



R20 Regulation

Subject code:3P3CB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

TKRCET

B.Tech III Semester Supplementary Examinations, December 2024

BASIC ELECTRICAL ENGINEERING (Mechanical Engineering)

Maximum Marks: 70

Date:04.12.2024

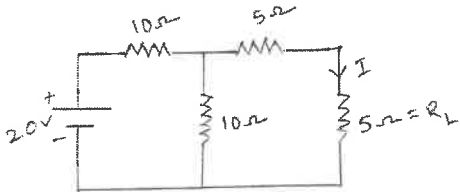
Duration: 3 hours

- 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 which carries 10M.
 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) | | CO | Bloom Tx |
|---|---|----|----------|
| 1 | State Ohm's law. | 1 | L1 |
| 2 | State superposition theorem. | 1 | L1 |
| 3 | Modify the following rectangular quantities into polar. 20+j30 (b) 5-j10 | 2 | L1 |
| 4 | Define i) form factor ii) peak factor | 2 | L1 |
| 5 | Define transformation ratio | 3 | L1 |
| 6 | Explain about mutual inductance. | 3 | L1 |
| 7 | State the function of commutator | 4 | L1 |
| 8 | Define slip in induction motor | 4 | L1 |
| 9 | Define power factor | 5 | L1 |
| 10 | Explain the terms i) Meter Board ii) Distribution Board | 5 | L1 |

Part-B

| Answer All the following questions. (5X10M=50Marks) | | CO | Bloom Tx |
|---|---|----|----------|
| 11 | State Kirchoff's voltage law and Kirchoff's Current law with suitable example. [10M] | 1 | L2 |
| OR | | | |
| 12 | Find the current "I" across load resistor R_L using thevenin's theorem  | 1 | L2 |
| [10M] | | | |
| 13 | Explain following terms: i) form factor ii) peak factor iii) phase difference iv) frequency v) Power factor ? [10M] | 2 | L2 |
| OR | | | |

| | | | |
|----|--|---|----|
| 14 | Derive the expression for impedance (Z), phase angle (Θ) and power factor ($\cos\phi$) for RL series circuit with relevant phasors. [10M] | 2 | L2 |
| 15 | Explain the construction and working principle of single phase transformer. [10M] | 3 | L2 |
| | OR | | |
| 16 | Explain the OC test of a single-phase transformer with neat diagram, [10M] | 3 | L2 |
| 17 | Explain the working principle and construction parts of dc machine with neat diagram. [10M] | 4 | L2 |
| | OR | | |
| 18 | Explain the construction and working principle of 1-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 |