Q. P. Code : 13673

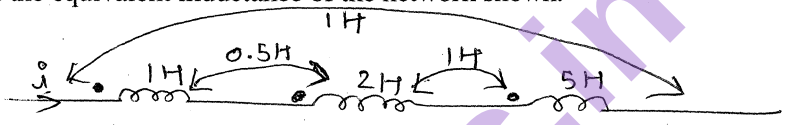
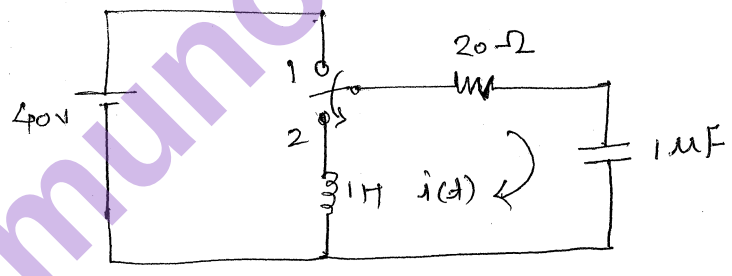
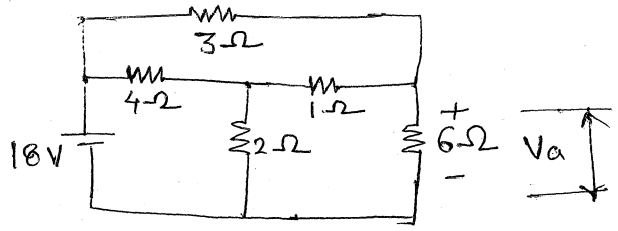
(3 Hours) [Total Marks : 80

Note: 1) Question No.1 is compulsory.

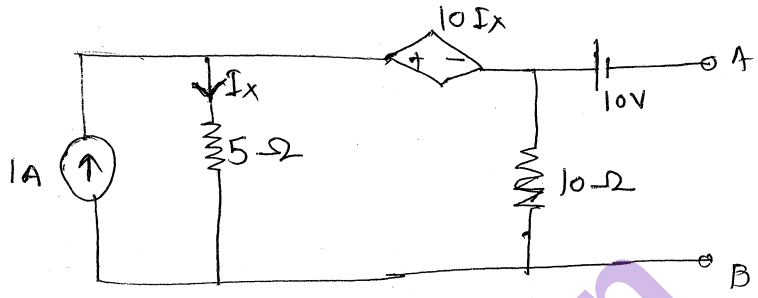
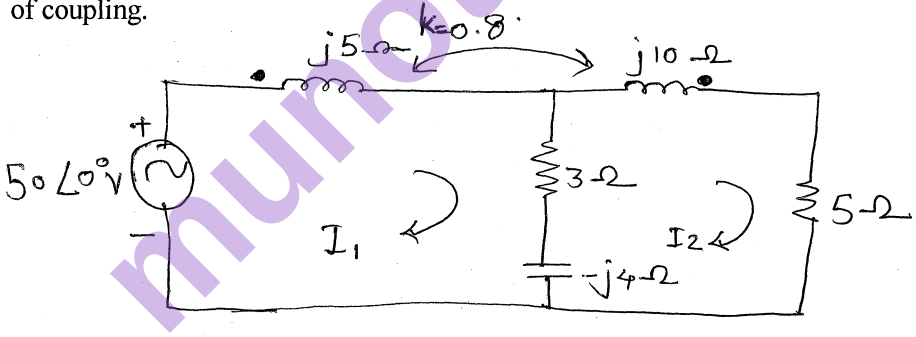
2) Attempt any three questions from remaining five questions.

