

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

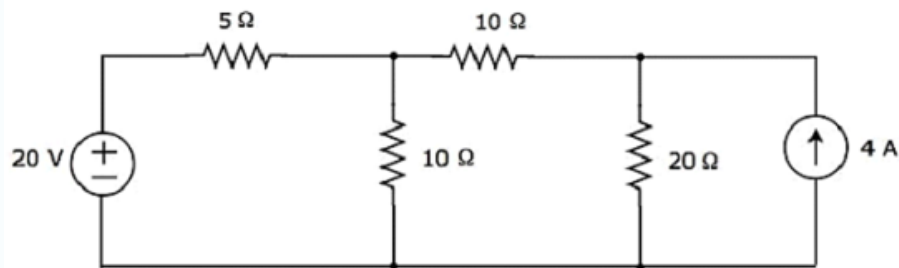
Max. Marks: 100

Duration: 3 Hours

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

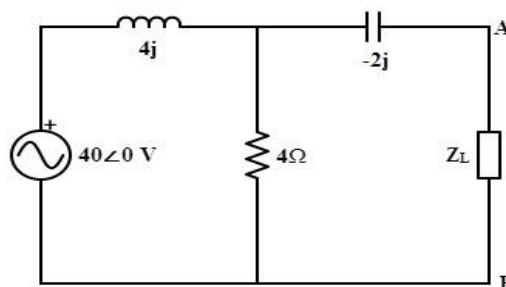
Marks

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



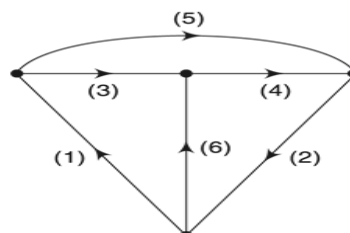
fig(1)

- c) Find the value of load and maximum power delivered to load in fig(2) (7)



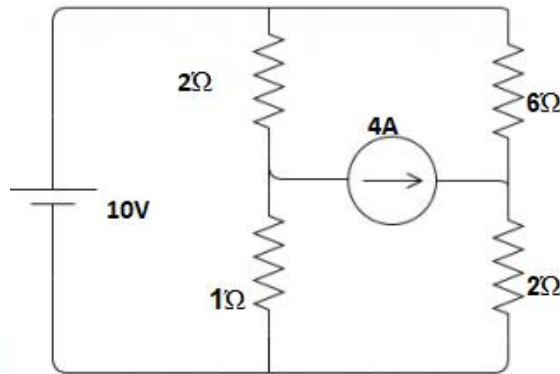
fig(2)

- 2 a) Find the tie set matrix for the graph shown in fig(3) (4)



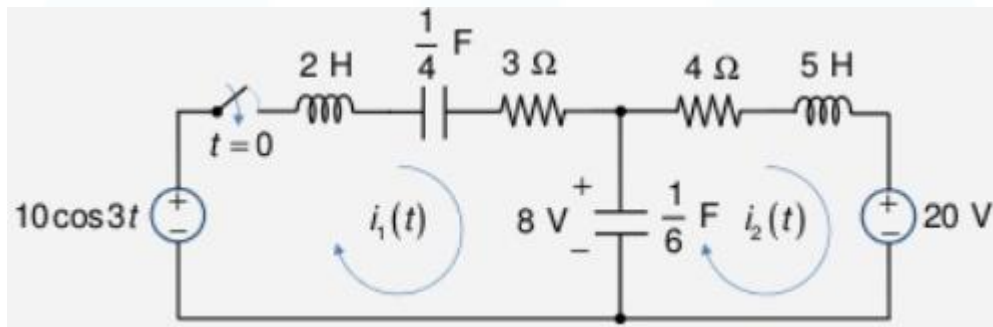
fig(3)

- b) Define Node, Tree and Link (3)
- c) State and prove initial value and final value theorem (8)
- 3 a) Solve the circuit and find the loop currents in fig(4) (6)



fig(4)

- b) State reciprocity theorem (3)
- c) Draw the laplace transformed circuit and write the mesh equations for the circuit shown in fig(5) (6)

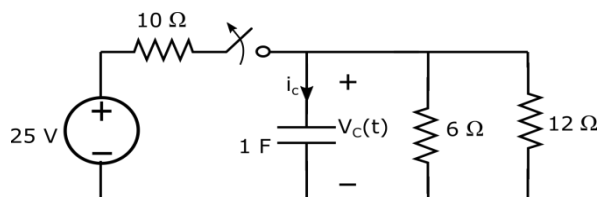


fig(5)

PART B

Answer any two full questions, each carries 15 marks.

- 4 a) Find the inverse laplace transform of (8)
- $$F(s) = \frac{21s - 33}{(s + 1)(s - 2)^3}$$
- 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)



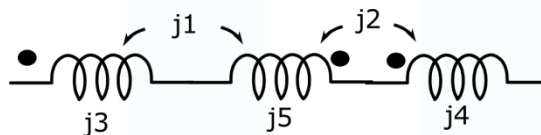
fig(6)

- 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 (7)
- $$2y'' + 3y' - 2y = te^{-2t}, \quad y(0) = 0 \quad y'(0) = -2$$
- 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

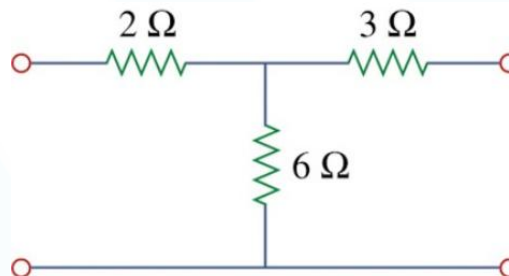
Answer any two full questions, each carries 20 marks.

- 7 a) The Z parameters of a two port network are $Z_{11}=20\Omega$, $Z_{12}=Z_{21}=10\Omega$, $Z_{22}=30\Omega$. Find Y and ABCD parameters. (9)
- b) Derive the expression for voltage amplification of single tuned circuits. (7)
- c) Find the equivalent inductance (4)



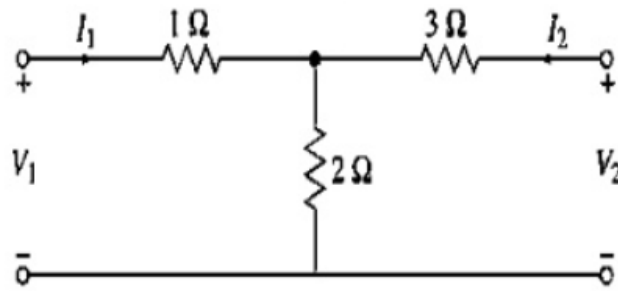
fig(7)

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

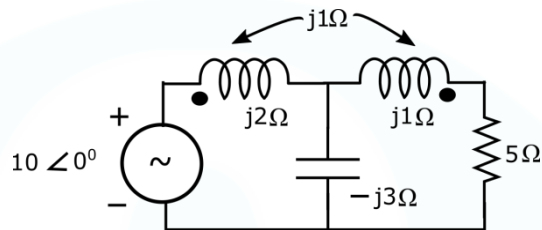


fig(8)

- b) Explain characteristics impedance and image impedances (6)
- c) Find the expressions for resonant frequency, Q factor and bandwidth of parallel RLC network (8)
- 9 a) Find the Y parameters of the circuit shown and comment on the symmetry and reciprocity of the circuit. (7)



- b) For the circuit shown, find the drop across 5 Ohms (7)



- c) Compare and classify parallel resonance network and series resonance network (6)
