Total No. of Printed Pages:2

F.E. Semester –I (Revised Course 2019-20)
EXAMINATION FEBRUARY 2022
Basics of Electrical & Electronics Engineering

[Duration : Three Hours]   **[Total Marks : 100]**

**Instructions:**   1) Answer any two questions each from PART A and PART B and any one
                                        question from PART C.
                                     2) Assume data wherever necessary

PART-A

Q.1   a) Differentiate between Renewable and non-Renewable energy resources   (6)

       b) Explain in brief the procedure for Nortonizing a circuit   (8)

       c) A coil of resistance $120\,\Omega$ is placed in magnetic field of 10^{-3}wb. The resistance of   (6)
          galvanometers is $400\,\Omega$ and coil has 100 turns. calculate the avg. emf and current if coil is
          moved $1/10$ sec from given field to a field of 0.2 mwb.

Q.2   a) find current through 2Ω using mesh analysis   (8)
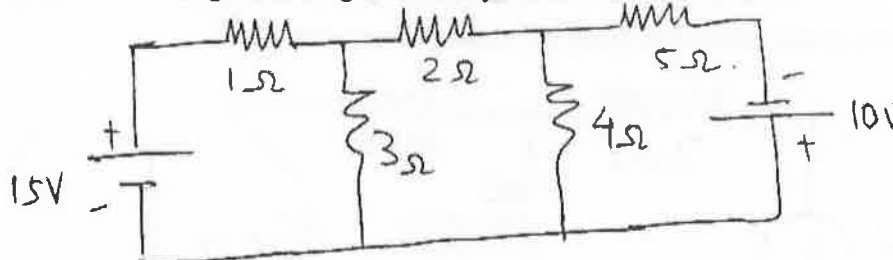

       b) Briefly explain the following terms with respect to single phase transformer   (4)

          i) magnetic leakage ii) Copper loss iii) voltage regulation iv) efficiency.

       c) Derive expression for delta to stare transformation   (8)

Q.3   a) With respect to alternating current define the following term briefly.   (6)
          i) RMS value   iv)Ripple factor
          ii) peak Value   v) frequency
          iii) Average value vi) phase

       b) with the help of power triangle explain the Concept of active power, Reactive power and   (6)
          apparent power with relevant equations

       c) Derive the relationship between line voltage and phase voltage in 3 phase star connected   (8)
          system.

PART-B

Q.4   a) Explain the construction and working principle of light emitting diode (LED).   (6)

       b) 230 V AC supply is applied to a half wave rectifier through a transformer of ratio 10:1   (6)
find i) dc output voltage ii) PIV. Assume ideal diode

       c) Explain in detail the working of zener diode in 3rd quadrant with relevant curve   (8)

Q.5   a) Explain the amplifying action of a Bipolar Junction transistor.   (8)

       b) Differentiate between signal diode and Go Zener diode.   (6)

       c) Describe the different breakdown mechanism in diodes   (6)

Q.6   a) Explain the fixed bias circuit for Bipolar Junction transistors.   (8)

       b) Describe the construction and working of JFET   (8)

       c) Differentiate between line regulation and load regulation for zener regulator   (4)

PART-C

Q.7   a) for circuit given below determine the reading of ammeter.   (6)
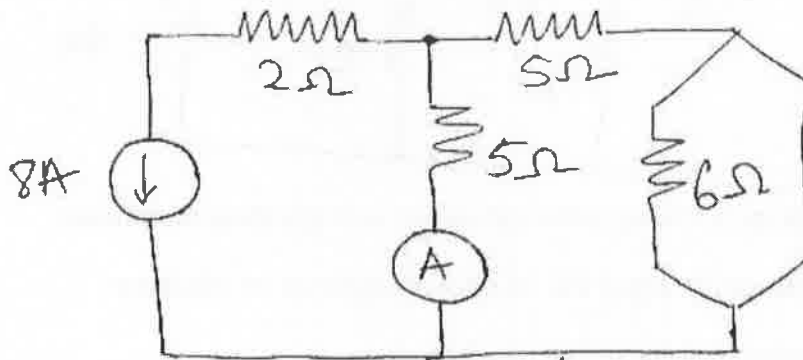
       b) Define the significance of iron loss and copper loss in transformer   (6)

       c) Draw the block diagram of thermal power plant and explain its working.   (8)

Q.8   a) Derive the condition of maximum power transfer and also derive the equation of   (10)
maximum power

       b) Draw the VI characteristics of SCR and explain in detail various modes of operation   (10)

2