

Code: R7100406

R7

B.Tech I Year (R07) Supplementary Examinations, December 2012

NETWORK ANALYSIS

(Common to ECE, EIE, E.Con.E and ECC)

Time: 3 hours

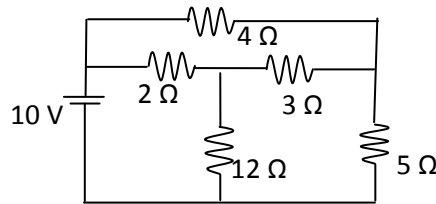
Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

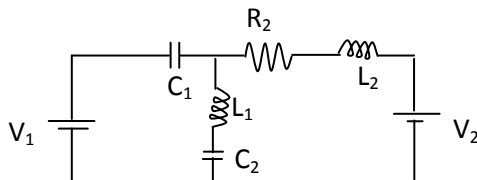
- 1 (a) Derive the expression for RMS value of a sinusoidal wave form.
- (b) Coil 1 of a pair of coupled coils has a continuous currents of 5 A and the corresponding fluxes ϕ_{11} and ϕ_{12} are 0.2 and 0.4 m.wb respectively. If the turns are $M_1= 500$ and $M_2= 1500$. Find L_1, L_2, M and coefficient of coupling.

- 2 (a) Derive the relation between phase and line values of a 3-phase balanced star connected system.
- (b) Three impedances each of $(3 - j 4)$ ohm are connected in delta to a 230 V, 3-phase, 50 Hz balanced supply calculate the line and phase currents in delta connected load and the power delivered to the load.

- 3 (a) Briefly explain the voltage and current sources.
- (b) Find the current supplied by 10 V battery by using star delta transformation.



- 4 (a) Derive and explain (i) Graph (ii) Tree. (iii) Basic cut set matrix (iv) basic tie set matrix.
- (b) Draw the dual network for the given circuit and also write down the procedure to obtain dual network.

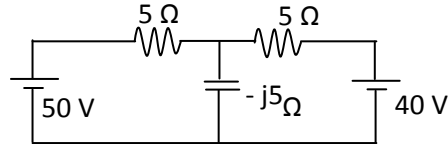


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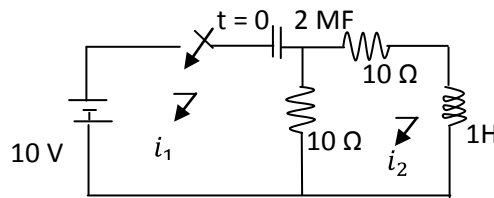
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- 5 (a) State and explain mill main theorem.
 (b) Obtain current flowing through the capacitor using super position theorem.



- 6 (a) Derive and explain admittance parameter.
 (b) A two port network has the following parameter.
 $Z_{11} = 20 \Omega$, $Z_{12} = 5 \Omega$, $Z_{21} = 20 \Omega$ and $Z_{22} = 15 \Omega$ calculate ABCD parameter.

- 7 For the circuit shown the switch in closed at $t = 0$. Find the values of i_1 , i_2 , $\frac{di_1}{dt}$, $\frac{di_2}{dt}$, $\frac{d^2i_1}{dt^2}$ and $\frac{d^2i_2}{dt^2}$ at $t = 0^+$.



- 8 (a) What is an attenuator? Derive the design equations for T-type attenuator.
 (b) Design a constant K – low pass filter having $f_c = 2 \text{ KHz}$ and design impedance $R_0 = 600 \Omega$. Obtain the value of attenuation at 4 KHz.
