DIPLOMA VIEP ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)/ ADVANCED LEVEL CERTIFICATE COURSE IN ELECTRONICS AND COMMUNICATION ENGINEERING (ACECVI)

Term-End Examination

December, 2013

BIEL-028 : CIRCUITS AND NETWORKS

Time : 2 hours   *Maximum Marks : 70*

Note : (i) *Attempt five questions.*

(ii) *Question No. 1 is compulsory.*

(iii) *Use of scientific calculator is permitted.*

1. Mention **true** or **false** for the statement given below.   **7x2=14**

    (a) Narrow width of the resonance curve of a circuit indicates its higher selectivity.

    (b) Frequencies within the pass band of an ideal Bandpass filter have zero attenuation.

    (c) Two resistors are said to be connected in series when they provide only one path for the current flow.

    (d) Tuning circuits use the principle of resonance.

    (e) A high -Pass filter stops low frequencies.

    (f) With the help of poles, the stability of the network can be determined.

    (g) Laplace transform is used to convert frequency domain signal to time domain signal.

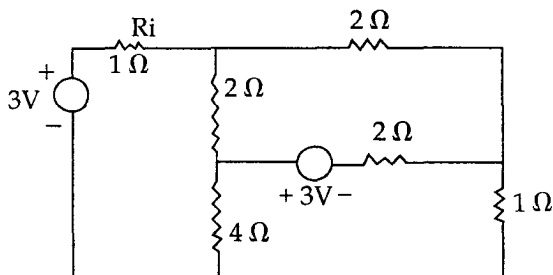2. (a) Determine the current through 1Ω (Ri) resistance for the circuit shown in fig (i). **2x7=14**

fig (i)

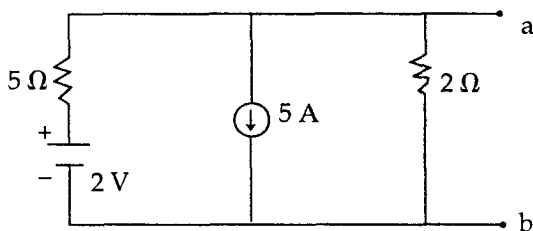(b) Find the Nortons equivalent circuit across a-b for the network shown in fig (ii).


fig (ii)

3. An RLC series circuit consists of R= 80 Ω, L=40 μ henry and C=0.0783 pf   **14**
    Find its   (a) Resonant frequency.
                (b) Q-factor.
                (c) Bandwidth.

4. (a) Design constant - K low pass T and π sections of filter having cut off frequency 3000 Hz and nominal characteristic impedance R_o = 600 Ω.   **2x7=14**

(b) The image impedances of the network shown in fig (iii) are $Zi_1 = 100\ \Omega$ and $Zi_2 = 50\ \Omega$. Calculate the Values of impedances Z_1 and Z_2.
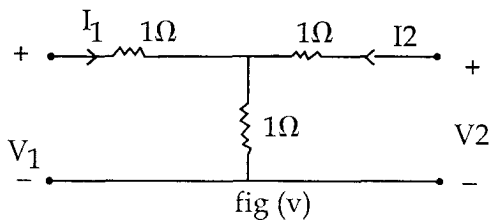

fig (iii)
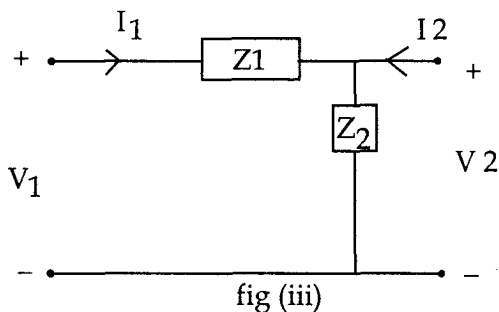
5. (a) Find the Z- Parameters of the network shown in fig (iv)

2x7=14

fig (iv)
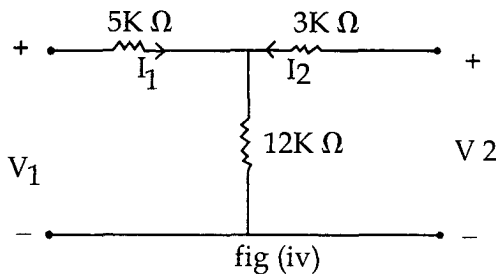
(b) Two identical sections of the network shown in fig (v) are Cascaded. Calculate the transmission Parameters (ABCD Parameters) of the resulting network .

fig (v)

6. (a) Discuss the Natural response of RL Series network. **2x7=14**

(b) In the network of fig(vi), the switch is opened at t = 0, after having been closed for a long time, Find i_L (t) for t>0,
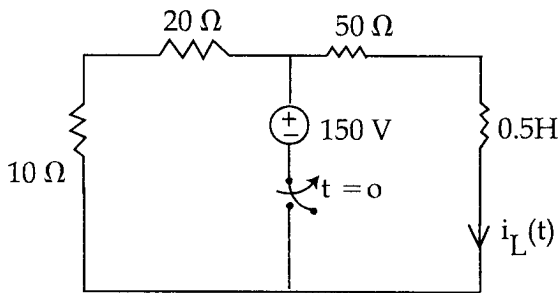

fig (vi)

7. (a) State the significance of Poles and Zeroes.

(b) Obtain the pole zero plot of the impedance function of the network shown in fig (vii).

2x7=14

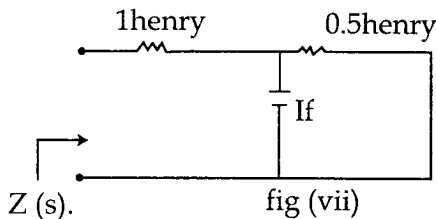Z (s).   fig (vii)

8. Write short notes on *any four* :   **4x3.5=14**
   (a) Attenuators
   (b) Image Impedance
   (c) Interrelation between Z-and Y- Parameters.
   (d) Parallel resonance
   (e) Constant K-type Band pass filter