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C – 5366

(Pages : 4)

Reg. No. : .....

Name : .....

Third Semester B.Tech. Degree Examination, October 2017
(2008 Scheme)
08.303 : NETWORK ANALYSIS (TA)

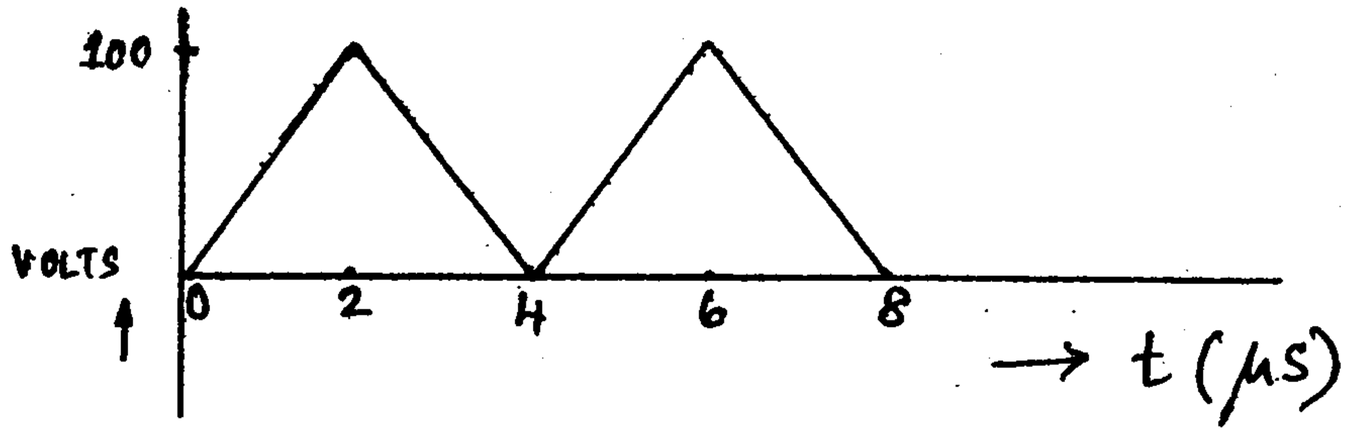
Time : 3 Hours Max. Marks : 100

Instruction : *Graph sheets/semi log sheets may be supplied.*

PART – A

Answer **all** questions.

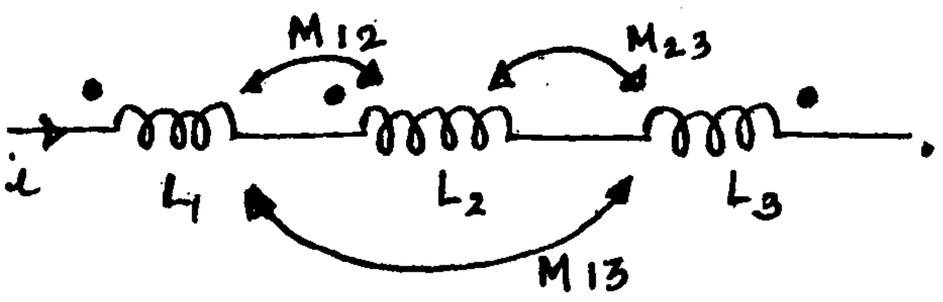
1. Derive the Laplace transform of a ramp function.
2. State and explain Nortons theorem.
3. The voltage waveform applied to a pure capacitor of 60 μ F is shown. Sketch the current and power waveforms.



4. What is the significance of poles and zeros in network functions ?
5. What is a filter ? How are filters classified ?
6. What is a bode plot ? What information does it give ?
7. Derive the hybrid parameters of a 2-port network.
8. Define selectivity and bandwidth of a resonating circuit.

P.T.O.

