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R20 Regulation

Subject code: 3P3CB

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

**B.Tech III Semester Supplementary Examinations, December 2025**

## BASIC ELECTRICAL ENGINEERING

(ME)

Maximum Marks: 70

Date: 30.12.2025

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

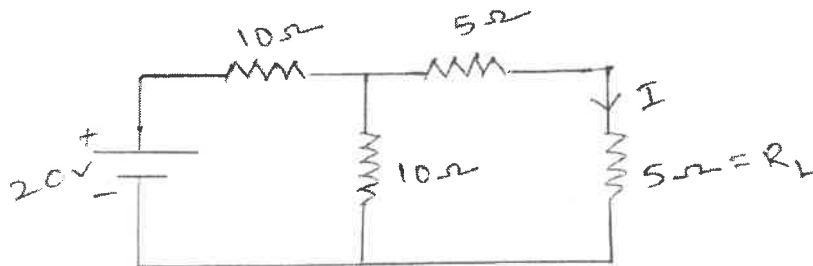
All the following questions carry equal marks (10X2M=20 Marks)		Marks	CO	BTL
1	Draw the symbol of resistor, capacitor, and inductor.	2M	1	L1
2	State Maximum power transfer theorem.	2M	1	L1
3	Convert the following rectangular quantities into polar. 2+5j (b) 3-4j	2M	2	L1
4	Define phase difference.	2M	2	L1
5	Define transformation ratio.	2M	3	L1
6	Write about mutual inductance.	2M	3	L1
7	Write down the Emf equation of a dc motor.	2M	4	L1
8	What is principle operation of 3-phase induction motor?	2M	4	L1
9	Write about Earthing.	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	State Kirchhoff's voltage law and Kirchhoff's Current law with suitable example.	10M	1	L2

OR

12	Find the current "I" across load resistor $R_L$ using Thevenin's theorem.	10M	1	L2
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13	Derive the expression for average value, RMS value, Form factor and Peak factor of sinusoidal waveform.	10M	2	L2
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OR

14	For the given series RL circuit find 1) Impedance 2)Current 3)Phase angle 4)Voltage across R,L.	10M	2	L2
15	Explain the principle of operation of transformer and derive the Emf equation.	10M	3	L2
OR				
16	Explain about Auto-Transformer with neat diagram.	10M	3	L2
17	a) Derive the Emf equation of Dc Generator. b) Calculate the emf generated by a 6 pole dc generator having 480 conductors and driven at a speed of 1200 rpm. The flux per pole is 0.012 wb. Assume the generator to be i) lap wound ii) wave wound.	5M 5M	4	L2
OR				
18	Explain the torque –speed characteristics of 3-phase induction motor.	10M	4	L2
19	Explain the different types of MCB'S in details.	10M	5	L2
OR				
20	Explain about service mains, meter board and distribution board in detail.	10M	5	L2