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

Seat No.	

[4857]-1038

S.E. (Electrical Engineering) (II Sem.) EXAMINATION, 2015

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**.

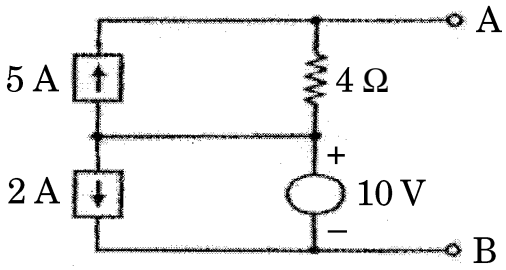
(*ii*) Neat diagrams must be drawn wherever necessary.

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

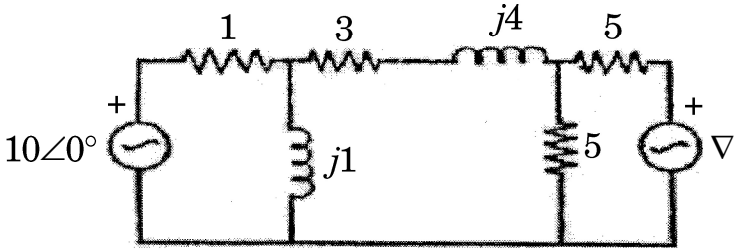
(*iv*) Use of calculator is allowed.

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

1. (*a*) Convert the network shown in Fig. into a single voltage source in series with single resistor. [7]



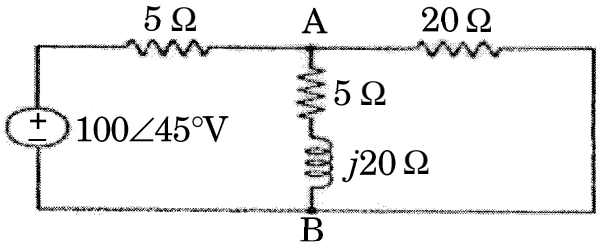
(*b*) Determine V such that the current through the impedance $(3 + j4)\Omega$ is zero. Use Thevenin's theorem. [6]



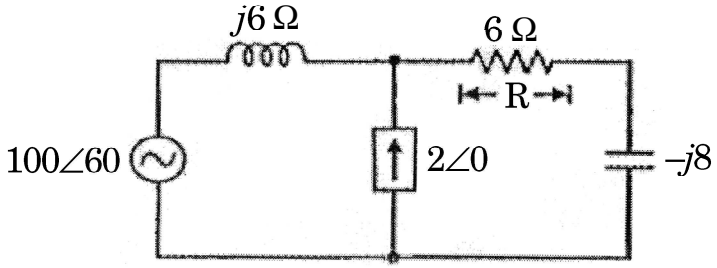
P.T.O.

Or

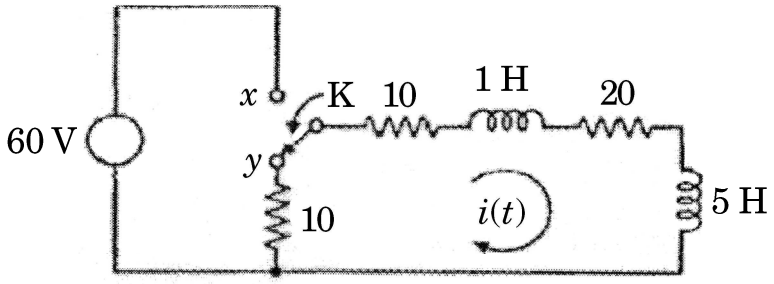
2. (*a*) For the network shown in figure, find the voltage V_{AB} using the nodal method. [7]



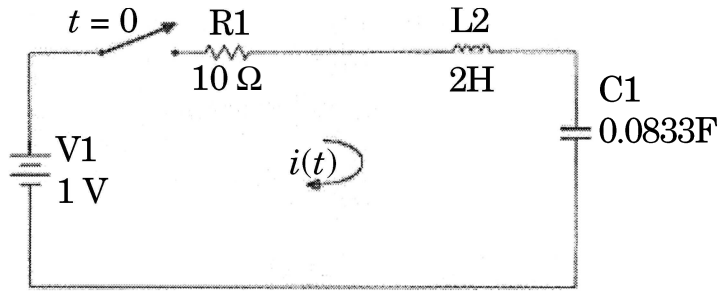
(*b*) Find the current the resistor 'R' using principle of superposition. [6]



3. (*a*) Find particular solution for $i(t)$ when switch K is moved from x to y at time $t = 0$. Steady state current having previously obtained in Circuit use conventional method. [7]

