Total No. of Questions—**8**] [Total No. of Printed Pages—**4+1**

Seat No.	

[5152]-148

S.E. (Electrical Engineering) (Second Semester)

EXAMINATION, 2017

NETWORK ANALYSIS

(2012 PATTERN)

Time : Two Hours **Maximum Marks : 50**

N.B. :— (*i*) Answer Q. No. **1** or Q. No. **2**, Q. No. **3** or Q. No. **4**, Q. No. **5** or Q. No. **6**, Q. No. **7** or Q. No. **8.**

(*ii*) Neat diagrams must be drawn wherever necesary.

(*iii*) Figures to the right side indicate full marks.

(*iv*) Use of calculator is allowed.

(*v*) Assume suitable data, if necessary.

1. (*a*) Reduce the given network figure 1 to a single voltage source and impedance. [7]

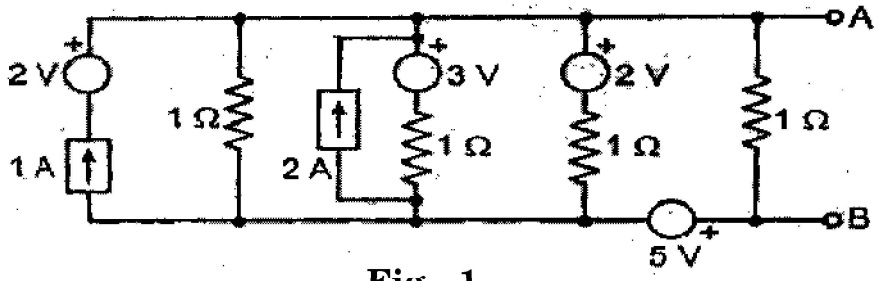

Fig. 1

P.T.O.

(*b*) Find Voltage at node **1** by using Nodal Analysis technique as shown in fig. (2) [6]

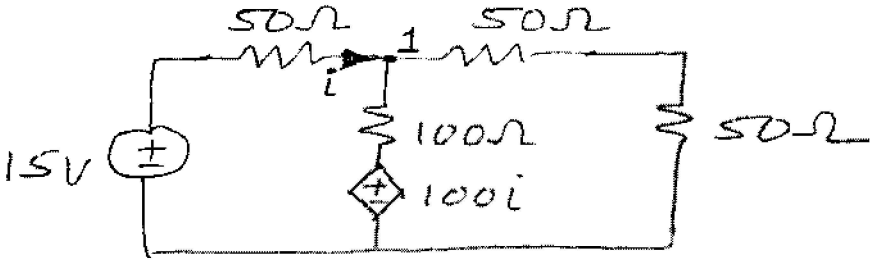

Fig. 2

Or

2. (*a*) Find current through (3–*j* 4) Ω by using Superposition Theorems as shown in fig. (3) [7]

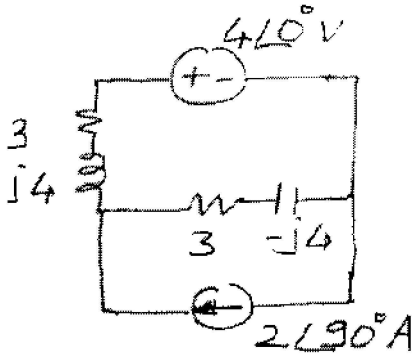

Fig. 3

(*b*) Draw the dotted equivalent circuit of the coupled circuit shown and hence find voltage across capacitor by mesh analysis. [6]

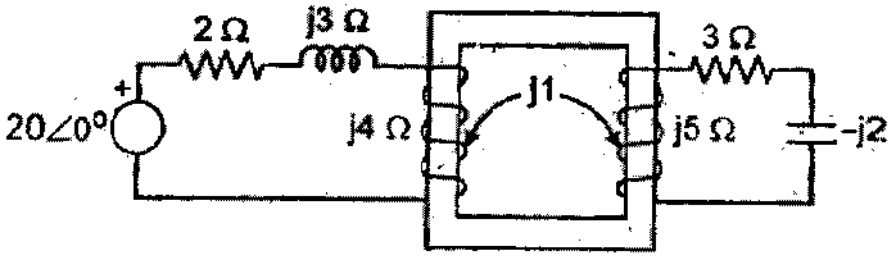

Fig. 4

3. (*a*) In the circuit, the switch S1 is closed at time $t = 0$, and switch S2 is closed at time $t = 0.1$ sec, find the transient current by using classical theory and also draw this current for two intervals. [7]

