Question Paper

Exam Date & Time: 20-Nov-2019 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES END SEMESTER THEORY EXAMINATIONS NOVEMBER 2019 III SEMESTER B.sc. (Applied Sciences) in Engg. NETWORK ANALYSIS [IEE 231 - S2]

Duration: 180 mins.

Marks: 100

Answer 5 out of 8 questions. Missing data, if any, may be suitably assumed.

1)

Using Superposition theorem, find the value of V if the current I = 2 A (10)

A)



^{B)} Verify Reciprocity theorem in finding Voltage V. ⁽¹⁰⁾



2)

Obtain the dotted equivalent for the circuit shown in Fig. and use the ⁽⁶⁾ equivalent to find the equivalent inductive reactance

A)



^{B)} Compute the voltage V for the coupled circuit shown in Fig.



^{C)} For the coupled circuit shown in Fig.find the ratio V2 / V1 which results in $^{(6)}$ zero current I_1 .



³⁾ Discuss the Transient Analysis of series RC circuit with sinusoidal excitation ⁽¹²⁾

A)

^{B)} In the network shown the switch is closed to position 1 at t = 0 and is moved ⁽⁸⁾ to position 2 at t = 10ms. Determine the inductor current I _L (t).

(8)



⁴⁾ A voltage is expressed as V(s) = $\frac{s+1}{s(s^2+4s+4)}$. If this voltage is applied ⁽⁸⁾ ⁽⁸⁾

across a resistance of 0.25Ω , find the current through the resistor in time domain.

- ^{B)} A waveform is given by f(t) = 6u(t-t1)+2u(t-t2)-10u(t-t3). Draw the waveform. ⁽⁶⁾
- ^{C)} In the series RC circuit of Fig., the capacitor has an initial charge 2.5 mC. At $^{(6)}$ t =0, the switch is closed and a constant-voltage source V = 100 V is applied. Use the Laplace transform method to find the current.



⁵⁾ A Network has been shown in fig. The switch K is closed at t = 0. Find the current ⁽²⁰⁾ in RL using Thevenin's Theorem. Assume steady state condition before switching. Use Laplace Transform method. Assume RL=10 Ω .



A ' π ' circuit is shown in fig. Find the Y-parameters and draw the equivalent ⁽⁸⁾ A) circuit.







- ^{B)} In a Two port Network Z11=2 Ω , Z12=Z21=5 Ω , Z22=1 Ω . Find h parameter ⁽⁸⁾ and Y parameter matrices.
 - Find [Z].

A)

8)

A)

6)

(10)



^{B)} Find ABCD parameters for the network shown in Fig.



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(10)