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Total number of pages: [2]

B.Tech. || ECE || 3rd Sem. (RP)
Network Analysis & Synthesis
 Subject Code :BTEC-304A
 Paper ID : _____

Time allowed: 3 Hrs

Max Marks: 60

Important Instructions:

- All Questions are Compulsory.
- Assume any missing data

PART A (2×10)

Q. 1.	Short Answer Questions.
(a)	Explain the concept of ideal voltage source.
(b)	Differentiate between dependent and independent sources. Draw their symbols.
(c)	List and draw basic signal types.
(d)	Draw and brief about the RC low pass circuit.
(e)	Sketch the signal $u(t)-u(t-3)$ where u signifies unit step function.
(f)	Differentiate between impedance and admittance functions.
(g)	What do you mean by driving point impedance? Explain with the help of diagram.
(h)	Differentiate between T and pi network sections with the help of diagram.
(i)	What are different types of filters based upon frequency response? List and brief.
(j)	What do mean by composite filters? Explain.

PART B (5×8)

2.	Differentiate between Thevenin's theorem and Norton's theorem for circuit analysis. Explain with the help of example of each technique. OR What do you understand by maximum power transfer theorem? Explain with the help of example.	CO1
Q. 3.	Draw the pole zero diagram for the given network function and hence plot $v(t)$ $V(S) = \frac{4(s+2)s}{(s+1)(s+3)}$	CO2

OR
What is the use of Laplace transform (LT) in circuit analysis? State and explain at least two properties of LT.

Q. 4. Explain the impedance and admittance parameters of two port networks with the help of suitable diagrams.

CO3

OR
Realize the following function in Foster Form I

$$F(S) = \frac{(s^2 + 1)}{s(s^2 + 2)}$$

Q. 5. What are m-derived filters? Explain the advantages of m-derived filters.

CO4

OR
What are different types of filters? How would you calculate the characteristics impedance of a purely reactive network?

Q. 6. State Norton's theorem and give steps to develop Norton's equivalent circuit from Thevenin's theorem.

CO1

OR
Explain the working principle of super-position theorem with the help of suitable example.