R22 Regulation *Subject code:4E1AC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Regular Examinations, March/April 2023

Basic Electrical and Electronics Engineering

(CE)

Maximum Marks: 60 Date:12.04.2023 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

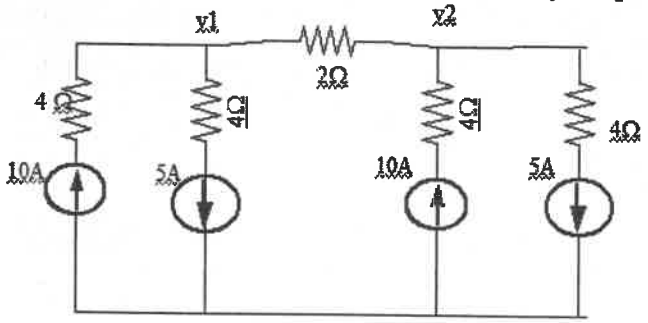
All the following questions carry equal marks **(10x1M=10 Marks)**

1. a State Norton's theorem.
   b Write the expression for equivalent resistance for '*n*' number of resistors in parallel connection.
   c List the merits of three phase circuit over single phase circuit.
   d State the principle of operation of a transformer.
   e Why the transformer rating is in kVA and not in kW?
   f List out the purpose of commutator and brushes.
   g Define the Zener diode.
   h What is the diffusion.
   i What is the FET.
   j Define the depletion MOSFET.

Part-B

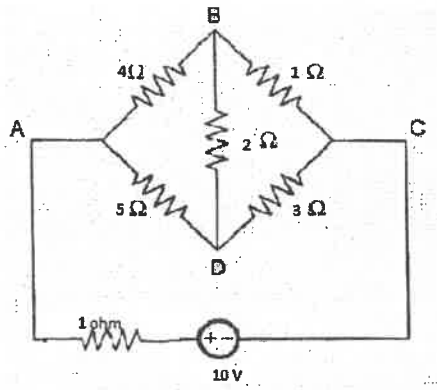
Answer All the following questions. **(10M X 5=50Marks)**

2 Find the nodal voltages V_1, V_2 for the given circuit using nodal analysis. [10M]



OR

3 In the circuit shown, determine the current through the 2 ohm resistor and the total current delivered by the battery. Use Kirchhoff's laws. [10M]



4 With a neat diagram, explain the principle operation of DC motor. [10M]

OR

5 Explain the various types of self-excited DC generator with diagrams. [10M]

6 Explain the open circuit test and short circuit test on a single-phase transformer. [10M]

OR

7 Explain the principle of operation of a transformer with a neat diagram. Also state where it is used in power systems. [10M]

8 Explain the PN junction diode and draw the V-I characteristics of diode. [10M]

OR

9 Explain the Half wave rectifier with neat diagram. [10M]

10 Explain the types of FET. [10M]

OR

11 Explain the enhancement MOSFET and draw the transfer characteristic. [10M]