9. Find the total inductance of the series connected coils shown



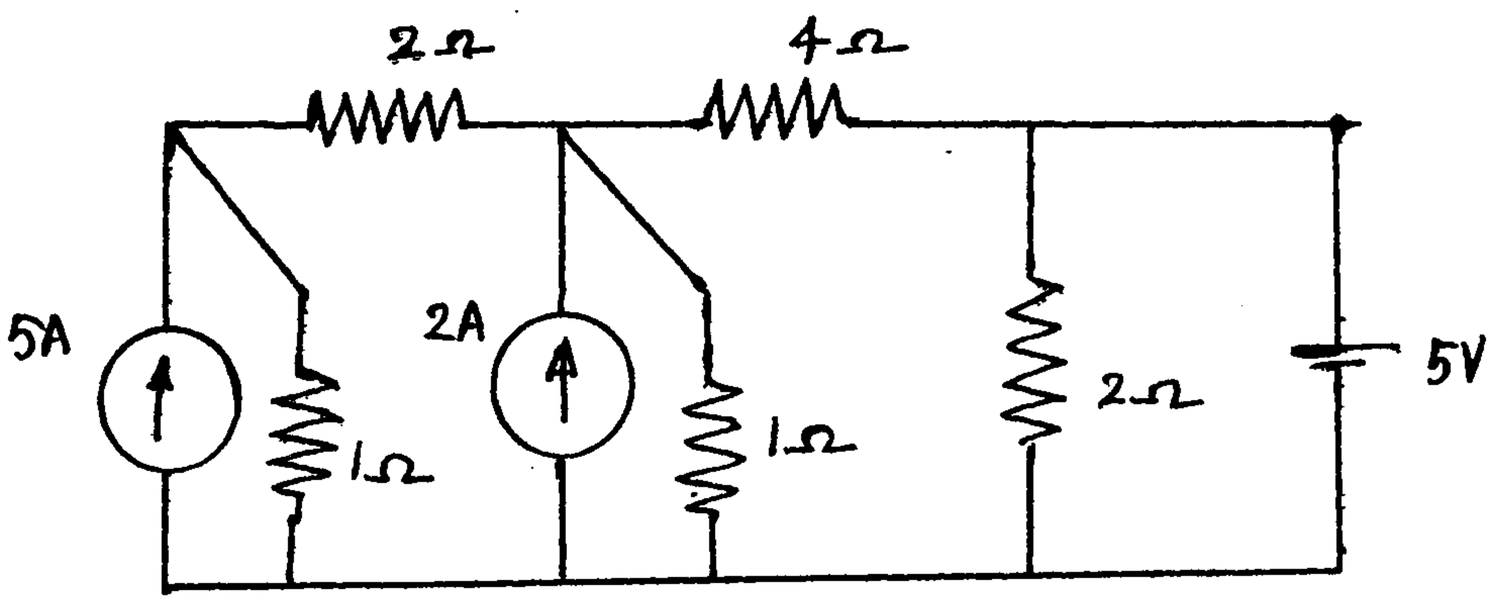
10. Explain Millmans theorem with an example. **(4×10=40 Marks)**

PART – B

Answer **any two** questions from **each** Module. **Each** question carries **10** marks.

Module – I

11. In the circuit shown find the power delivered/ absorbed by each of the energy sources.



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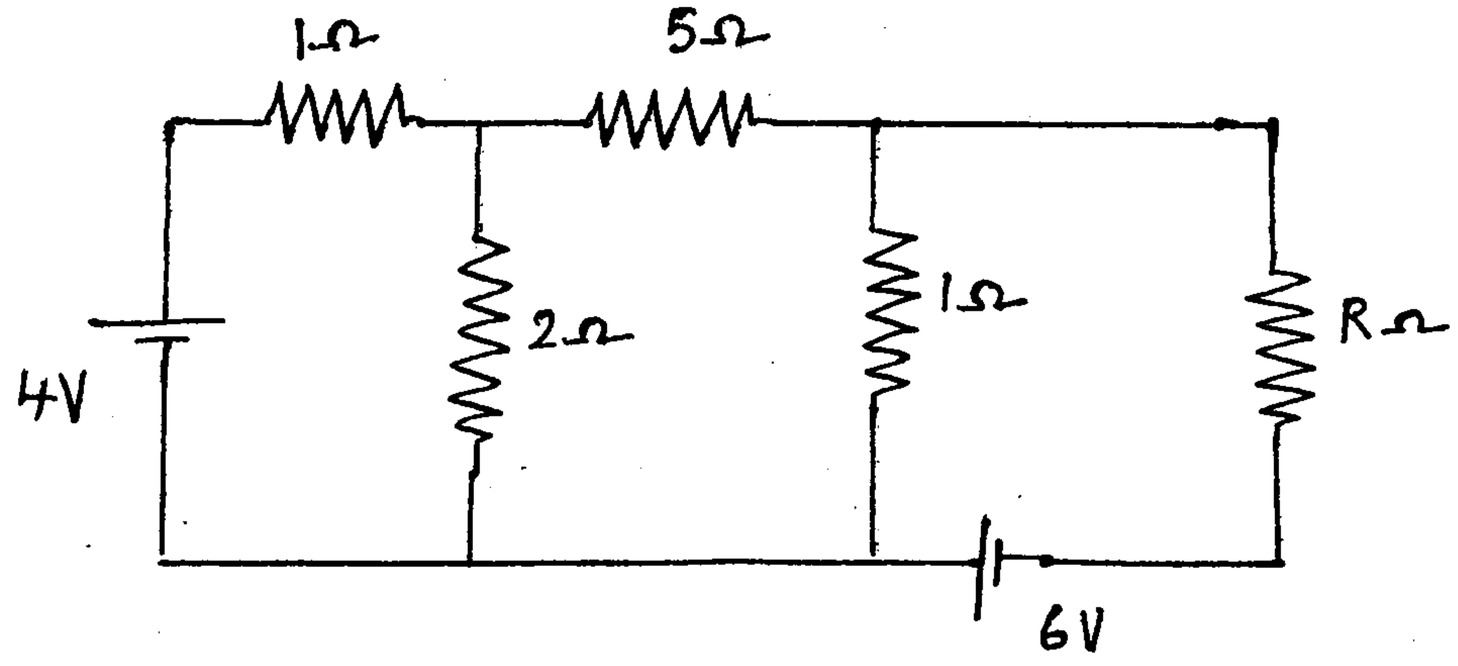
12. In a series RC circuit, the resistance 2Ω while the capacitor is ¼ F. Find the transfer function of the circuit and the drop across the capacitor assuming supply voltage $V_0(t) = tu(t)$.

