No. of Printed Pages : 6

BIEL-028

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

Term-End Examination

December, 2011 01372

BIEL-028 : CIRCUITS AND NETWORKS

Time : 2 hours *Maximum Marks : 70*

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

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

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

(b) If $f(s) = \dfrac{s(s+1)}{(s+4)(s^2+4s+8)}$

Find the $f(t)$ using the pole-zero diagram of the function.

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

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

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

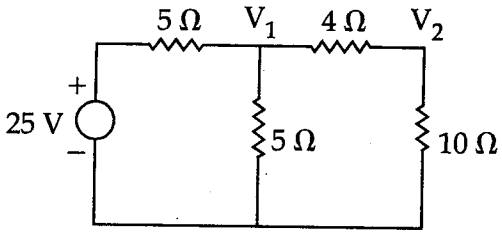

Fig. 1

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

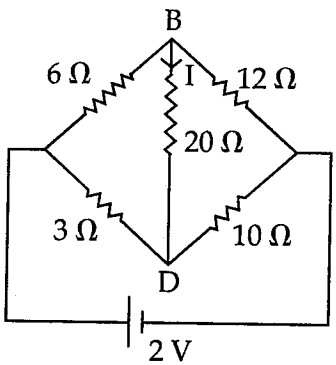

Fig. 2

(c) Discuss the source transformations for dependent source.

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

(a) Explain parallel resonance in the circuit also discuss the figure of merit.

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

(c) In the circuit given in fig. 3 there is an initial voltage V_{CO} on the capacitor. The switch is closed at $t=0$. Determine the $V_{C(+)}$, $V_{R(+)}$ and $I_{C(+)}$ for $t \geq 0$.

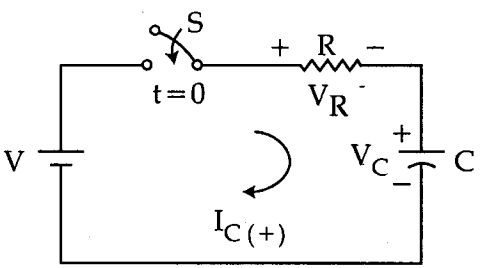

Fig. 3

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

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

(b) Determine the current through and voltage across 30 Ω resistor using Thevenin's theorem in fig. 4.

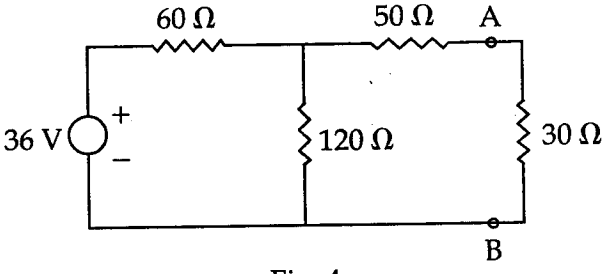

Fig. 4

(c) Determine the current through 5 Ω resistor in the circuit using Norton's theorem in fig. 5.

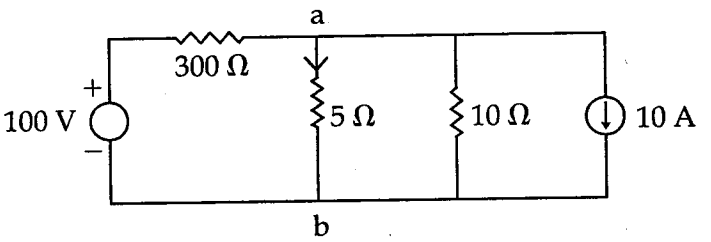

Fig. 5

5. Attempt *any two* parts : 14

(a) Discuss parallel - parallel interconnection in two port Network.

(b) Explain Impedance transformation in Resonance circuit.

(c) Discuss the super position theorem with example.

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

(a) Find z parameter of the 2 port Network in fig. 6.

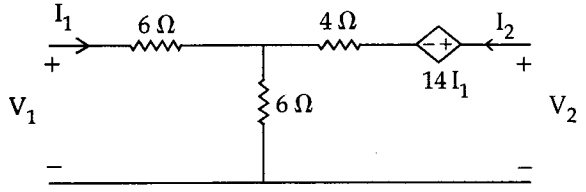

Fig. 6

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

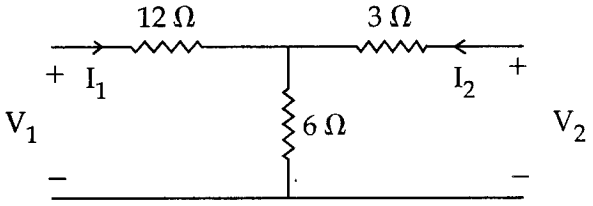

Fig. 7

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

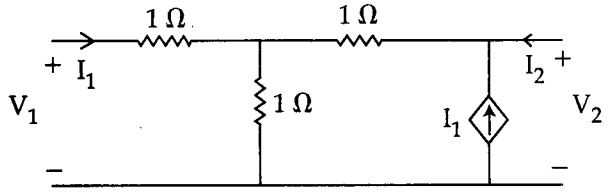

Fig. 8

7. Write short notes on ***any two*** : **14**

(a) π type Attenuator

(b) Constant K type high pass filter.

(c) Transmission parameter.

(d) Parallel resonance circuit.