

PARUL UNIVERSITY
FACULTY OF ENGINEERING & TECHNOLOGY
B. Tech. Winter 2022 – 23 Examination

Semester: 1
Subject Code: 303106101
Subject Name: Basic Electrical Engineering

Date: 25-01-2023
Time: 02.00pm to 04.30pm
Total Marks: 60

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Objective Type Questions - (Fill in the blanks, one word answer, MCQ-not more than five in case of MCQ) (All are compulsory) (Each of one mark) **(15)**

1. Two Resistance 5 ohm and 5 ohm are connected in Parallel, what will be the Equivalent resistance?
a) 2.5 ohm b) 20 ohm c) 10 ohm d) 15 ohm
2. What is the rating of Transformer?
a) KW b) KWh c)KVA d) None
3. In Norton's Theorem, I_{SC} is equal to
a) Short circuit terminal Current b) Open circuit terminal voltage c) None d) All
4. In superposition Theorem Voltage source is replace by?
a) open circuit b) short circuit c) Both a & b d) None
5. What is the working principle of Induction motor?
a) Electromagnetic induction b) ohms law c) Joule law d) None
6. If $N_1 = 100$, $N_2 = 200$, Then transformer is known as _____ transformer.
7. If voltage is 100 V and Resistance is 20 ohm, what is the value of current (I) _____
8. In a series circuit, which of the parameters remain constant across all circuit elements such as resistor, capacitor and inductor? (Current/Voltage)
9. The Form factor value of sine wave is _____.
10. Two Resistance of 10 ohm and 10 ohm connected in series. What is the total resistance? _____
11. What is the unit of Active Power?
12. In Parallel circuit, Which parameter remain constant? (Current/Voltage)
13. The Peak factor value of sine wave is _____.
14. KCL is applied at _____.(Loop/Node)
15. In Ac circuit, If Frequency is increase X_L is _____. (Increase/Decrease)

Q.2 Answer the following questions. (Attempt any three) **(15)**

- A) State and Explain Kirchhoff's voltage and current laws.
- B) Difference between series and parallel circuit.
- C) Explain working of Transformer?
- D) Definitions of Frequency, Time Period and Power Factor.

Q.3 A) Explain RL series circuit with necessary circuit diagram, wave forms and derive Current and power equation. **(07)**

B) State Definition of RMS and Average value and derive the equation of RMS value for sine wave. **(08)**

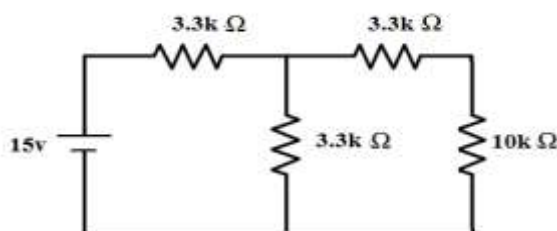
OR

B) Write down the step of Thevenin's Theorem and Explain with example. **(08)**

Q.4 A) Define the transformer and explain Construction of Transformer. **(07)**

OR

A) Find Current Flowing Through 10k Ω Resistor using Thevenin's theorem **(07)**



B) An Ac circuit, a coil having resistance of 7 ohm and an inductance of 31.8mH is connected to 230 V, 50 Hz supply. Calculate 1) current 2) Phase angle 3) Power Factor 4) Power Consumed. **(08)**