No. of Printed Pages : 5

BIEL-028

DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)

Term-End Examination 00832

June, 2011

BIEL-028 : CIRCUITS AND NETWORKS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt **any five** questions. Each questions carry **equal** marks.*

1. Attempt ***any two*** parts. **14**

(a) Determine the voltage across the 10Ω resistor using Nodal analysis in fig 1.

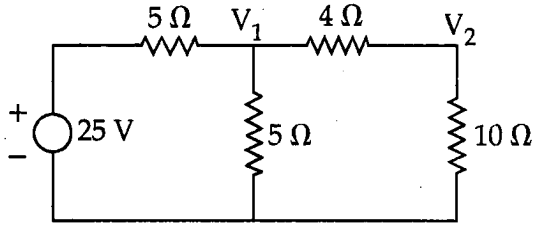

Fig. 1

(b) Discuss the source transformation for dependent sources.

(c) Determine the current in Branch BD where galvanometer is connected in fig. 2.

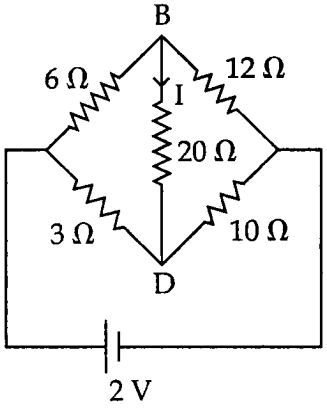

Fig. 2

2. Attempt *any two* parts. **14**

(a) Discuss the Natural Response of RC Network and also find the characteristic equation of RC Network.

(b) Determine the current through the Inductor L for $t \geq 0$ as a parallel RL circuit. The switch is been in position 1 for a long time and then moved to position 2 at $t = 0$ circuit shown in fig 3.

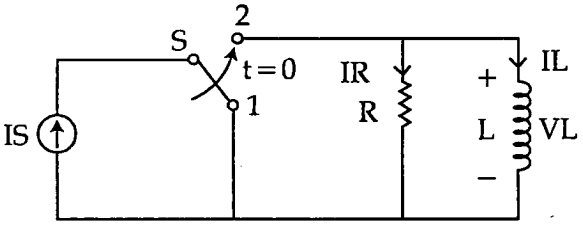

Fig. 3

(c) Explain the series resonance in the circuit also discuss the figure of merit.

3. Attempt *any two* parts. **14**

(a) Draw the Thevenin's equivalent of the circuit given in and find the load current in 2 Ω resistor. fig 4

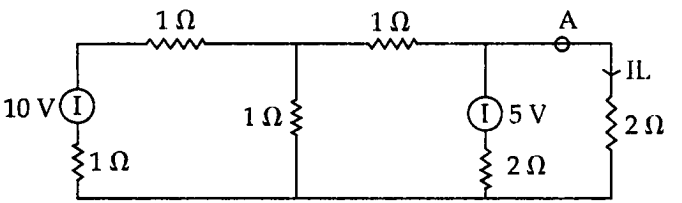

Fig. 4

(b) Discuss the maximum power transfer theorem and prove maximum power will be $P = E^2/4R$.

(c) Determine current through 5 Ω Resistor using Norton theorem in fig. 5.

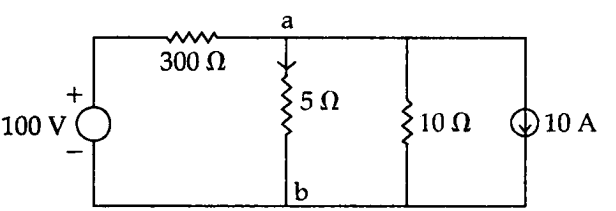

Fig. 5

4. Attempt ***any two*** parts. **14**

(a) Discuss the significance of pale and zero in Network functions.

(b) If $F(s) = \dfrac{S(S+1)}{(S+4)(S^2+4S+Q)}$

Find f(t) using the pale-zero diagram of the functions.

(c) Discuss the Necessary condition for transfer function also discuss the pale position on the system stability.

5. Attempt ***any two*** parts. **14**

(a) Find the Z parameters for the π Network in Fig 6.

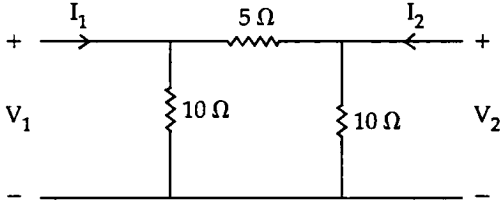

Fig. 6

(b) Determine the h parameters for the Network in fig 7.

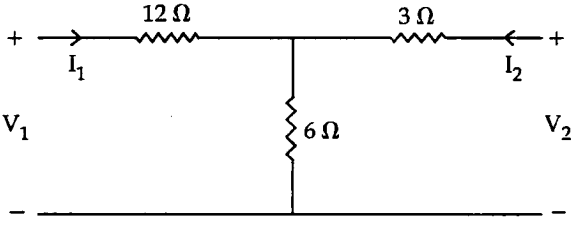

Fig. 7

(c) Determine ABCD parameters for the Network in fig 8.

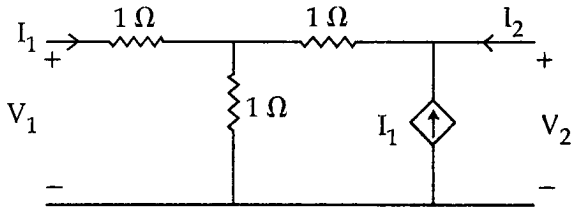

Fig. 8

6. Attempt *any two* parts : **14**

(a) Discuss series series inter connection of two port Networks.

(b) Explain impedance transformation in resonance circuits.

(c) Discuss super position theorem with example. How it is helpful in Network analysis.

7. Attempt *any two* for writing short notes. **14**

(a) T- Type Attenuator

(b) Constant K - Type Low Pass Filter.

(c) Hybrid Parameters.

(d) Series Resonance Circuit.