No. of Printed Pages : 5

BIEL-028

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

Term-End Examination 00001

June, 2013

BIEL-028 : CIRCUITS AND NETWORKS

Time : 2 hours *Maximum Marks : 70*

Note : *(i) Attempt **five** questions in all.*

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

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

1. Mention **true** or **false** for the statement given below. **2x7=14**

(a) If same current passes through each resistor of a combination, they must be connected in parallel.

(b) The impedance of a series RL circuit is given by the algebraic sum of R and x_l.

(c) Greater the Bandwidth, higher the selectivity.

(d) Given poles and zeros, the network function can be determined.

(e) A tuned circuit is a resonant circuit.

(f) A Band pass filter can be converted into a bandstop filter simply by interchanging its resonant circuits.

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

2. (a) Determine the current through 10Ω resistor for the circuit shown in fig (i). **2x7=14**

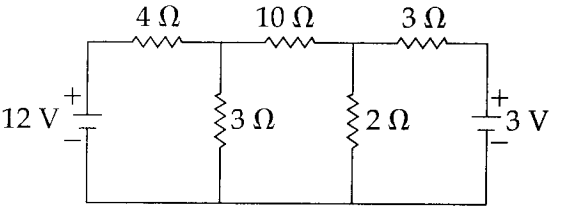

Fig. (i)

(b) Find the current i using superposition theorem for the circuit shown in fig (ii).

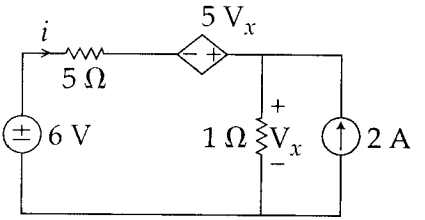

Fig. (ii)

3. For a parallel resonant circuit shown in fig (iii), **14**

(a) Find the resonant frequency

(b) Q of the circuit

(c) Bandwidth

(d) Circuit impedance at resonance

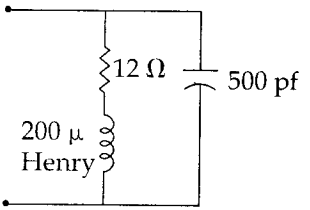

Fig. (iii)

4. (a) The RC network shown in fig (iv) acts as a low pass filter. Derive expression for cut off frequency and find the value of 'C' If R = 2 kΩ, and fc = 800 Hz ? **2x7=14**

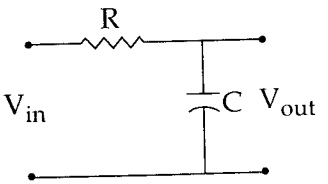

Fig. (iv)

(b) Derive the reciprocity condition for y-parameter.

5. (a) Derive z - parameter of the network shown in fig (v). **2x7=14**

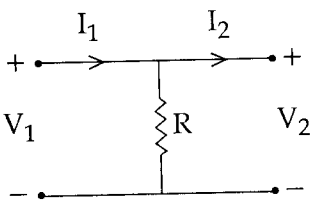

Fig. (v)

(b) Two identical sections of the network shown in fig (vi) are connected in parallel. Calculate the Y-parameters of the resulting network.

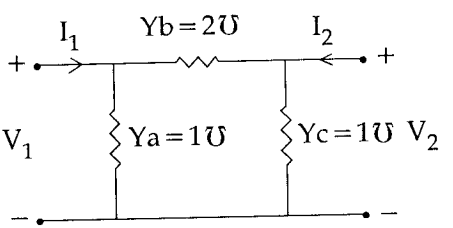

Fig. (vi)

6. (a) Discuss the natural response of RC series network. **2x7=14**

(b) The network shown in fig (vii) is in steady state with the switch k closed. At $t=0$, the switch is opened. Determine the voltage across the switch V_k at $t=0^+$.

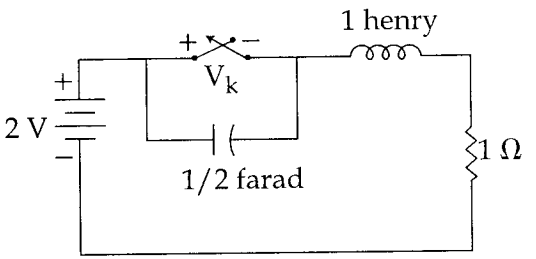

Fig. (vii)

7. (a) For the network shown in fig (viii) find transfer admittance Y_{12} (s) and plot the poles and zeros of the function. **10**

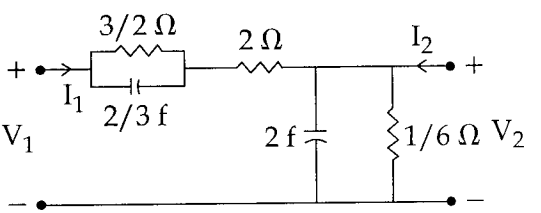

Fig. (viii)

(b) State the significance of poles and zeros. **4**

8. Write short notes on *any four* : 4x3.5=14

(a) Composite low pass filter

(b) Iterative impedance

(c) Inter relation between z and h parameters.

(d) Series resonance

(e) Constant K type band stop filter.