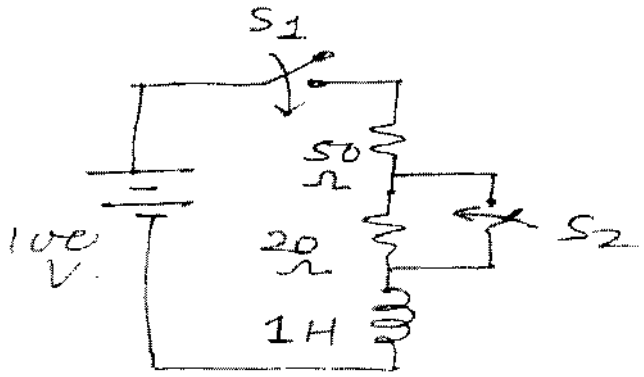

Fig. 5

(*b*) R-L-C circuit is excited by DC voltage source. Find Current $i(t)$ using conventional method. The switch is closed at time $t = 0$ [6]

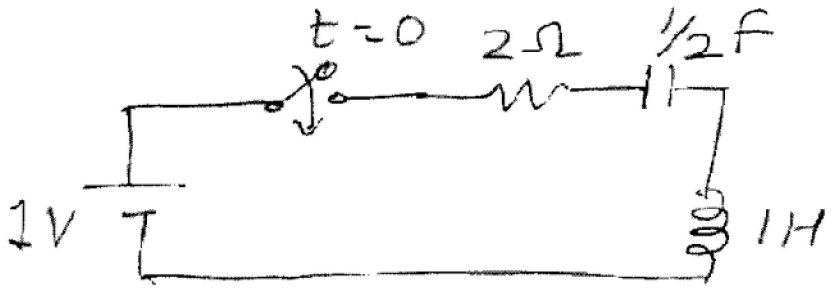

Fig. 6

Or

4. (*a*) After being on position 1 for long time, the switch is thrown on position 2 at time $t = 0$, find current using Laplace

Transform technique. [7]

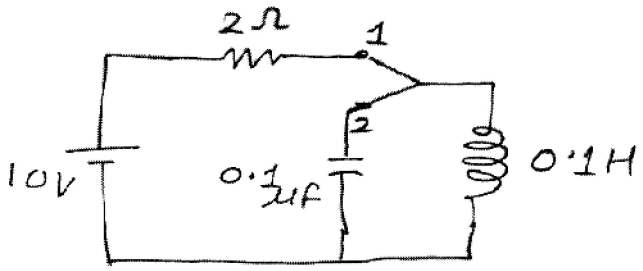

Fig. 7

(*b*) Obtain $f(t)$ for the function $f(s)$, using Convolution Integral. $F(S) = 10/(S^2 + 7S + 12)$ [6]

5. (*a*) Find Z parameter for the circuit as shown in Fig. 8 [6]

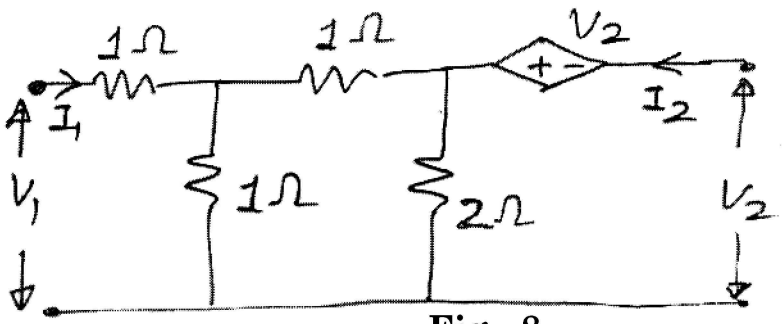

Fig. 8

(*b*) In the circuit shown in Fig. 9 find insertion loss in decibel in load resistance of 10 ohm, Inserted network is shown in dotted portion. [6]

