Total No. of Questions—8] [Total No. of Printed Pages—6

Seat No.	

[5057]-238

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

EXAMINATION, 2016

NETWORK ANALYSIS

(2012 PATTERN)

Time : Three Hours **Maximum Marks : 50**

N.B. :— (*i*) Answer Q. **1** or Q. **2**, Q. **3** or Q. **4**, Q. **5** or Q. **6** and Q. **7** or Q. **8**.

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

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

(*iv*) Use of calculator is allowed.

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

1. (*a*) Simplify the circuit shown in Fig. 1 and find V. [7]

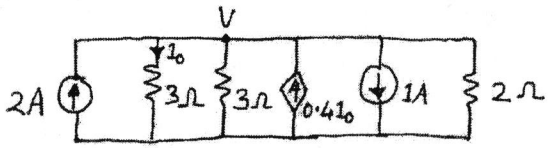

Fig. 1

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

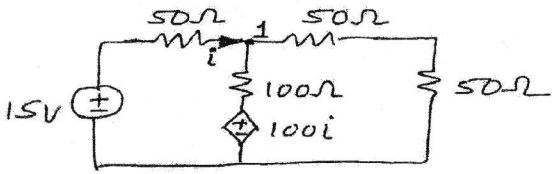

Fig. 2

Or

2. (*a*) Find V_a and V_b by using Superposition Theorem. [7]

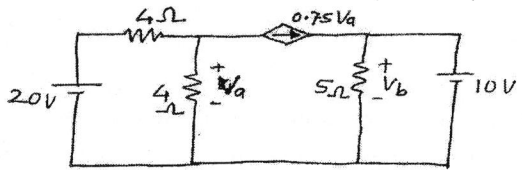

Fig. 3

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

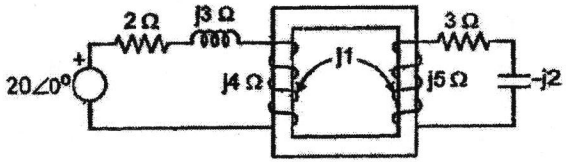

Fig. 4

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]

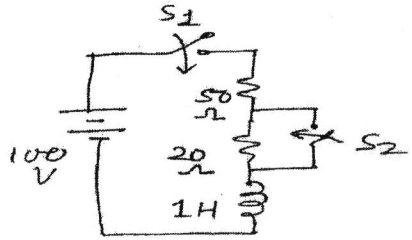

Fig. 5

(*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]

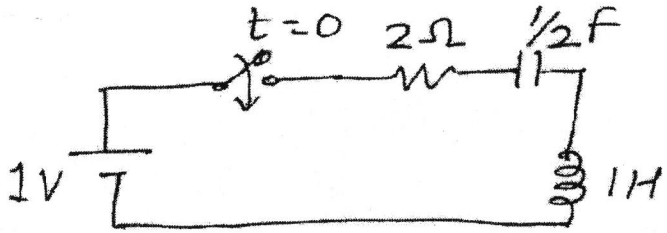

Fig. 6

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]

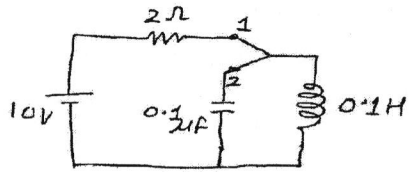

Fig. 7

(*b*) Obtain $f(t)$ for the function $f(s)$, using Convolution Integral : [6]

$$F(S) = 1/(S^2 + 20S + 75).$$

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

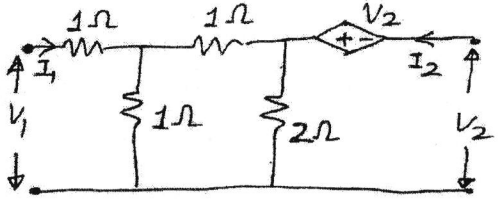

Fig. 8

(*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]

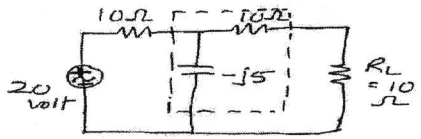

Fig. 9

Or

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

(*b*) For the network shown in Fig. 10. Find Z parameters. [6]

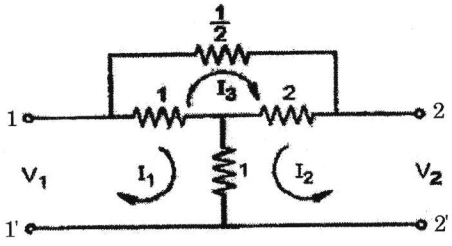

Fig. 10

7. (*a*) Find Voltage Transfer function. [6]

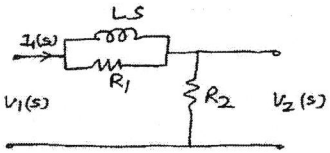

Fig. 11

(*b*) A parallel resonant circuit has a coil of 150 micro henry, Quality factor is 800 and anti-resonant frequency of 1.2 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]

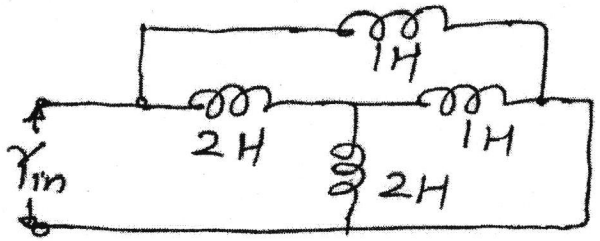

Fig. 12

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