13. Find the value of R in the circuit such that maximum power transfer takes place. What is the value of this power ?



(10×2=20 Marks)

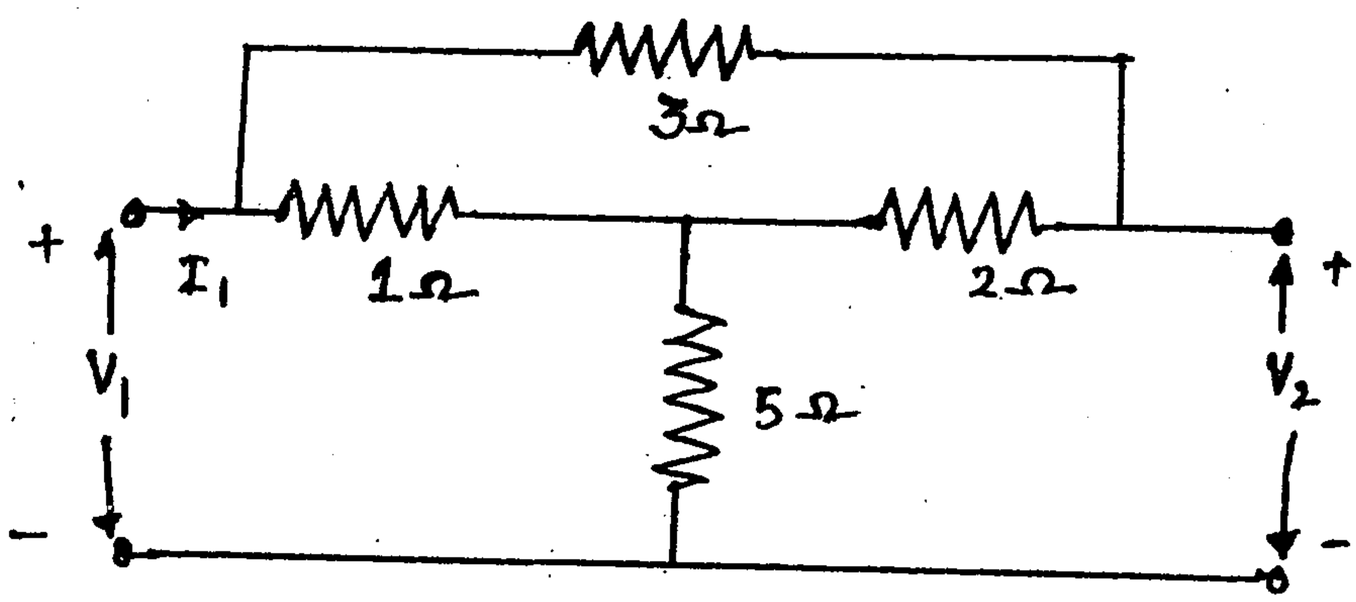
Module – II

14. Sketch the Bode plot of the given transfer function

$$G(s) = \frac{50}{s(1+0.25s)(1+0.1s)}$$

From the plot determine phase margin and gain margin.