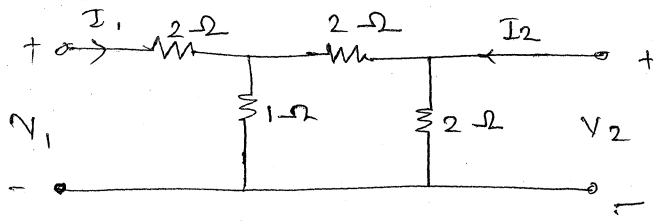
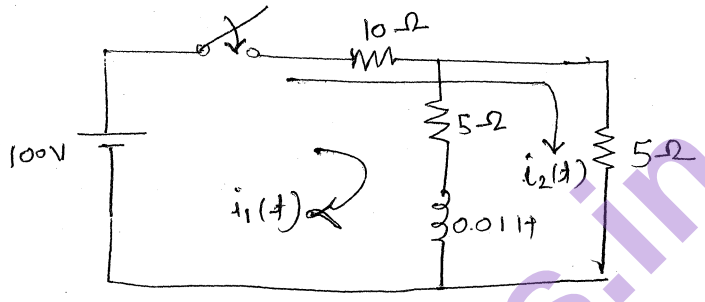
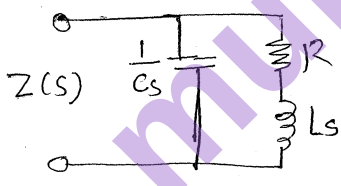
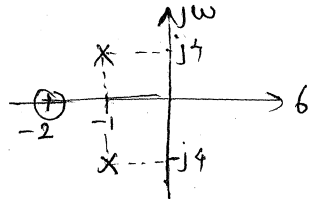
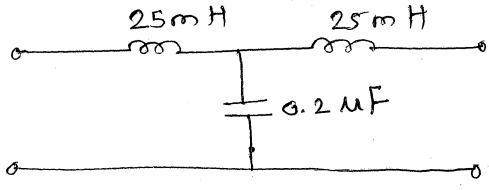
3) Figures to the right indicate full marks.

4) Use Smith Chart for transmission line problem.

Q.1)		Solve the following questions.	
	a)	Test for Hurwitz polynomial using Routh Hrwitz array $P(s)= S^8+5S^6+2S^4+3S^2+1$	5M
	b)	Check whether the given function is LC/RC/RL function. $F(s)=(s+2)(s+6)/2(s+1)(s+3)$	5M
	c)	Find VSWR and refection coefficient (Use Smith Chart) $Z_{L=}2+j2$	5M
	d)	Find the equivalent inductance of the network shown. 	5M
Q.2)	a)	In the network shown the switch is changed from the position 1 to the position 2 at t=0. Steady condition having reached before switching. Find the values i, di/dt and d^2i/dt^2 at $t=0^+$. 	8M
	b)	Calculate the voltage across resistor 6Ω using source shifting technique. 	8M
	c)	A coil of 20 Ω resistance has an inductance of 0.2 H and connected in parallel with a condenser of 100 μF Capacitance. Calculate the frequency at which this circuit will have as a non –inductive resistance. Find also the value of dynamic resistance.	4M

TURN OVER

Q.3)	a)	What are standing waves? A transmission line has a characteristic impedance of 50 Ω and terminated in a load Z_L = 75-j100 Ω. Find the following using a Smith chart a) VSWR b) Reflection coefficient c) input impedance at a distance 0.1λ from the load d) location of first voltage maximum and first voltage minimum from the load.	8M
	b)	Find the Thevenin's equivalent of following network. 	8M
	c)	Test for Hurwitz polynomial using continued fraction expansion method. $P(s)= S^4+7S^3+6S^2+21S+8$	4M
Q.4)	a)	Find the voltage across 5Ω resistor in the network shown below. K=0.8 coefficient of coupling. 	8M
	b)	Test for positive real function i) $F(s)= \frac{s^3+6s^2+7s+3}{s^2+2s+1}$ ii) $F(s)= \frac{s^2+s+6}{s^2+s+1}$	12M

Q.5)	a)	Two identical sections of the network shown are connected in cascade. Obtain the transmission parameters of the overall connection. 	10M
	b)	In the network shown determine the currents $i_1(t)$ and $i_2(t)$ when the switch is closed at t=0. 	10M
Q.6)	a)	Realize foster form I and foster form II for the following function. $Z(s)=\frac{(s^2+1)(s^2+3)}{s(s^2+2)}$	8M
	b)	The pole zero diagram of the driving point impedance function of the network is shown below. At dc, the input impedance is resistive and equal to 2W. Determine the values of R, L and C.  	8M
	c)	Find the nominal impedance, cut off frequency and pass band for the network shown. 	4M