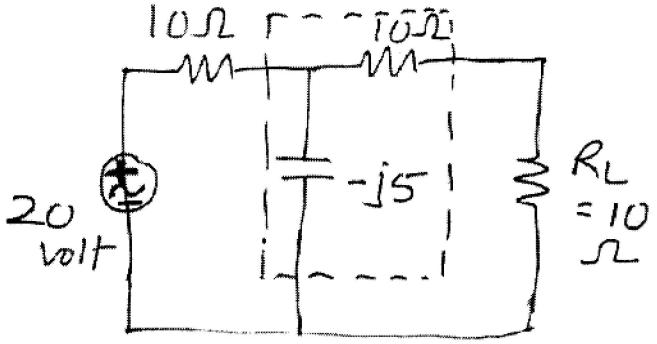

Fig. 9

Or

6. (*a*) Design the High pass filter and develop relation of inductance and capacitance in terms of cut-off frequency & design resistance. [6]

(*b*) Obtain Z parameter of network as shown in Fig. 10. [6]

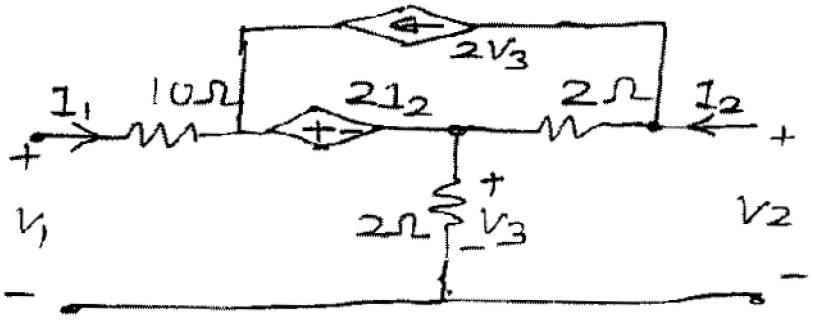

Fig. 10

7. (*a*) Find Transfer Function of network as shown in Fig. 11. [6]

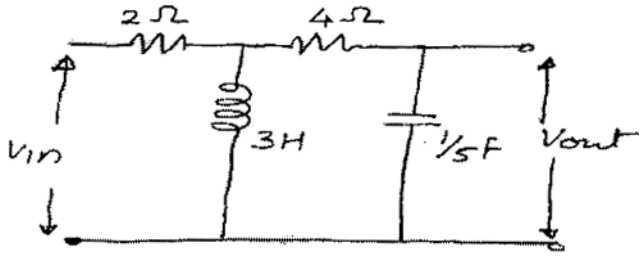

Fig. 11

(*b*) A parallel resonant circuit has a coil of 120 micro hennery, Quality factor is 600 and anti resonant frequency of 1 mega hertz, specify the value of capacitance, internal resistance of coil and impedance offered by circuit at resonance. [6]

Or

8. (*a*) For the network shown in Fig 12, find input admittance Y_{in} [6]

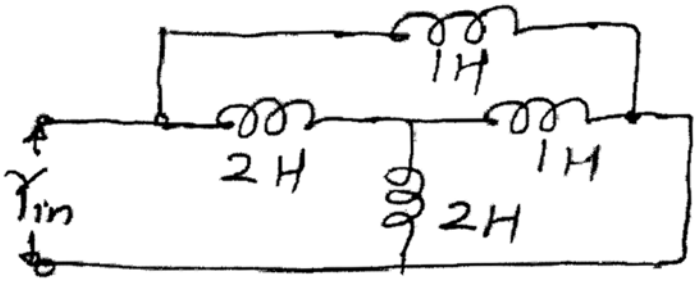

Fig. 12

(*b*) Draw the time domain wave form for various types of transfer function & comment on stability of system. [6]