

Or

    (b) (i) Explain the working of transistor as on amplifier. (8)

    (ii) Write short notes on MOSFET. (8)

14. (a) (i) Draw the block diagram of a d.c. power supply unit and explain the function of each block. (8)

    (ii) Explain the principle of operation of the RC coupled amplifier with neat circuit diagram. (8)

Or

    (b) (i) What is the need for voltage regulator in a power supply? Explain the principle of operation of any one type of voltage regulator. (8)

    (ii) Draw the circuit of a full wave rectifier (centre–tapped). Explain its working and obtain the maximum rectification efficiency. (8)

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15. (a) (i) Explain the principle and working of current feedback amplifier with neat circuit diagram. (8)

    (ii) Compare Hartley and Collpitt's oscillator and bring out the advantages of one over the other. (8)

Or

(b) (i) Discuss the effect on negative feedback on gain, distortion, bandwidth and gain stability. (10)

    (ii) Explain the principle of operation of a Wein bridge oscillator. (6)