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

Question Paper Code : 20211

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Second Semester

Computer Science and Engineering

BE 8255 – BASIC ELECTRICAL, ELECTRONICS AND MEASUREMENT ENGINEERING

(Common to: Artificial Intelligence and Data Science/Computer Science and Business Systems/Information Technology

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL the questions.

PART A — (10 × 2 = 20 marks)

1. Define Maximum power transfer theorem.
2. Define power factor
3. Classify the different types of DC generators.
4. What is the difference between distribution transformer and power transformer?
5. What are is the significance of earthing in electrical installations?
6. Compare NiCd and Li ion batteries.
7. Draw the VI characteristics of diode and zener diode.
8. Mention the applications 555 timer.
9. What are the types of error that can occur in electrical measurements?
10. Distinguish between energy meter and watt meter.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Find the current through R3 resistor shown in the figure.1 (6)

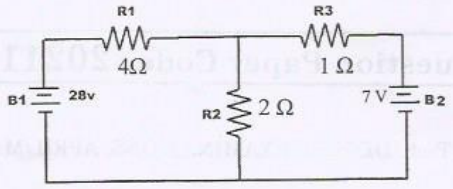


Figure.1

(ii) Deduce the equivalent impedance across terminals A and B. (7)

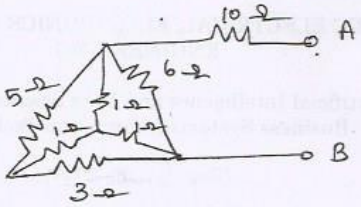


Figure.2

Or

(b) Deduce the voltage current and power expression for a star connected system.

12. (a) Draw the cross sectional view of DC machine and explain the principle and operation of DC generator and DC motor. (13)

Or

(b) (i) Derive the emf equation of transformer. (6)
(ii) Explain the construction and working principle of stepper motor. (7)

13. (a) With the help of a block diagram explain the working principle of
(i) Refrigerator (7)
(ii) Air Conditioner. (6)

Or

(b) Explain construction and working principle
(i) Sodium Vapour lamp and (6)
(ii) Fluorescent tube. (7)

14. (a) Explain the principle of operation of Successive Approximation A/D Converter. (13)

Or

(b) (i) Explain the how integration can be done by OP Amp? (6)
(ii) Explain the working of voltage regulator employing IC LM723. (7)

15. (a) Explain the principle of operation, merits and demits of moving coil instruments. (13)

Or

(b) Briefly explain the construction and working principle of CRO. (13)

PART C — (1 × 15 = 15 marks)

16. (a) (i) Deduce the thevenin equivalent of the circuit across terminals AB. (7)

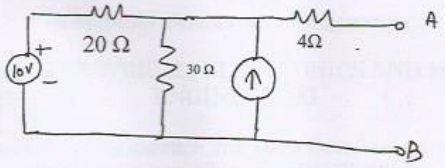


Figure.3

(ii) By employing superposition theorem find the current through (8)

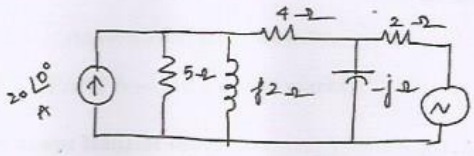
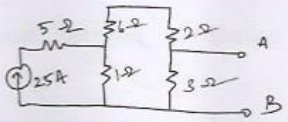


Figure.4

Or

(b) (i) Determine the Norton's equivalent across terminal A and B. (7)



(ii) Determine thevenin's equivalent across terminal A and B. (8)