(Pages : 4) **H – 4538**

Reg. No. : .....

Name : .....

Third Semester B.Tech. Degree Examination, February 2020

08.303 : NETWORK ANALYSIS (TA)

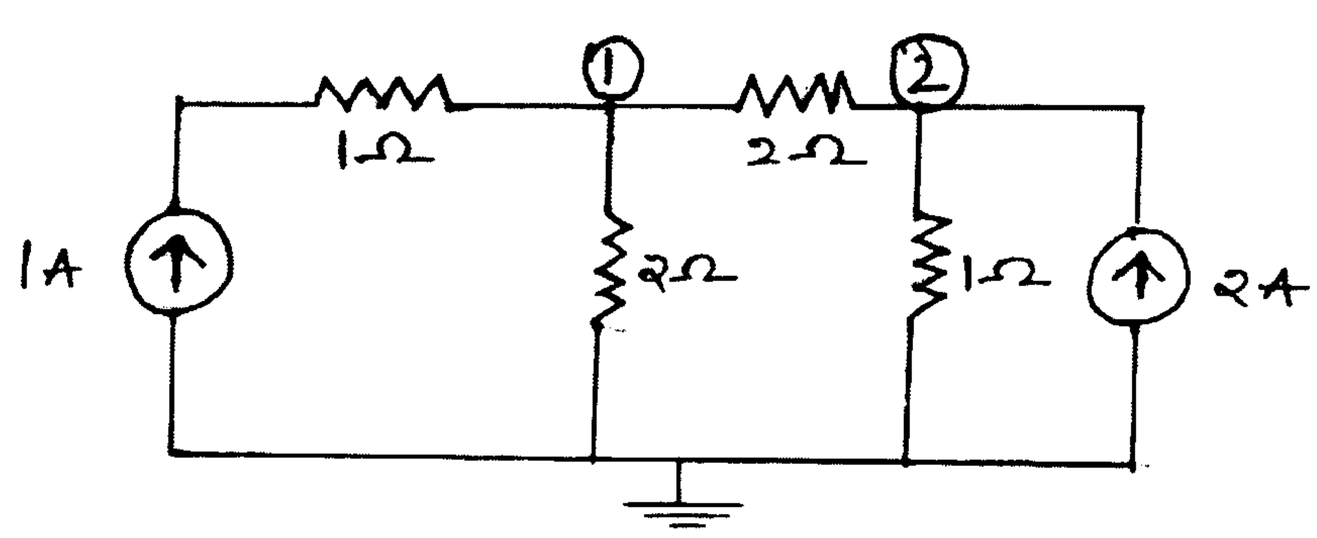
(2008 Scheme)

Time : 3 Hours Max. Marks : 100

PART – A

Answer **all** questions : Each question carries **4** marks.

1. Determine the voltages at nodes I and 2 of the network shown by node analysis.



2. Explain Millman theorem.

3. State and prove final value theorem.

4. Explain the concept of complex frequency.

5. Write on the restrictions on the location of poles and zeros of a network function in the s plane.

6. Derive the expressions for Z-parameters of a two port network in terms of Y- parameters.

P.T.O.

7. What are magnitude and phase plots? Explain with relevant figures.

8. Discuss the properties of RL impedance and RC admittance functions.

9. Determine the quality factor of series RLC circuit R = 100 Ω, L = 0.1 H and C = 100 μ F.

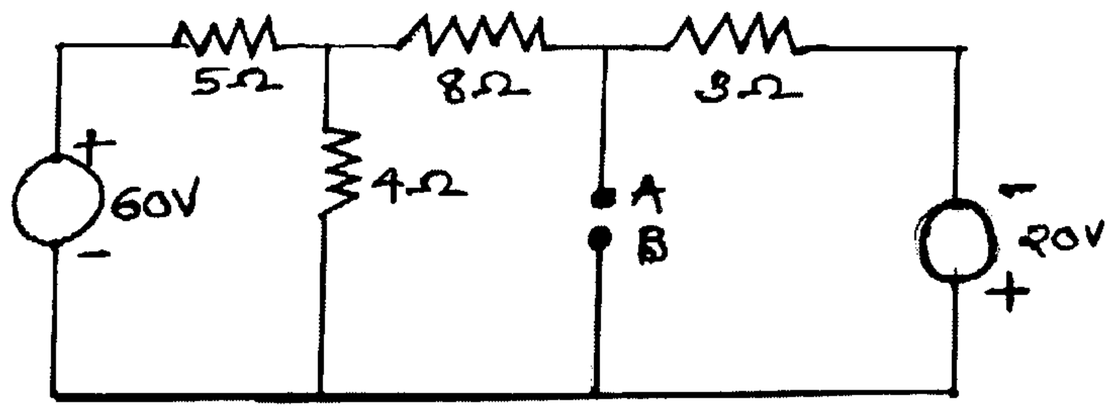
10. Explain the frequency transformation to High pass and Band pass in analog filter design.

