PVP 19

Code: 19EE3301

II B.Tech - I Semester – Regular Examinations – MARCH 2021

ELECTRICAL CIRCUIT ANALYSIS
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
4. All parts of Question paper must be answered in one place

PART – A

1. a) Define Reactive Power.
   b) State Millman's Theorem.
   c) What is the Final condition of the elements Inductor & Capacitor, when the switch is closed for long time?
   d) Define Co-efficient of coupling.
   e) Compare Single Phase System and Three Phase System.

PART – B

UNIT – I

2. a) Briefly Explain about (i) Power Factor (ii) Power Triangle (iii) Complex Power. 6 M
   b) A sinusoidal voltage v(t)=50sin(314t) volts is applied to an AC circuit. The current is i(t)=25sin(314t–53^0) amperes. Determine (i) Average Power (ii) Apparent Power (iii) Power Factor. 6 M

OR

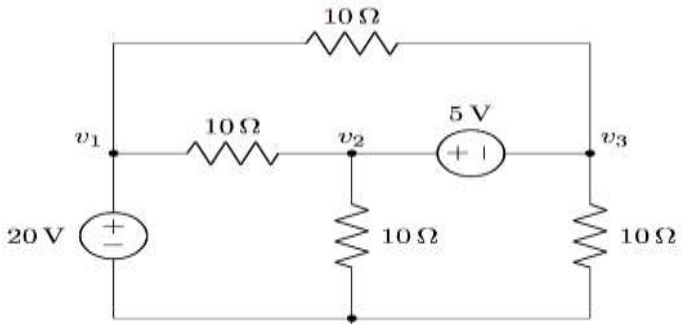
3. a) Explain the steady state analysis of Series RC circuit when excited by a sinusoidal input. 6 M

b) Determine the steady state current in a Series RL circuit which consists of R=20Ω, L=0.1H when excited by a voltage $v(t)=100\cos(1000t+90^0)$ volts. 6 M

UNIT – II

4. a) Briefly discuss about (i)Series Resonance (ii)Parallel Resonance. 6 M

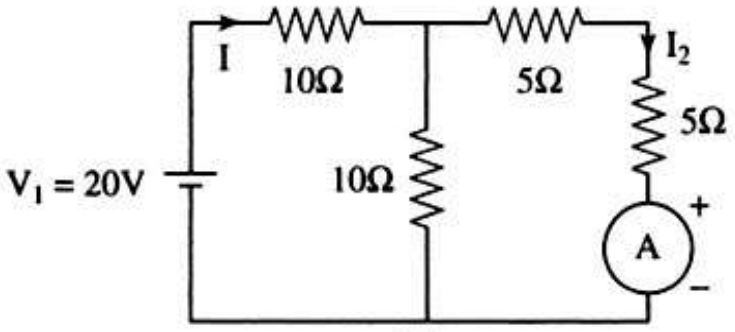
b) Determine the node voltages of given circuit using Super Node Analysis. 6 M



OR

5. a) State and prove Tellegen's Theorem with an example. 6 M

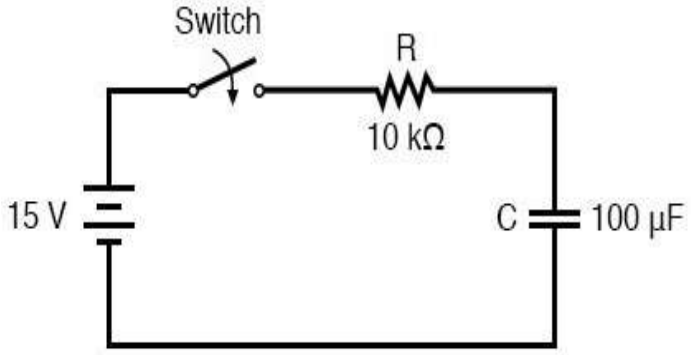
b) Verify Reciprocity Theorem for the given circuit. 6 M



UNIT-III

6. a) Derive an expression for Step Response of Series RLC Circuit. 6 M

   b) For the given Series RC Circuit, determine the current in the circuit when the voltage is applied by closing the switch at t=0. 6 M



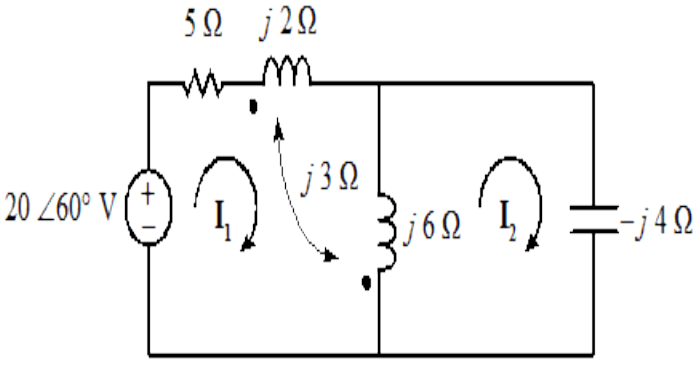
OR

7. For a Series RL circuit, a sinusoidal voltage is applied at t=0. Determine the expression for i(t) for t > 0. 12 M

UNIT – IV

8. a) Explain in brief about (i) Self Inductance (ii) Mutual Inductance. 6 M

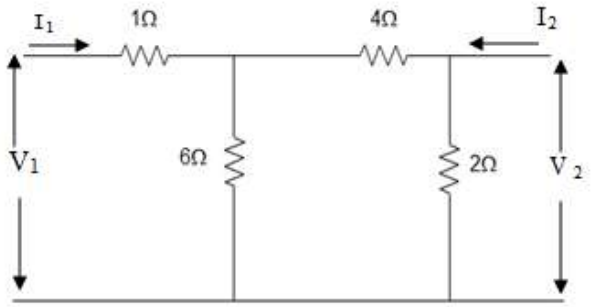
   b) Determine the Loop Currents I_1 and I_2 in the given circuit. 6 M



OR

9. a) The impedance parameters of a two port network are $Z_{11}=6\Omega$, $Z_{22}=4\Omega$, $Z_{12}=Z_{21}=3\Omega$. Compute the Admittance Parameters and Transmission Parameters. 6 M

   b) Find the Hybrid Parameters for the given two port network. 6 M



UNIT – V

10. a) Explain about Star Connected three phase balanced system and derive the relationship between line and phase voltages. 6 M

    b) A balanced Delta Connected load of (2+j3) Ω per phase is connected to a balanced three phase supply of 440V. Determine the phase currents and line currents. 6 M

OR

11. a) Explain the two wattmeter method to measure the power in three phase circuits. 6 M

    b) The input power to a three phase load is 10kW at 0.8 power factor lagging. Two wattmeters are connected to measure the power. Find the individual readings of the wattmeters. 6 M