Question Paper

Exam Date & Time: 10-Jan-2024 (09:30 AM - 12:30 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Third Semester Make Up End Sem Examination January 2024- Network Analysis BME 2124

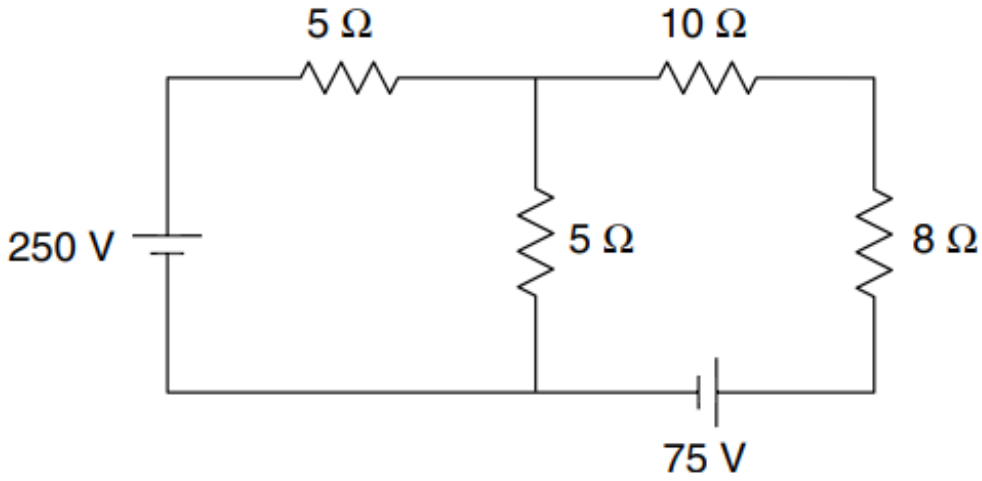
NETWORK ANALYSIS [BME 2124]

Marks: 50 **Duration: 180 mins.**

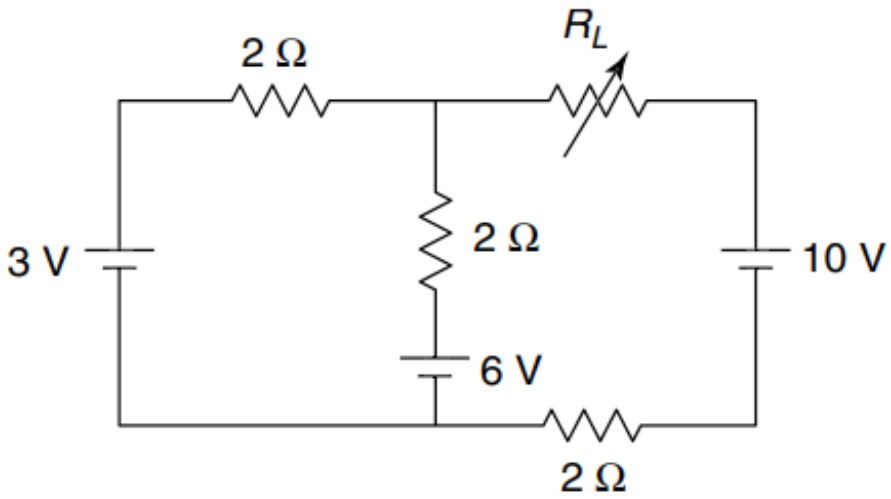
Descriptive

Answer all the questions. Section Duration: 180 mins

1A) Apply the Thevenin's theorem to find current through 8Ω resistor. (3)



1B) Analyse the circuit using maximum power transfer theorem to calculate the RL and calculate the maximum power. (4)



1C) An RLC series circuit with a resistance of 10 Ω, inductance of 0.2 H and a capacitance of 40 μF is supplied with a 100 V supply at variable frequency. Determine the following w.r.t. the series resonant circuit: (3)