PART – B

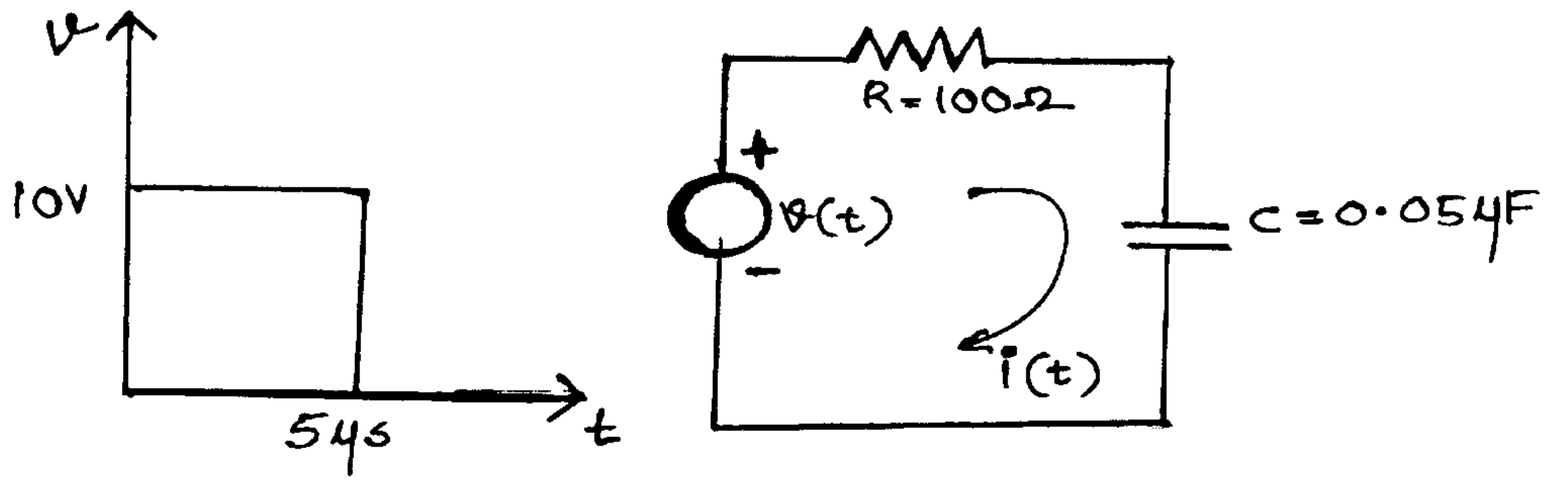
Answer **any two** questions from each module. Each question carries **10** marks.

