

Roll No.

Total Pages : 05

BT-3/D-19 33088

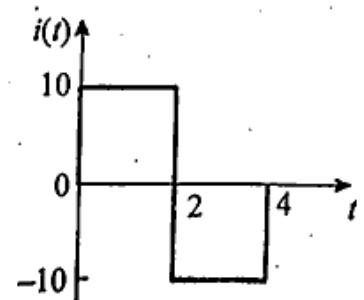
NETWORK ANALYSIS AND SYNTHESIS
ECE-205N (Opt. II)

Time : Three Hours] [Maximum Marks : 75

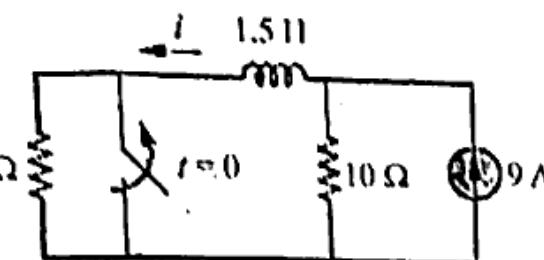
Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit.

Unit I

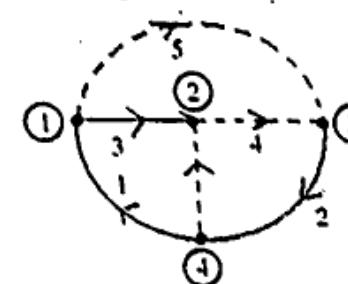
1. (a) Express the current pulse in terms of the unit step function : 8



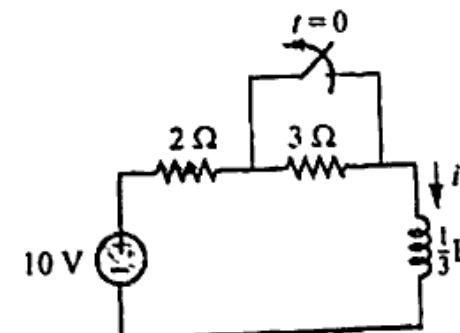
- (b) Find $i(t)$ in the circuit for $t > 0$. Assume that the switch has been closed for a long time. 7



2. (a) For the tree shown, develop the fundamental cut-set matrix. 8

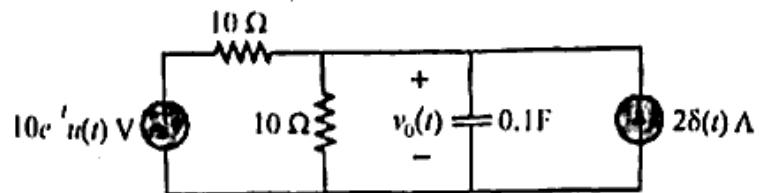


- (b) Find $i(t)$ in the circuit for $t > 0$. Assume that the switch has been closed for a long time. 7



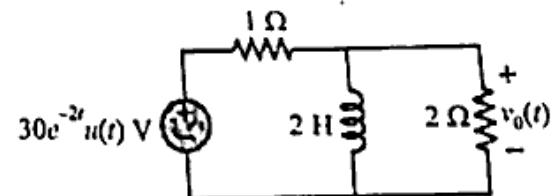
Unit II

3. (a) Calculate $v_0(t)$ assuming that $v_0(0) = 5V$ using Laplace Transform. 8



- (b) List and explain various restrictions on pole and zero locations for driving-point functions. 7

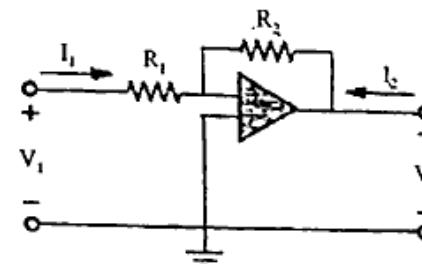
4. (a) Calculate $v_0(t)$ assuming that $i_L(0) = 0A$ using Laplace Transform. 8



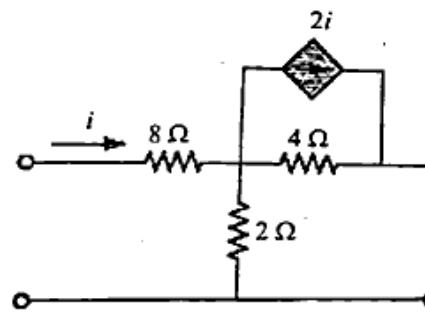
- (b) List and explain various restrictions on pole and zero locations for transfer functions. 7

Unit III

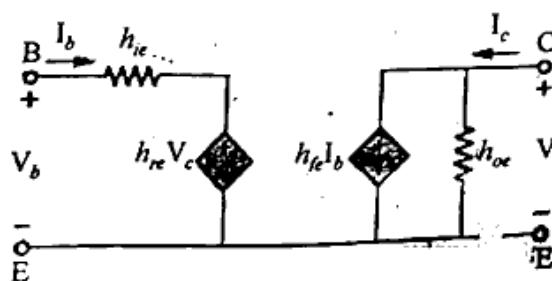
5. (a) Determine the Z parameters for the two-port shown in following Fig. : 8



- (b) Determine the Y parameters of a two-port network. 7



6. For CE configuration of BJT amplifier circuit, calculate Z_{out} . 15



Unit IV

7. (a) Design m-derived π -sections LPFs for $R_0 = 500$ ohms, $f_c = 3600$ Hz and $f_\infty = 4000$ Hz. 8

- (b) List and explain the synthesis properties of RL impedance functions. 7

8. (a) An impedance is given by $Y(s) = \frac{3s^2 + 18s + 24}{s^2 + 3s}$.

Realize the network in Cauer-II form. 8

- (b) List and explain the synthesis properties of R-C driving-point impedance functions. 7