15. Obtain the open circuit parameters and loop equations of the network shown



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16. What are the restrictions on the location of poles and zeros in driving point functions ? Explain giving reasons, why the following expression for driving point impedance is not suitable for representing a passive one-port network.

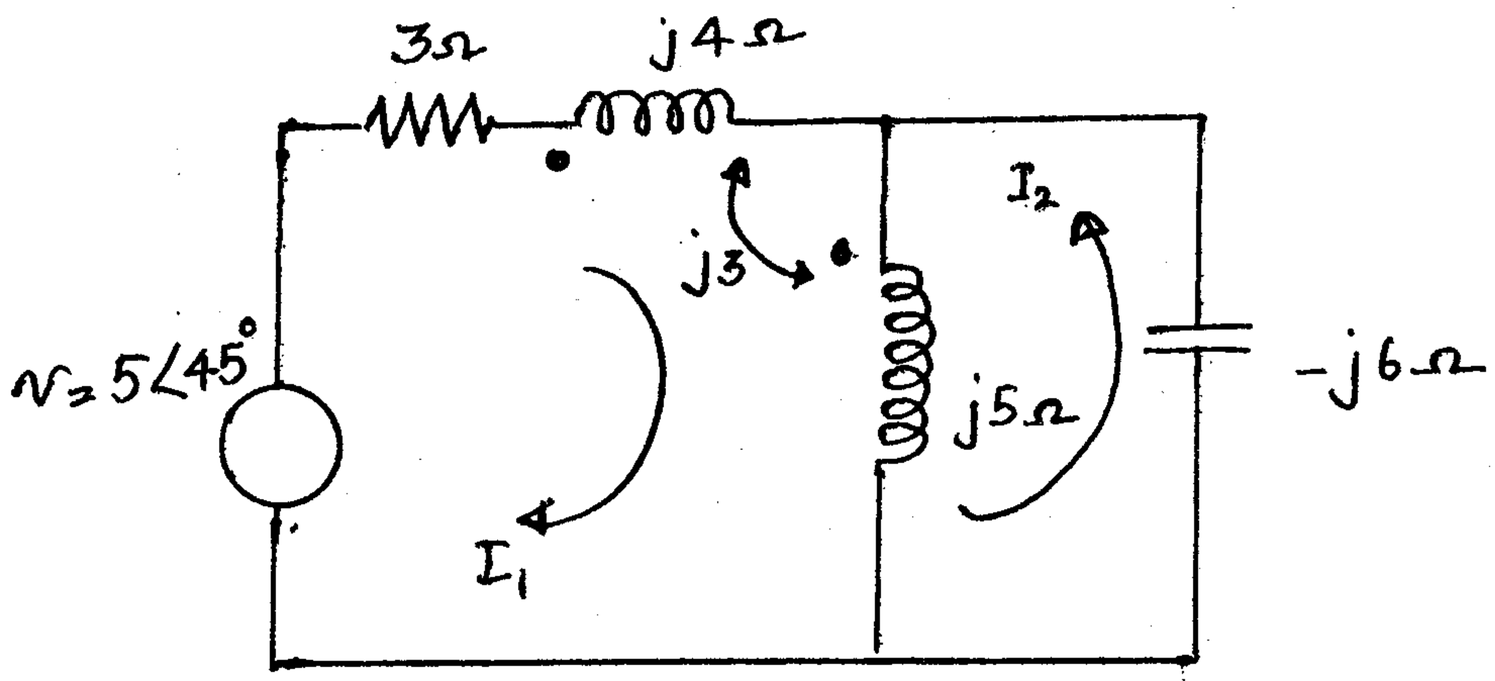
$$Z(s) = \frac{s^2 + s + 3}{s^4 + 5s^3 + 6s^2}.$$

(10×2=20 Marks)

Module – III

17. A series resonating circuit has $R = 1k\Omega$ and half power frequencies of 10 and 90 kHz. Determine the bandwidth and resonant frequency. Calculate the inductance and capacitance of the circuit.

18. In the figure shown find the drop across the capacitor and resistor.



19. Realise an active Butterworth second order low pass filter using op-amps and obtain the transfer function. **(10×2=20 Marks)**

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