PVP 14

Code: EE3T4

II B.Tech - I Semester–Regular/Supplementary Examinations
November 2016

ELECTRICAL CIRCUIT ANALYSIS - II
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Duration: 3 hours Max. Marks: 70

PART – A

Answer ***all*** the questions. All questions carry equal marks
11x 2 = 22 M

1.
a) State Compensation's theorem.
b) State Tellegen's theorem.
c) Write the relation between Z and Hybrid (H) parameters.
d) Prove the reciprocity condition of ABCD parameters.
e) State and express the initial value theorem.
f) Write dirchilet conditions.
g) Express the Fourier series coefficients of even function symmetry.
h) Find voltage across capacitance in a series R-C circuit having R=5Ω and C=0.1F with 5V DC excitation applied at t=0.
i) Find i(t) in a series R-L circuit having R=25Ω and L=2H with 50V DC excitation applied at t=0.
j) Express the current i(t) of a R-L-C series circuit is energised with dc source in under damped condition.

k) Find the condition for critical damping in a R-L-C series circuit.

PART – B

Answer any ***THREE*** questions. All questions carry equal marks. 3 x 16 = 48 M

2.

a) Find current I_y in 5Ω resistor using superposition theorem for the circuit shown in Fig. 1. 8 M

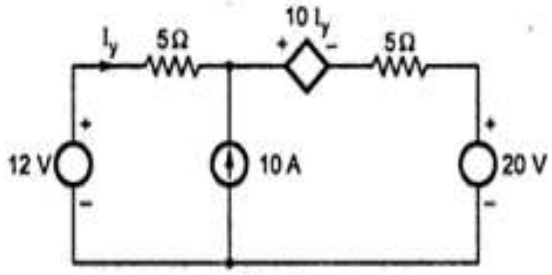

Fig. 1

b) Find the current through PQ branch for the circuit shown in Fig. 2. 8 M

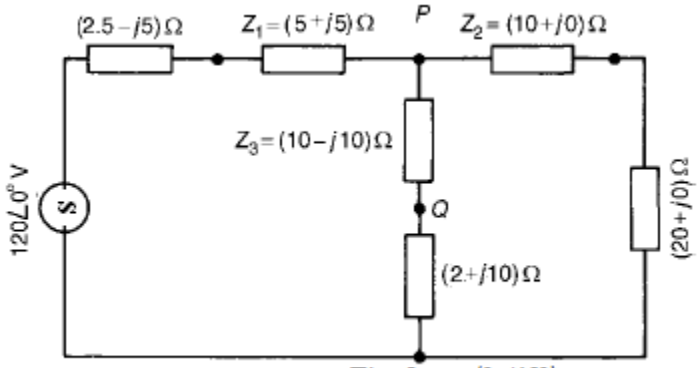

Fig. 2 (2 - j102)

3.

a) Obtain ABCD parameters for the network shown in Fig. 3. 8 M

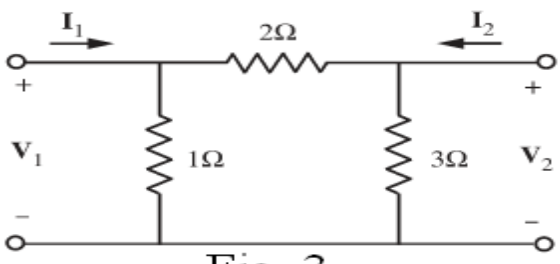

Fig. 3

b) Obtain Z-parameters for the network shown in Fig. 4. 8 M

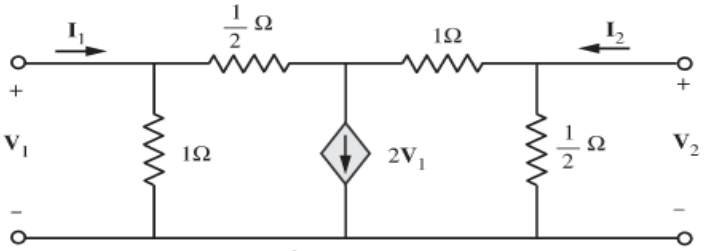

Fig. 4

4.

a) Find the Fourier series expansion of the wave form shown in Fig. 5. 8 M

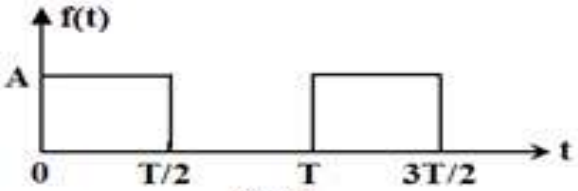

Fig. 5

b) Obtain the exponential Fourier series expansion for the signal shown in Fig. 6. 8 M

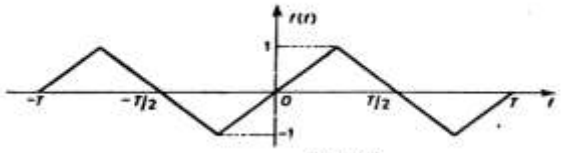

Fig. 6

5.

a) Derive the equation for the transient current i(t) in a series RL circuit excited by a step input of V volts, at time t=0. Assume zero initial current for the inductor. 8 M

b) The switch shown in the Fig. 7 is moved from position A to B at t=0. Determine i(t) and i(t) at t=2 mS. 8 M

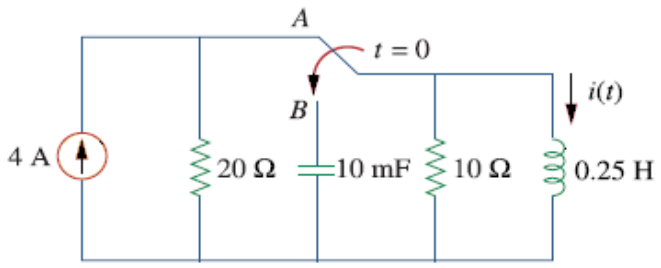

Fig. 7

6.

a) Derive the equation for the transient current i(t) in a series RC circuit excited by a sinusoidal voltage source v(t) = Vm sinωt, at time t=0. Assume zero initial charge across the capacitor. 8 M

b) A series RLC circuit with R=2 Ω, L=1H and C= 1F has a sinusoidal voltage source v(t) = 250 Sin 500t applied at time t=0. Determine the transient current i(t). Assume zero initial conditions. 8 M