**R22**

# ANURAG Engineering College
### (An Autonomous Institution)
**I B.Tech II Semester Regular/Supplementary Examinations, June/July – 2024**
### BASIC ELECTRICAL ENGINEERING
### (COMMON TO ECE & IT)

**Time: 3 Hours**  |  **Max. Marks: 60**

## Section – A (Short Answer type questions)  (10 X 1M = 10M)

**Answer All Questions**

| | | Course Outcome | B.T Level | Marks |
|---|---|---|---|---|
| 1. | State Ohm's law. | CO1 | L2 | 1M |
| 2. | State KCL. | CO1 | L2 | 1M |
| 3. | Define RMS value of alternating current. | CO2 | L2 | 1M |
| 4. | Define Peak factor. | CO2 | L2 | 1M |
| 5. | Define Voltage Regulation of transformer. | CO3 | L2 | 1M |
| 6. | Mention the various losses which occur in a transformer. | CO3 | L1 | 1M |
| 7. | State Flemming's Right Hand rule. | CO4 | L2 | 1M |
| 8. | Define Slip. | CO4 | L2 | 1M |
| 9. | What are the components of LT switchgear. | CO5 | L1 | 1M |
| 10. | What is the necessity of Earthing? | CO5 | L1 | 1M |

## Section B (Essay Questions)
**Answer all questions, each question carries equal marks.**  (5 X 10M = 50M)

| | | | | | |
|---|---|---|---|---|---|
| 11. A) | i) Explain in detail about Thevenin's Theorem. | | CO1 | L3 | 5M |
| | ii) Find the current flowing through the 1 Ω resistor using Thevenin's theorem | | | | 5M |
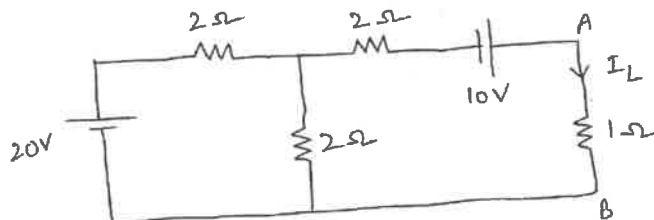


**OR**

| | | | | | |
|---|---|---|---|---|---|
| B) | i) Explain in detail about Superposition Theorem. | | CO1 | L3 | 5M |
| | ii) Find the current I in the circuit using Superposition theorem | | | | 5M |



| | | | | | |
|---|---|---|---|---|---|
| 12. A) | i) Explain about Real power and reactive power | | CO2 | L3 | 5M |
| | ii) A resistance of 10 ohms, inductance of 0.5H, capacitance of 10µF are connected in series across 50V,50Hz supply, calculate impedance, current, p.f, power consumed. | | | | 5M |
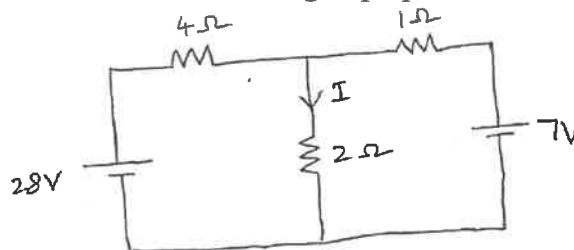
**OR**

| | | | |
|---|---|---|---|
| B) | What are three phase balanced circuits, derive voltage and current relations in star and delta connections. | CO2 | L3 | 10M |

13. A) i) Explain the working of single phase transformer         CO3  L3  5M
ii) Distinguish between Ideal and Practical transformer and draw the        5M
equivalent circuits of ideal and practical transformers.
**OR**
B) A 3 KVA , single phase, 50 Hz, 230/115 V transformer gave the  CO3  L3  10M
following test results
OC test: 115 V, 0.6 A, 10 W
SC test: 60 V, 13 A, 200 W
If the power factor of the load is 0.8 lagging, Calculate the
i) efficiency at full-load and   ii) efficiency at half full-load

14. A) i) Draw the performance characteristics of dc generators      CO4  L3  5M
ii) Draw the performance characteristics of dc motors         5M
**OR**
B) i) Explain the generation of rotating magnetic field.         CO4  L3  5M
ii) Explain the construction and working of a three-phase induction motor  5M

15. A) What are the types of Batteries and explain their characteristics.    CO5  L3  10M
**OR**
B) i) Explain the elementary calculations for energy consumption.     CO5  L3  5M
ii) What do you understand by power factor? Explain the necessity of   5M
improving power factor?