Module – I

11. Obtain Thevenin and Norton equivalent circuits at terminals AB of the circuit



12. A voltage pulse of 10 V magnitude and 5μs duration is applied to the RC network shown in fig. Find current $i(t)$



13. Find the initial and final value of the following functions

(a) $\frac{s-1}{(s+1)(s+2)}$ (b) $\frac{1}{s^2+4s+5}$

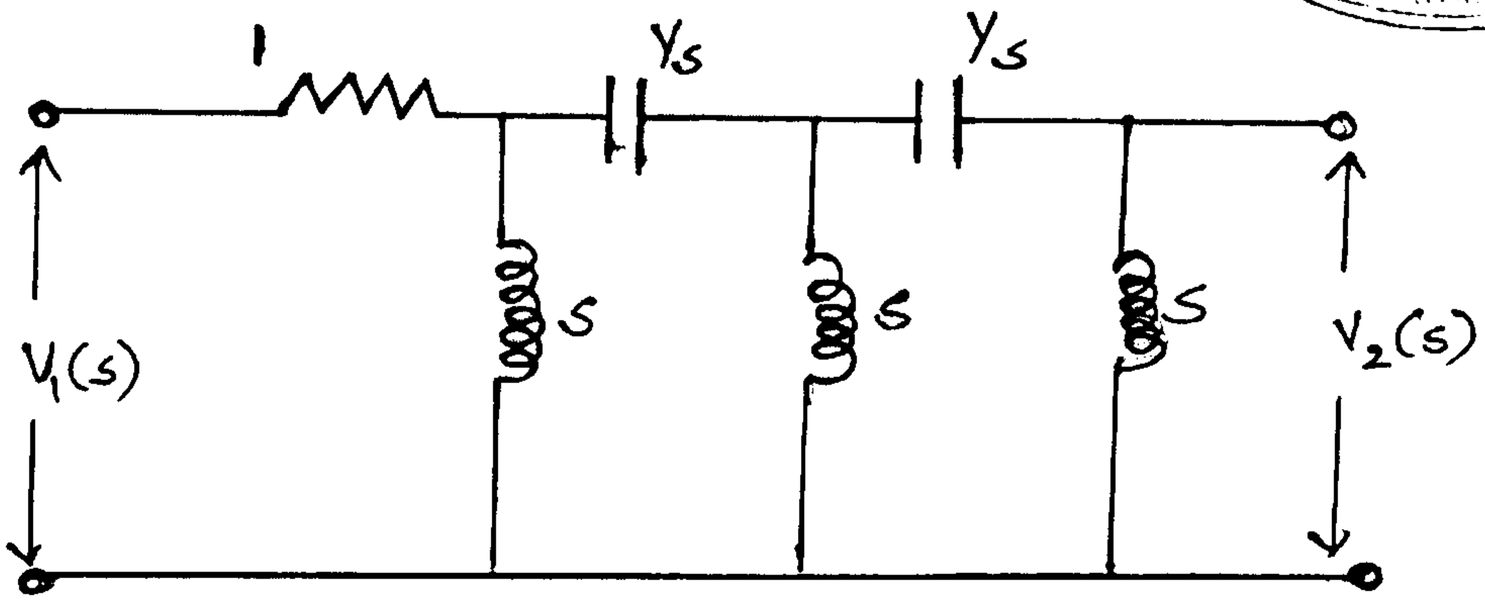
Also find the inverse Laplace transforms of the above functions.

Module – II

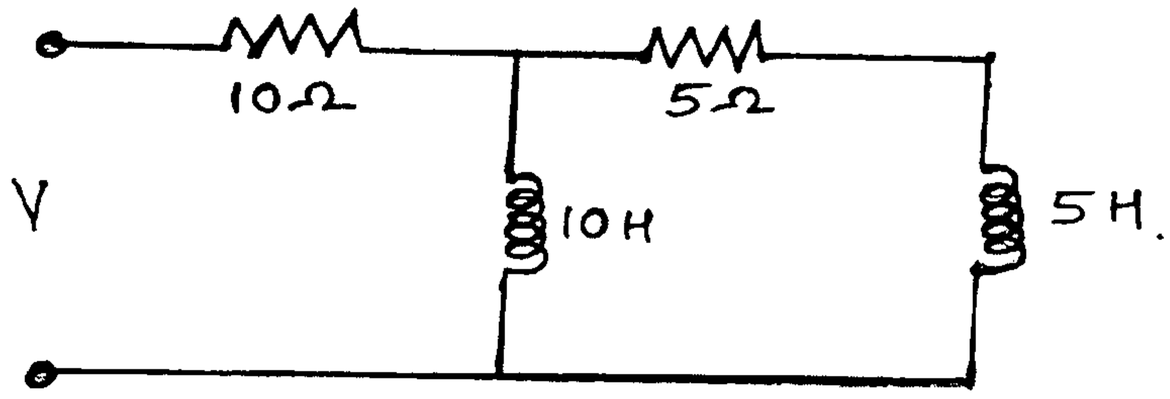
14. For the ladder network shown in figure below :

