R22 Regulation *Subject code:4E1AC*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech I Semester Supplementary Examinations, July 2025

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

(CE)

Maximum Marks: 60 Date:18.07.2025 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 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)		Marks	CO	BTL
1 a	How capacitor will act for DC Supply?	1M	1	L1
b	What is the internal resistance of ideal current source?	1M	1	L1
c	List out power factor improvement methods?	1M	2	L1
d	What is meant by ELCB?	1M	2	L1
e	State the principle of operation of single-phase transformer?	1M	3	L1
f	List out speed control methods of DC motor?	1M	3	L1
g	What are inductive filters?	1M	4	L1
h	What is meant by full wave rectifier?	1M	4	L1
i	Define BJT.	1M	5	L1
j	What is meant by biasing FET?	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	a) Explain Voltage and Current sources. b) Define and derive an expression for RMS Value for a sinusoidal quantity.	5M 5M	1	L2
	OR			
3	a) Define the following terms: i)Real power ii)Reactive Power iii)Apparent power iv)Power factor b) A 500 mH coil of negligible resistance is connected to an AC circuit in which an effective current of 6 mA is flowing. Determine the voltage across the coil if the frequency is 100 Hz.	5M 5M	1	L2
4	a) Explain types of wires and cables. b) Explain important characteristics of batteries.	5M 5M	2	L2
	OR			
5	a) Explain the working principle of MCB. b) Explain the steps to calculate the energy consumption.	5M 5M	2	L2
6	a) Derive the EMF equation of the Transformer. b) Explain constructional details of DC generators.	5M 5M	3	L2

	OR			
7	a) Explain the speed control of three phase induction motor. b) Explain working principle of Synchronous Generators.	5M 5M	3	L2
8	a) Explain the characteristics of zener diode. b) Explain the working of the PN junction diode as a rectifier.	5M 5M	4	L2
	OR			
9	a) Draw the circuit diagram of a half-wave rectifier, and explain its operation. b) Explain inductive filters.	5M 5M	4	L2
10	a) Explain the constructional details of a Bipolar Junction Transistor. b) Compare the performance of a BJT as an amplifier in CE, CB, and CC configurations.	5M 5M	5	L2
	OR			
11	a) Explain principle of operation of FET. b) Compare FET with BJT.	5M 5M	5	L2