VTU.REG.NO

22ESC242

B.E. Second Semester Examination – July 2024

Introduction to Electrical Engineering

Time: 3 hrs]   [Maximum Marks: 100

Note: Answer any FIVE full questions, selecting ONE full question from each module.

Module - I

1. a) List the advantages and disadvantages of conventional energy sources.   (06 Marks)
   b) List the differences amongst conventional and non conventional source of energy   (06 Marks)
   c) With the block diagram, explain the solar and wind power generation.   (08 Marks)

2. a) State and explain the Faraday's laws of electromagnetic induction.   (06 Marks)
   b) State and explain Lenz's law.   (06 Marks)
   c) Distinguish between statically and dynamically induced emf.   (08 Marks)

Module - II

3. a) Define form factor and peak factor.   (06 Marks)
   b) An alternating voltage has an amplitude of 100 V. Find its RMS, average value.   (06 Marks)
   c) Show that power consumed in a purely inductive circuit is zero.   (08 Marks)

4. a) Explain the advantages of three phase circuits.   (10 Marks)
   b) Explain the star connected three phase system.   (10 Marks)

Module - III

5. a) Derive the emf equation of DC generator.   (10 Marks)
   b) Explain the classification of DC generator.   (10 Marks)

6. a) Derive the torque equation of DC motor.   (10 Marks)
   b) Explain the characteristics of DC motor.   (10 Marks)

Module - IV

7. a) Define transformer, explain the working principle and its construction.   (10 Marks)
   b) Derive the emf equation of transformer.   (10 Marks)

8. a) Explain the principle of operation and constructional details of three phase
      induction motor.   (10 Marks)
   b) A 3-ϕ induction motor has 6 poles supplied to 50 Hz frequency. If its full load
      speed is 970 rpm, what is the percentage slip at full load?   (10 Marks)

Module - V

9. a) Explain the different types of domestic wiring.   (10 Marks)
   b) Explain the practical method of earthing.   (06 Marks)
   c) List the advantages of earthing.   (04 Marks)

10. a) If your previous metre reading was 1200 kWh and current reading is 1400 kWh,
       your energy consumption is 200 kWh. If the tariff rate is 6 Rs.per kWh, what is
       total energy consumption cost?   (04 Marks)
    b) Define fuse, explain the working principle of same.   (08 Marks)
    c) List the advantages of fuse.   (08 Marks)