19101818

B.Sc. DEGREE (CBCS) EXAMINATION, MAY 2019

Second Semester

B.Sc Electronics Model III

Core Course - **EL2CRT04 - NETWORK THEORY**

2017 ADMISSION ONWARDS

72EA3C10

Maximum Marks: 80   **Time: 3 Hours**

Part A

Answer any **ten** questions.

Each question carries **2** marks.

1. Explain how super mesh analysis is done.

2. State maximum power transfer theorem and its significance.

3. Obtain the Laplace transform of e^{-at}

4. A 40 Ohm resistor and a 50 mF capacitor are connected in series and supply with a dc of 20 V. Find the time constant of the circuit.

5. Which law is used when equivalent circuit with z-parameter is drawn for a two-port network? Justify.

6. Represent h_{11} and h_{12} in terms of Y-Parameters

7. What do you mean by stop band and pass band of a filter response?

8. What do you mean by characteristic impedance of a network? What is its importance?

9. Define Propagation constant of network.

10. Define transfer admittance of a twor port network.

11. What do you mean by multiplicity 'r' of poles and zeroes?
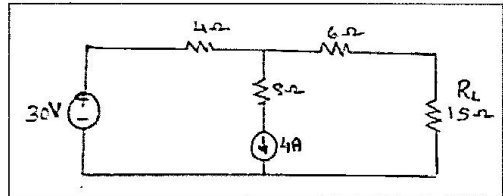
12. What is a pole zero plot?

(10×2=20)

Part B

Answer any **six** questions.

Each question carries **5** marks.

13. Draw the Norton's equivalent circuit and find the load current for the following circuit.

14. Explain the steady state and transient response of a circuit with time constant with an example.

15. With neat sketch, explain DC response of parallel RL circuits.

16. Explain short circuit admittance parameters.

17. Explain transmission parameters.

18. Derive the characteristic impedance of a π-type networks.

19. What do you mean by attenuators? What do you mean by pad in attenuator?

20. Explain the different methods to compute the stability of circuit.

21. For the denominator polynomial of a network function, verify the stability of the network by using Routh- Hurwitz criterion. $Q(s) = s^4 + 2s^3 + 4s^2 + 12s + 10$
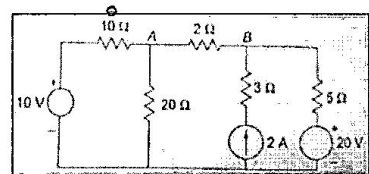
(6×5=30)

Part C

Answer any **two** questions.

Each question carries **15** marks.

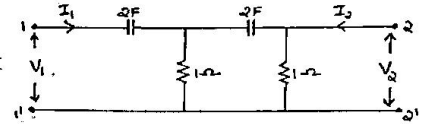22. Determine the mesh currents of following network
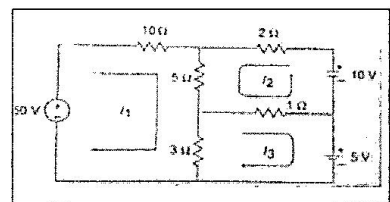
23. State superposition theorem. Find the current through the 2ohm resistor and voltage across it in the figure below using superposition theorem.

24. Explain unit impulse, step and ramp signals. What are its relations? What are its Laplace Tramsforms? Why they are called fundamental signals?

25. Find the ABCD- parameters for the given RC ladder network below. Hence obtain the h- parameters. Also check their symmetry.

(2×15=30)