*R20 Regulation* *Subject code: 3P3CB*

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

**B.Tech III Semester Supplementary Examinations, June 2026**

## BASIC ELECTRICAL ENGINEERING

**(ME)**

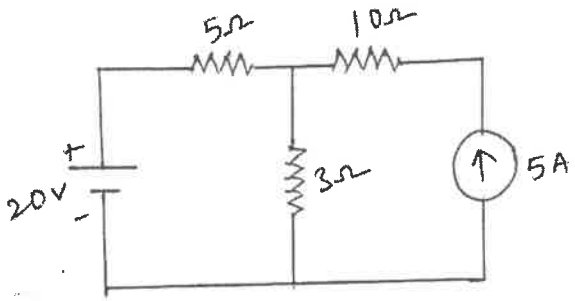
***Maximum Marks: 70*** Date: 11.06.2026 Duration: 3 hours

**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 | State Ohm's law. | 2M | 1 | L1 |
| 2 | State superposition theorem. | 2M | 1 | L1 |
| 3 | Modify the following rectangular quantities into polar.<br>20+j30 (b) 5-j10 | 2M | 2 | L1 |
| 4 | Define frequency. | 2M | 2 | L1 |
| 5 | Write the principle of Transformer. | 2M | 3 | L1 |
| 6 | Write about self inductance. | 2M | 3 | L1 |
| 7 | Classify armature windings a in DC machine. | 2M | 4 | L1 |
| 8 | Write the Emf equation of a dc generator. | 2M | 4 | L1 |
| 9 | What is the importance of earthing? | 2M | 5 | L1 |
| 10 | Classify the types of wires. | 2M | 5 | L1 |

Part-B

| Answer All the following questions. (5X10M=50Marks) | | Marks | CO | BTL |
|---|---|---|---|---|
| 11 | Derive the relation of delta-star conversion equations. | 10M | 1 | L2 |
| | OR | | | |
| 12 | Find the current response across 3Ω resistor using superposition theorem<br> | 10M | 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 (Θ) and power factor (cosϕ) for RC series circuit with relevant phasors. | 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 a neat diagram. | 10M | 3 | L2 |
| 17 | a) Derive the Emf equation of DC Generator.<br>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<br>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 detail. | 10M | 5 | L2 |
| | OR | | | |
| 20 | Explain about service mains, meter board and distribution board in detail. | 10M | 5 | L2 |