(a) frequency of which resonance takes place

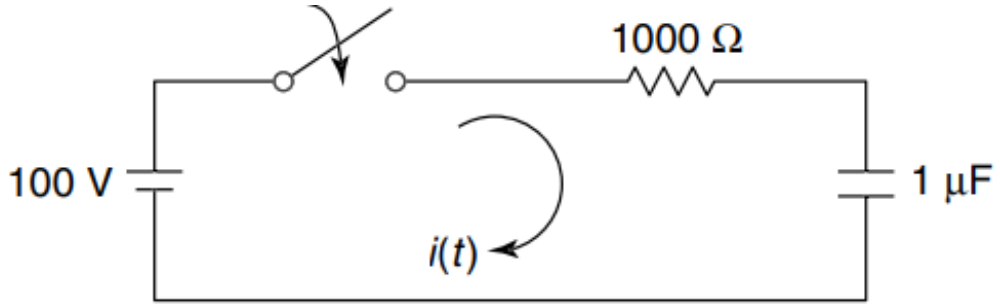
(b) quality factor

(c) half-power points

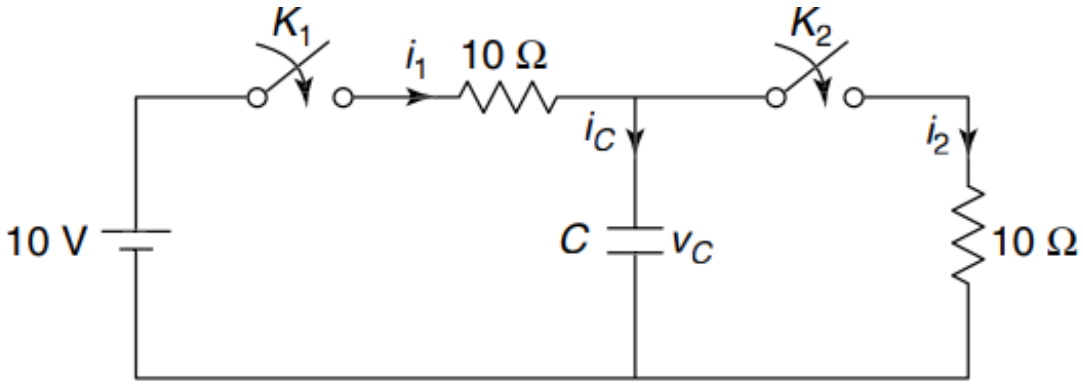
(d) resonance and phasor diagrams

2A) In the network, the switch is closed at t = 0. With the capacitor uncharged. Determine the values of (4)

$i, \frac{di}{dt}, \frac{d^2i}{dt^2}$ at t=0+.



2B) In the network, the switch K1 has been closed for a long time prior to t=0. At t=0, the switch K2 is closed. Analyse Vc(0+) and Ic(0+). (2)



2C) Determine the Laplace transform of Cosine function. (4)

3A) Solve the initial and final value theorem for: (4)

$$\frac{(2s+1)}{(s^3+6s^2+11s+6)}$$

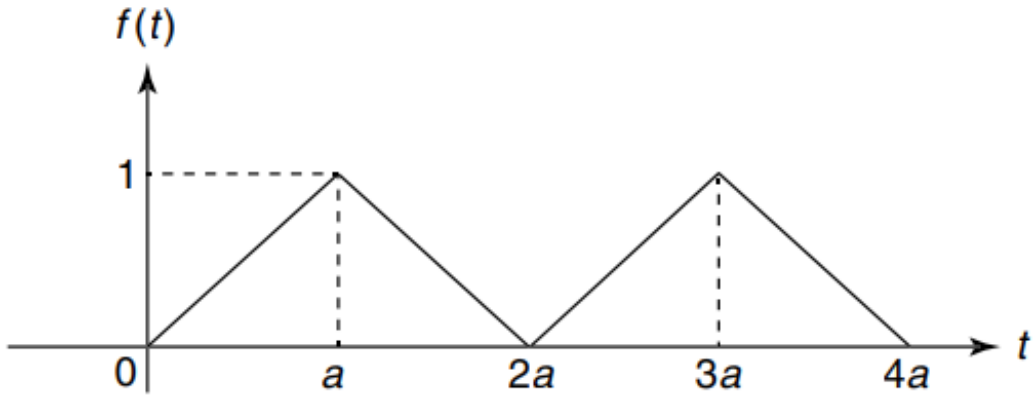
3B) Simplify the Laplace transform: (3)

