PVP 12

Code: EE3T5

II B.Tech - I Semester – Regular Examinations – December 2014

ELECTRICAL CIRCUIT ANALYSIS - II
(ELECTRICAL & ELECTRONICS ENGINEERING)

Duration: 3 hours Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1 a) Define various topological terms associated with graph of a network. 7 M

b) Determine the value of I_1 and I_2 using general loop analysis for the circuit shown in Figure 1. 7 M

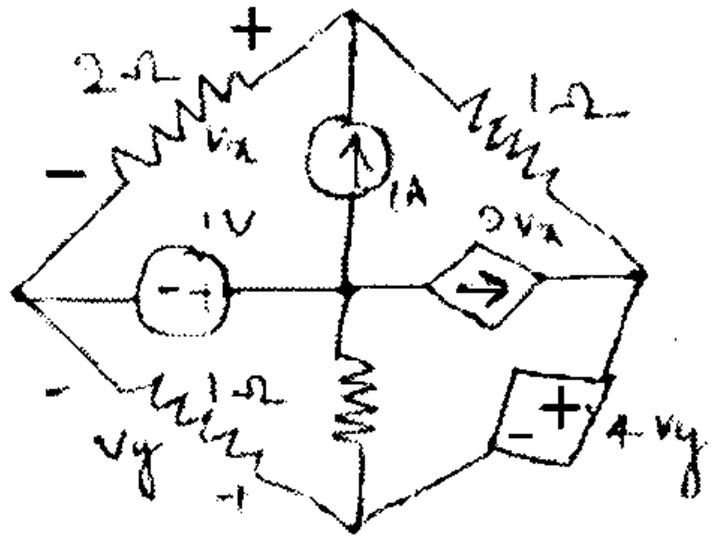

Figure 1

2 a) Define locus diagrams. Obtain the locus diagram of I, V, Z and power in a series R-L-C circuit. 7 M

b) A simple RLC parallel circuit with R=500Ω, L=0.2H and C=375μF is excited by a current source of $i(t) = 2\cos 316t\ A$. Determine R, L and C values, resonant frequency, and band width and quality factor. 7 M

3 a) State and prove maximum power transfer theorem for circuits with ac excitation. 7 M

b) For the circuit shown in Figure 2, find the value of I using Thevenin's theorem. 7 M

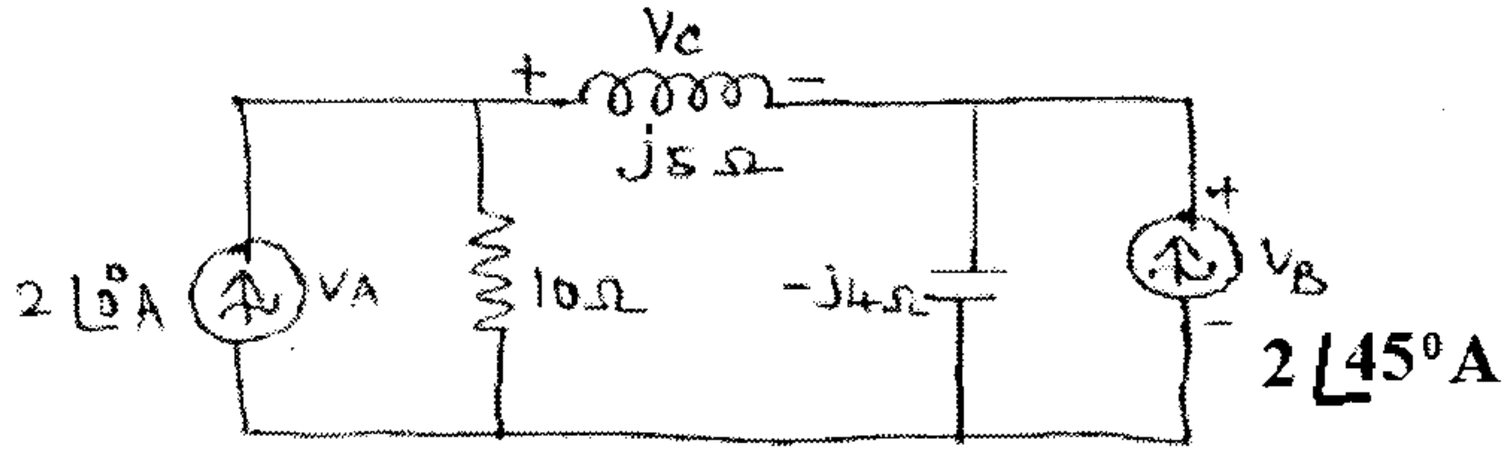

Figure 2

4 a) Explain the two-watt meter method of measuring power in a three phase balanced circuit feeding a balanced R-L load. 7 M

b) A balanced three phase, three wire system has Y-connected load containing a balanced three phase RLC load of 50Ω, 1.2H and 50μF connected in series is fed by $400\angle 0$ V supply. Draw the phasor diagram of the line currents. 7 M

5 a) Explain the method of analyzing 3-Ø unbalanced circuits by star – delta transformation technique. 7 M

b) Explain the two-watt meter method of determining 3-Ø unbalanced loads fed by 3-Ø balanced supply. How will you determine the power factor of the circuit by the readings of two watt meters? 7 M

