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Marks

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Reg No.:	Name:	
APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY THIRD SEMESTER B.TECH DEGREE EXAMINATION(R&S), DEC 2019		
	Course Code: EC201	
	Course Name: NETWORK THEORY	
Max. Marks: 100		Duration: 3 Hours

PART A

Answer any two full questions, each carries 15 marks.

- 1 a) Classify independent and dependent sources. Also mention the types of dependent (4) sources.
 - b) Calculate the current through 20Ω using node analysis



fig(1)

c) Find the value of load and maximum power delivered to load in fig(2)



fig(2)

2 a) Find the tie set matrix for the graph shown in fig(3)



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- (3)

(6)

c) State and prove initial value and final value theorem (8)

3 a) Solve the circuit and find the loop currents in fig(4)

b) Define Node, Tree and Link



- b) State reciprocity theorem
- c) Draw the laplace transformed circuit and write the mesh equations for the circuit shown (6) in fig(5)



PART B Answer any two full questions, each carries 15 marks.

4 a) Find the inverse laplace transform of

$$F(S) = \frac{21S - 33}{(S+1)(S-2)^3}$$

b) Write any six properties of driving point and transfer functions. (7)

5 a) The switch is opened at t = 0. Find the capacitor voltage for t > 0 (8)



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- b) Draw the pole zero diagram of system function $\frac{S^3 7S^2 + 10S}{S^2 + S 6}$. Also mention the nature of the system. (7)
- 6 a) Solve the differential equation using laplace transform

$$2y'' + 3y' - 2y = t\mathbf{e}^{-2t}, \quad y(0) = 0 \quad y'(0) = -2$$

b) Draw Pole Zero Plot & using pole zero plot, Find the time domain response i(t). (8)

$$I(S) = \frac{2S}{(S+2)(S^2+2S+2)}$$

PART C

Answer any two full questions, each carries20 marks.

- 7 a) The Z parameters of a two port network are $Z11=20\Omega$, $Z12=Z21=10\Omega$, $Z22=30\Omega$. Find (9) Y and ABCD parameters.
 - b) Derive the expression for voltage amplification of single tuned circuits. (7)
 - c) Find the equivalent inductance



8 a) Find the hybrid parameters for the network in fig(8). Also represent its hybrid model. (6)



fig(8)

- b) Explain characteristics impedance and image impedances
- c) Find the expressions for resonant frequency, Q factor and bandwidth of parallel RLC (8) network
- 9 a) Find the Y parameters of the circuit shown and comment on the symmetry and (7) reciprocity of the circuit.

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b) For the circuit shown, find the drop across 5 Ohms



c) Compare and classify parallel resonance network and series resonance network

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(6)