

I B.Tech Supplementary Examinations, January 2010

NETWORK ANALYSIS

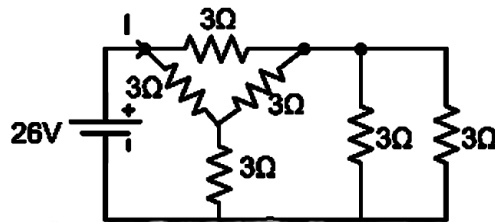
(Common to Electronics & Communication Engineering, Electronics & Instrumentation Engineering,
Electronics & Control Engineering and Electronics & Computer Engineering)

Time: 3 hours

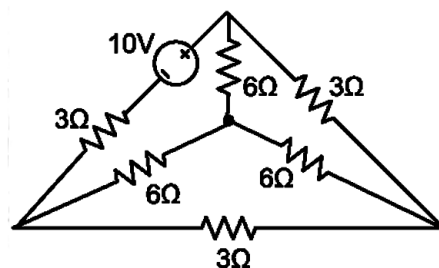
Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

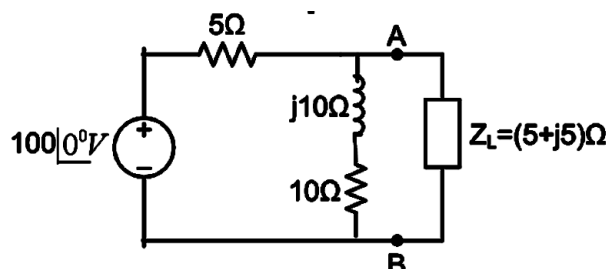
1. (a) Explain source transformation with example.
(b) Using network reduction techniques, find the current 'I' in circuit shown in figure.



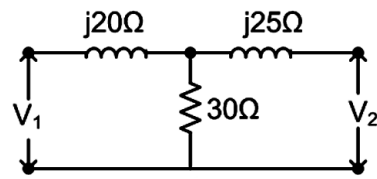
2. Derive expression for RMS value of sinusoidal alternating quantity.
3. (a) Derive the expression for resonant frequency for RLC series circuit.
(b) Three impedances each consisting of $(20+j15)\text{ohms}$ connected in star and across 400V, 3 – phase supply. Calculate:
 - i. Line currents.
 - ii. Phase currents.
4. (a) Define:
 - i. Graph.
 - ii. Tree.
- (b) Determine the loop currents for the circuit shown in figure.



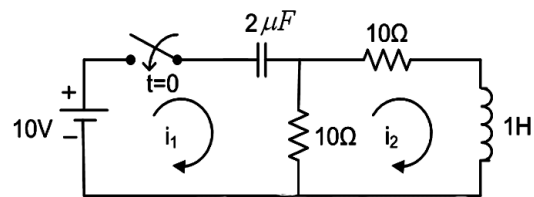
5. Using Norton's theorem, find the current through the load impedance Z_L for the network shown in figure.



6. Determine Z-parameters for the network shown in figure.



7. In the circuit shown in figure the switch is closed at $t=0$. Find the values of $i_1, i_2, (di_1/dt)$ and (di_2/dt) at $t = 0^+$ instant.



8. Design a m-derived high pass filter with a cut-off frequency of $10kHz$. Design impedance $500\ ohms$ and $m=0.4$.
