R22 Regulation *Subject code: 4B2AP*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech II Semester Regular Examinations, September 2023

BASIC ELECTRICAL ENGINEERING

(Common to CSE and CSE(AI&ML))

Maximum Marks: 60 Date:20.09.2023 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10x1M=10 Marks)

1. a Define Linear and nonlinear elements.
   b State Maximum power transfer theorem.
   c What are the advantages of 3-phase system?
   d Write expression for Average value of sinusoidal quantity?
   e Differentiate ideal transformer and practical transformer.
   f Define the efficiency.
   g Compare the Generator and Motor.
   h Write the construction parts of 3-ph Induction Motors?
   i What is the ideal value of power factor?
   j Write the Full form of MCCB?

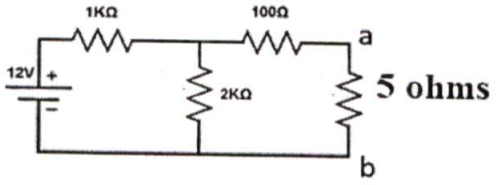
Part-B

Answer All the following questions. (5X10M=50Marks)

2 Derive the expression for Star to Delta transformation. [10M]

OR

3 State the Thevenin's theorem? Using Thevenin's theorem, calculate Thevenin's Resistance, Thevenin's voltage across 5 ohms resistor. [10M]



4 Derive the Voltage, current and power equations and draw the phasor diagram of RL series. [10M]

OR

5 Derive an expression for average and rms value of a sinusoidal quantity. [10M]

6 a) Derive the EMF equation for a single phase Transformer.? [5M]
b) Compare the transformer and auto transformer? [5M]

OR

7 Explain the operation of a single phase transformer under no-load condition and also draw the vector diagram and equivalent circuit. [10M]

8 Explain the Construction and working principle operation of DC Generator? [10M]

OR

9 a) Explain the principle of production of rotating magnetic field in a 3-phase induction Motor. [5M]

b) Sketch the Torque-slip characteristics of Induction motor and explain. [5M]

10 a) Explain the elementary calculation for energy consumption? [5M]

b) Mention advantages and disadvantages of ELCB. [5M]

OR

11 Explain construction & working of different types of MCBs [10M]