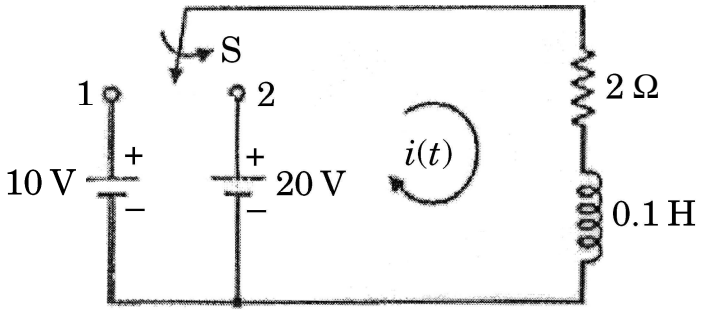


(*b*) R-L-C circuit is excited by DC voltage source. Find Current $i(t)$ using conventional method. The switch is closed at time $t = 0$. [6]



Or

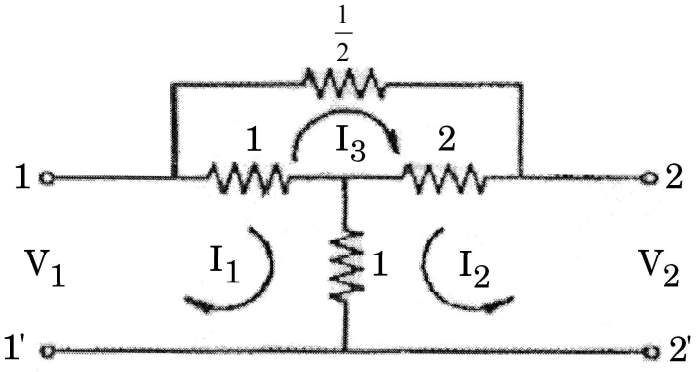
4. (*a*) For the circuit shown in Fig. below, determine the current $i(t)$, when the switch is moved, from position 1 to position 2 at $t = 0$. The switch has been at position 1 for a long time to get the steady state values. Use Laplace transform method. [7]



(*b*) Obtain the inverse Laplace transform of $F(s) = 1/s(s + 2)$ by using convolution integral. [6]

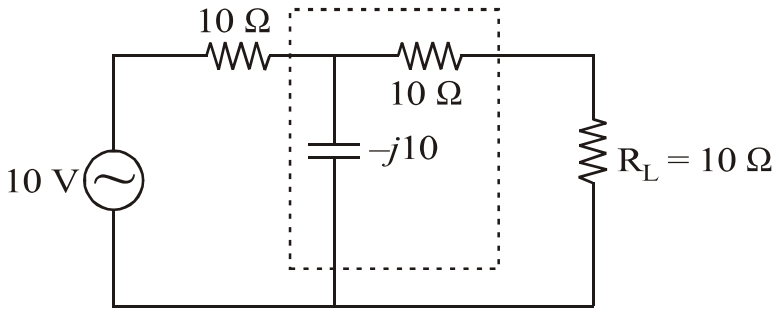
5. (*a*) Design constant K HPF network for cutoff frequency 1 kHz and design resistance 1000 ohm. [6]

(*b*) For the network shown in Fig. below, find Z parameters. [6]



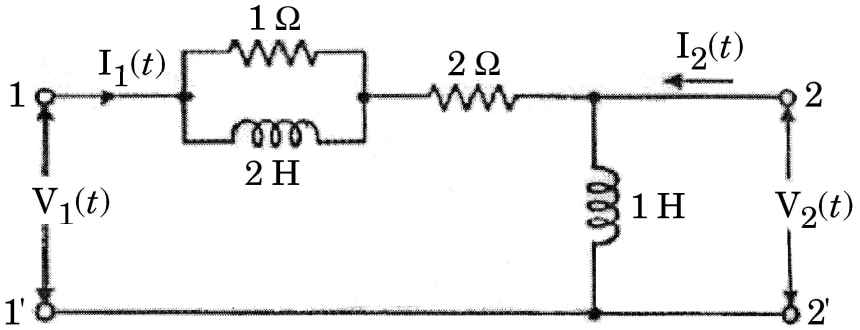
Or

6. (*a*) In the circuit shown in Fig. below, find insertion loss in decibel in load resistance of 10 ohm. [6]



(*b*) Develop the relationship between Transmission and Hybrid Parameters. [6]

7. (*a*) The network in figure, is terminated at port 2 by a resistance of 1 ohm. Find the transform admittance $Y_{12} = I_2(s)/V_1(s)$ for the network. [6]



(*b*) Define the following terms : [6]

(*i*) Transfer functions

(*ii*) Voltage transfer ratio

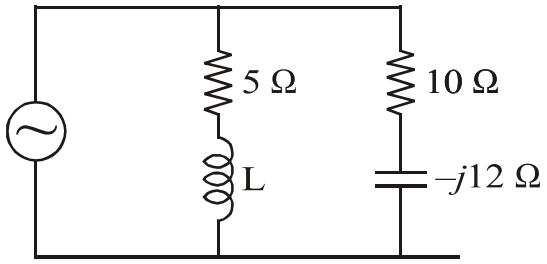
(*iii*) Current transfer-ratio

(*iv*) Transfer admittance

(*v*) Tranfer impedance.

Or

8. (*a*) Find the value of L at which the parallel circuit resonates at a frequency of 1000 rad./sec. in the circuit as shown in Fig. [6]



(*b*) Write the essential conditions of transfer function. [6]