$$4t^2 + \sin 3t + e^{2t}$$

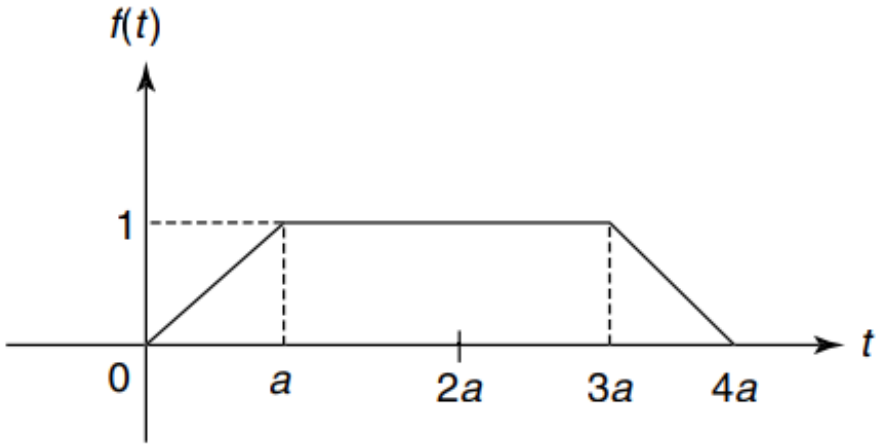
3C) Interpret the inverse Laplace transform : (3)

$$\frac{(2s+2)}{(s^2+2s+10)}$$

4A) Interpret the Laplace transform of the waveform: (3)

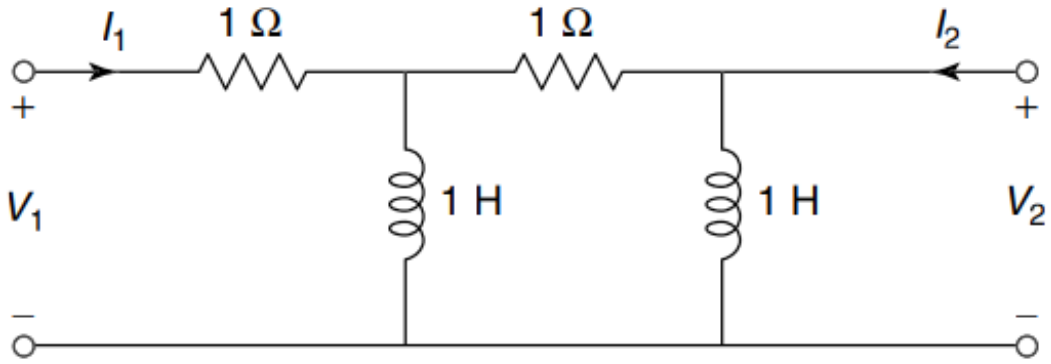


4B) Using waveform synthesis, interpret the Laplace transform of the wave shown: (4)



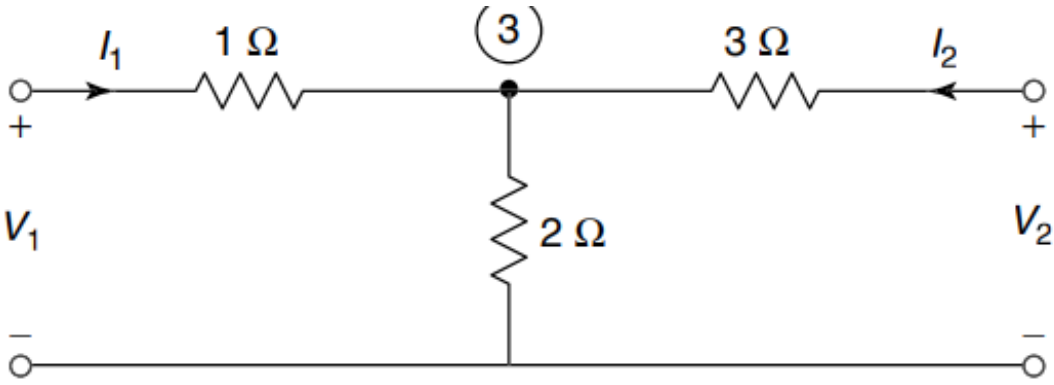
4C) Develop the parameters of H in terms of T parameters. (3)

5A) Analyse the two port network and interpret the Z parameters. (3)



5B) Develop the H parameters for a two port network. (3)

5C) Analyse the two port network and interpret Y parameters. (4)



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