Code: R7100206

R7

B.Tech I Year (R07) Supplementary Examinations, December 2012
ELECTRICAL CIRCUIT ANALYSIS
(Electrical and Electronics Engineering)

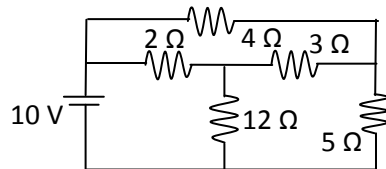Time: 3 hours   Max Marks: 80

Answer any FIVE questions
All questions carry equal marks
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1 (a) Explain in detail voltage and current sources.
   Find the current supplied by 10 V battery by using star delta transformation.

2 (a) Define co-efficient of coupling. Derive the expression for co-efficient of coupling.
   (b) A coil having an inductance of 60 MH is carrying a current of 90 A. Calculate the self
        induced emf in the coil, when the current is (i) reduced to zero in 0.03 sec. (ii) reversed in
        0.03 sec.

3 (a) Derive the expression for a average value of a sinusoidal wave form.
   (b) A series RLC circuit has R = 5 Ω, L = 40 MH and C = 1 MF calculate:
        (i) Factor of the circuit.   (ii) Band width.
        (iii) The resonant frequency.   (iv) The half power frequencies.

4 (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 phone currents in delta connected load and
        the power delivered to the load.

5   Define and explain: (i) Graph. (ii) Tree. (iii) Basic cut set.   (iv) Basic tieset.
       Draw th dual of the given network. And also write down the procedure to obtain the dual
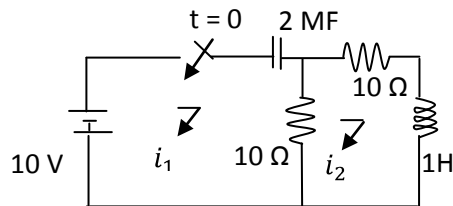   network.
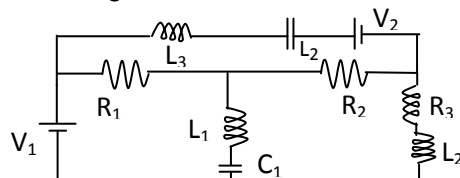
6 (a) State and explain mill man's theorem.

(b) Determine the current through the capacitor using The venin's theorem.

5 Ω   5 Ω

+

50 V

- j5

20 A
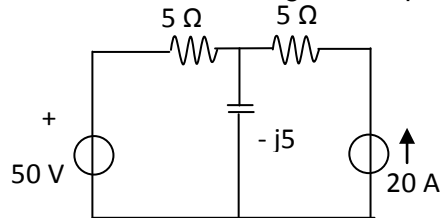
7   For the corcuit shown the switch is closed at t = 0 find the values of

i_1, i_2, $\frac{d i_1}{d t_2}, \frac{d i_2}{d t}, \frac{d^2 i_1}{d t^2}$ and $\frac{d^2 i_2}{d t^2}$ at $t = 0^+$.

t = 0   2 MF

10 Ω

10 V i_1 10 Ω i_2 1H

8 (a) Define and obtain hybrid parameter by taking any one example.

(b) A two port network has the following parameters $Z_{11} = 20\ \Omega$, $Z_{12} = 5\ \Omega$, $Z_{21} = 20\ \Omega$ and $Z_{22} = 15\ \Omega$. calculate the short circuit parameter.

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