(a) Obtain driving point impedance function at the port-1

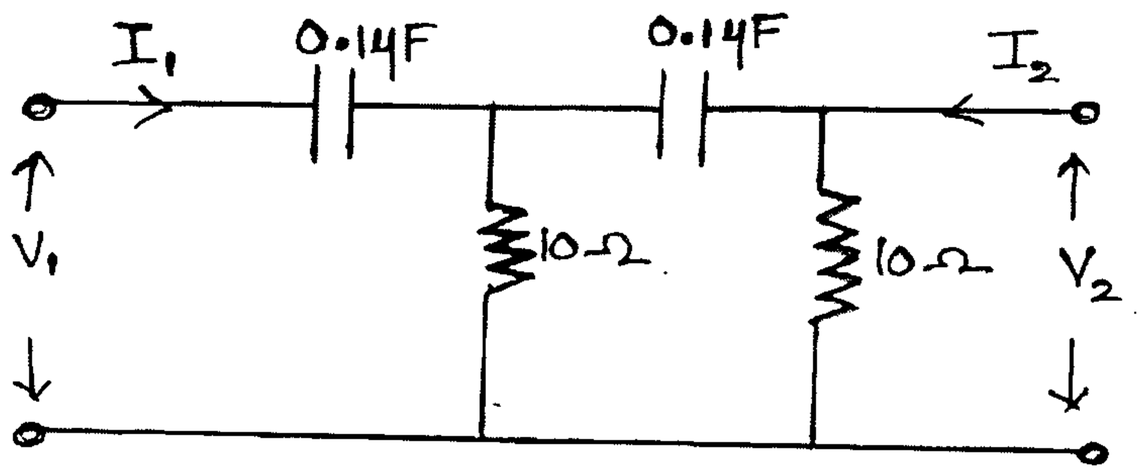
(b) Find the voltage transfer ratio $\frac{V_2(s)}{V_1(s)}$.



15. Obtain pole zero plot in the s-plane of the driving point impedance function for the network shown.



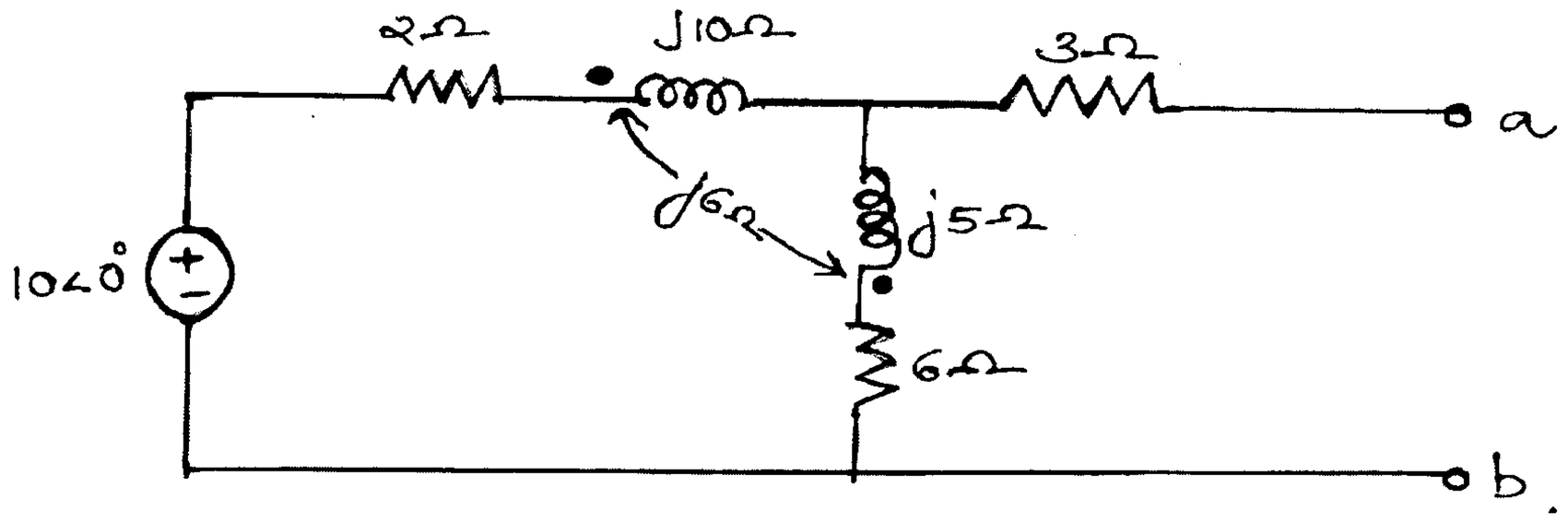
16. Determine the transmission parameters of the network



Module – III

17. A coil of resistance 15 Ω and inductance I H is connected in parallel with a capacitor of 25 μF. Compute the frequency at which the circuit will behave as a non-inductive resistance of R ohms. Find also the value of R?

18. Obtain Thevenin equivalent circuit at the terminal ab for the coupled circuit shown in fig.



19. Design a Chebyshev filter with a maximum pass band attenuation of 2.5 dB at $\Omega p = 20$ rad/s and the stop band attenuation of 30 dB at $\Omega s = 50$ rad/s.