R20 Regulation *Subject code:3E2AN*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech II Semester Supplementary Examinations, September 2023

BASIC ELECTRICAL ENGINEERING

(Common to ECE,CSE,CSE(AI&ML),CSE(DS) and IT)

Maximum Marks: 70 Date:22.09.2023 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)

1 Define Kirchoff's voltage law and current law.
2 Discuss Faradays law of electromagnetic induction.
3 Modify the following rectangular quantities into polar.
a) 20+j30 (b) 5-j10
4 Show the relationship between line values and phase values of voltage and current in star and delta connection.
5 State Thevenin's theorem.
6 State the Millman's theorem.
7 Classify armature windings a in DC machine.
8 Differentiate ideal transformer and practical transformer.
9 Write the importance of earthing.
10 Classify the types of wires.

Part-B

Answer All the following questions. (5X10M=50Marks)

11 Build the expression for star – delta transformations 10M

OR

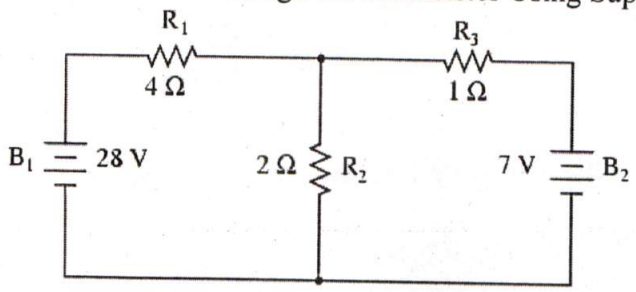
12 Derive the expression for self inductance, mutual inductance and coefficient of coupling of magnetic circuit. 10M

13 Derive the expression for average value, RMS value, Form factor and Peak factor of sinusoidal waveform. 10M

OR

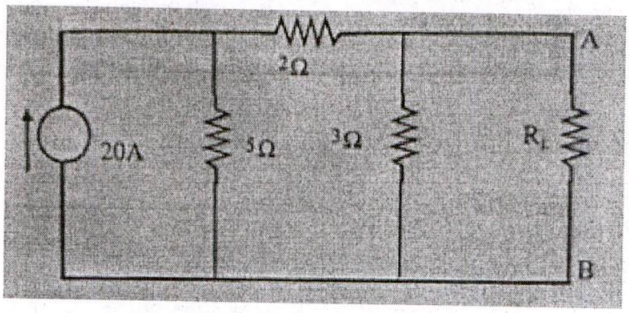
14 Outline the resonance of series RLC circuit and derive expressions for resonance frequency, quality factor and bandwidth. 10M

15 Measure current through the 2Ω resistor Using Superposition Theorem. 10M



OR

16 The circuit shown in the figure R_L absorbs maximum power. Compute the value of R_L and maximum power. 10M



17 A. Analyze principle of operation of DC generator. 5M
B. Show the expression for torque equation of DC motor. 5M

OR

18 Analyze the equivalent circuit of single phase transformer. outline its equivalent circuit applications. 10M

19 Summarize the function of circuit breaker and describe about MCB, ELCB and MCCB. 10M

OR

20 Classify the types of batteries and mention the important characteristics of batteries. Recommend type of battery for domestic appliances 10M