6 a) Define and explain the properties of Laplace transforms. 7 M

b) Determine the inverse Laplace transform of $\frac{e^{-s}(s+1)}{[(s+3)(s^2+2s)]}$ 7 M

7 a) For the circuit shown in figure 3, the switch is closed at t=0. Find v_R when $v_R = 10\sin(100t + 45^0)V$. 7 M

b) Explain the concepts of transient and natural responses. 7 M

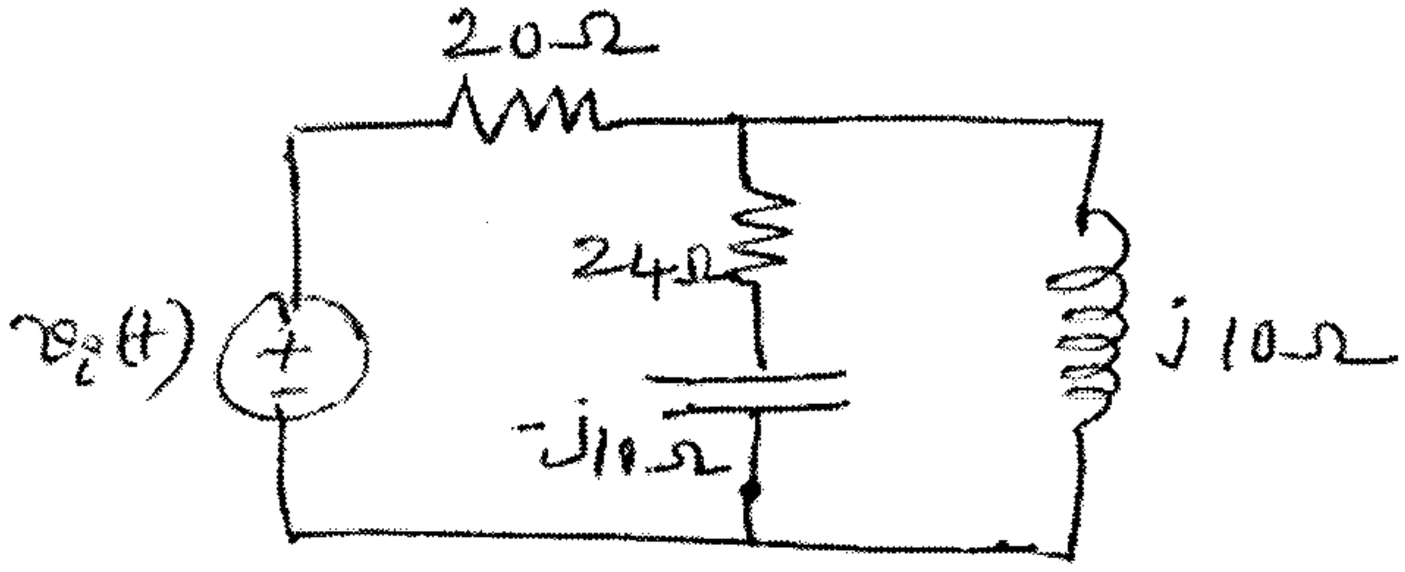

Figure 3

8 a) Obtain the trigonometric form of the Fourier series. 7 M

b) Using the Fourier transform method, find i_0 in the circuit of Figure 4, at t=1, if $v_s = \cos 2t$. 7 M

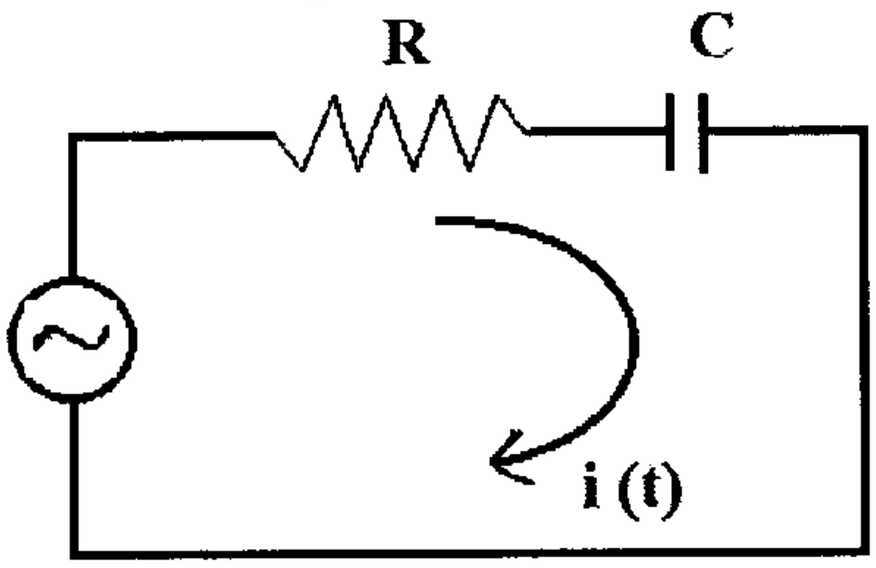

Figure 4