



*R20 Regulation* *Subject code:3E2AN*  
**TKR COLLEGE OF ENGINEERING AND TECHNOLOGY**  
 (Autonomous, Accredited by NAAC with 'A+' Grade)

**B. Tech II Semester Supplementary Examinations, January 2026**

**BASIC ELECTRICAL ENGINEERING**  
 (Common to ECE, CSE, IT, (CSE(AI&ML) & (CSE(DS)))

**Maximum Marks: 70**

**Date: 27.01.2026**

**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		(10X2M=20 Marks)	Marks	CO	BTL
1	Define current and voltage.		2M	1	L1
2	State Reciprocity theorem.		2M	1	L1
3	Define frequency.		2M	2	L1
4	Discuss the concept of phase and phase difference.		2M	2	L1
5	Define transformation ratio.		2M	3	L1
6	Explain about mutual inductance.		2M	3	L1
7	State Faraday's law of Electromagnetic induction.		2M	4	L1
8	Explain Statically induced EMF and Dynamically Induced EMF.		2M	4	L1
9	Explain about meter board and Distribution board.		2M	5	L1
10	List the types of cables.		2M	5	L1

**Part-B**

Answer All the following questions.		(5X10M=50Marks)	Marks	CO	BTL
11	Derive the expression for star to delta and delta to star transformation.		10M	1	L2
OR					
12	a) State Norton's theorem. b) find the Norton's equivalent circuit for the circuit shown below.		5M 5M	1	L2
13	Derive the expression for average value, RMS value, Form factor and Peak factor of sinusoidal waveform.		10M	2	L2

OR

14	Derive the expression for impedance (Z), phase angle ( $\Theta$ ) and power factor ( $\cos\phi$ ) for RL series circuit with relevant phasors.	10M	2	L2
15	a) Explain the principle of operation of single-phase transformer b) Derive the Emf equation of the transformer.	5M 5M	3	L2
OR				
16	Explain in detail different types of losses in transformer	10M	3	L2
17	a) Explain the constructional features of DC machine with neat diagram. b) Derive the EMF equation of the DC generator.	5M 5M	4	L2
OR				
18	Explain the construction and working principle of 3-phase induction motor.	10M	4	L2
19	Explain the different types of circuit breakers in detail.	10M	5	L2
OR				
20	Explain in detail the types of earthing with neat diagrams.	10M	5	L2