Please check that this question paper contains 09 questions and 02 printed pages within first ten minutes.

[Total No. of Questions: 09] [Total No. of Pages: .....]

Uni. Roll No. .....

Program: B.Tech. (Batch 2018 onward)

Semester: III

MORNING

09 MAY 2023

Name of Subject: Electrical Circuit Analysis

Subject Code: PCEE-101

Paper ID: 16064

Scientific calculator is Allowed

Detail of allowed codes/charts/tables etc. ...Nil.

Time Allowed: 03 Hours **Max. Marks: 60**

NOTE:

1) Parts A and B are compulsory
2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
3) Any missing data may be assumed appropriately

Part – A **[Marks: 02 each]**

Q1.

a) Define a dependent voltage source with the help of a diagram.

b) Describe unit ramp function and exponential function.

c) Describe maximum power theorem.

d) Calculate Laplace of cosωt.

e) Analyse series resonance.

f) Determine the values of A,B,C,D for transmission parameters.

Part – B **[Marks: 04 each]**

Q2. Explain transfer function representation with the help of a suitable circuit. What is an ideal transformer.

Q3. Describe Initial and final value theorem of Laplace.

Q4. Interpret open circuit parameters in terms of short circuit parameters.

Q5. For the circuit shown determine Norton's equivalent circuit between output terminals AB.

P.T.O.

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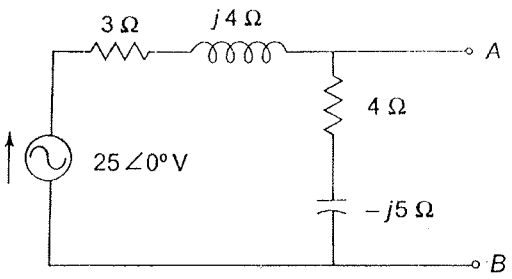

Q6. A 50Hz sinusoidal voltage v=311sinωt is applied to a RL series circuit. If the magnitude of resistance is 5ohms and that of inductance is 0.02H. Evaluate the rms current, instantaneous current, voltage drop across resistor.

Q7. Evaluate Laplace inverse of $\frac{4}{s^2+64}$

Part – C **[Marks: 12 each]**

Q8. Solve for Step response of RL series circuit with appropriate circuit.

OR

Explain Superposition theorem, nodal analysis, Thevenin's theorem.

Q9. The driving point impedance of a LC network is represented by

$Z(s) = 5\frac{(s^2+4)(s^2+25)}{s(s^2+16)}$

Evaluate First and Second form of foster

OR

The driving point impedance of a RC network is represented by

$Z(s) = \frac{(s^2+5s+4)}{(s^2+2s)}$

Evaluate First and Second form of Cauer

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