Total No. of Questions—**8**] [Total No. of Printed Pages—**4+2**

Seat No.	

[4757]-1038

S.E. (Electrical Engineering) (Second Semester) EXAMINATION, 2015

NETWORK ANALYSIS

(2012 PATTERN)

Time : Three 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*) Simplify the circuit shown in Fig (1) and. Find V_1 : [6]

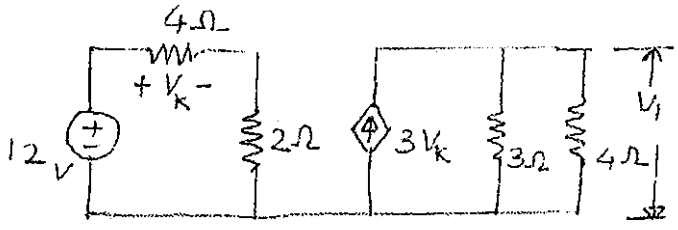

Fig (1)

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(*b*) Draw the dotted diagram and Find equivalent reactance as shown in Fig. (2) : [7]

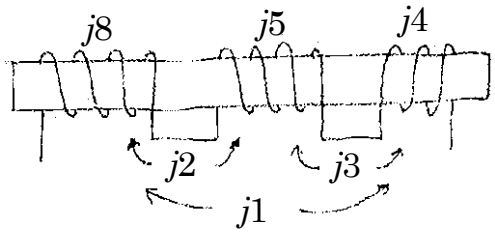

Fig. (2)

Or

2. (*a*) Find current through 5 Ω using Norton's theorem as shown in Fig. (3) : [7]

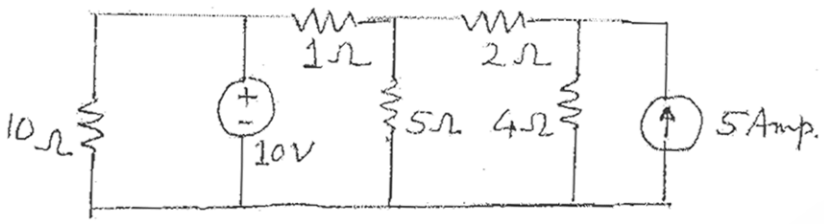

Fig (3)

(*b*) Find current through 15 Ω by using Millman's theorem. [6]

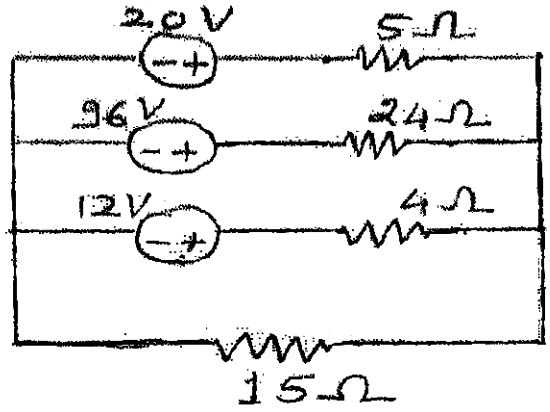

Fig. (4)

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3. (*a*) For the circuit shown in Fig. (5), find $i(t)$ using classical theory. [7]

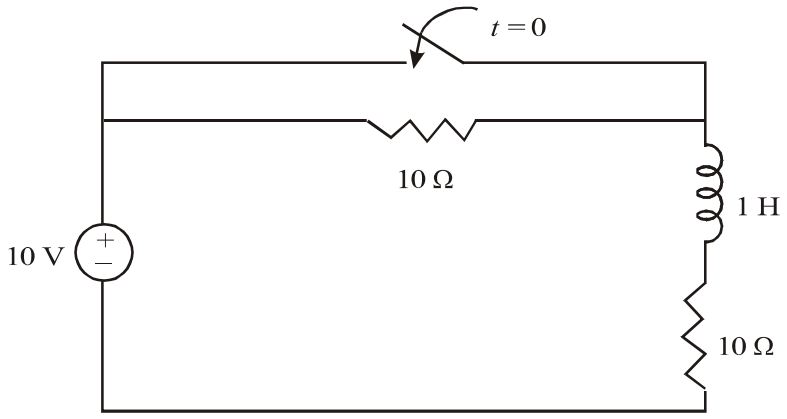

Fig. (5)

(*b*) Find current $i(t)$ by using Laplace transform. The switch is closed at time $t = 0$. [6]

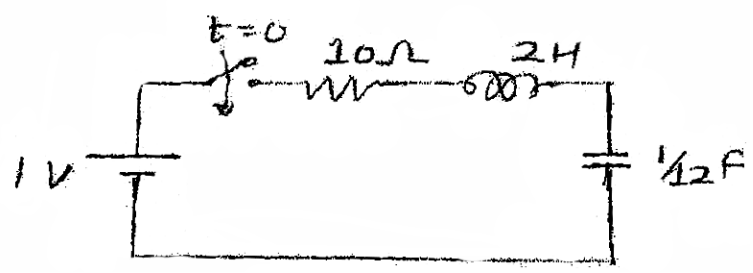

Fig. (6)

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Or

4. (*a*) In the circuit shown in Fig. (7), the switch is moved to position 2 at time $t = 0$, find the expression of current for time $t > 0$ using Laplace transform : [7]

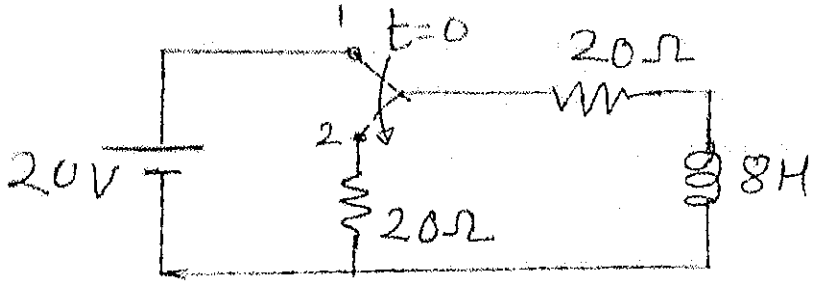

Fig. (7)

(*b*) Find $i(t)$, by using convolution integral : [6]

$$F(s) = \frac{1}{s^2 + 9s + 18}$$

5. (*a*) For the circuit as shown in Fig. (8), find transmission parameters : [6]

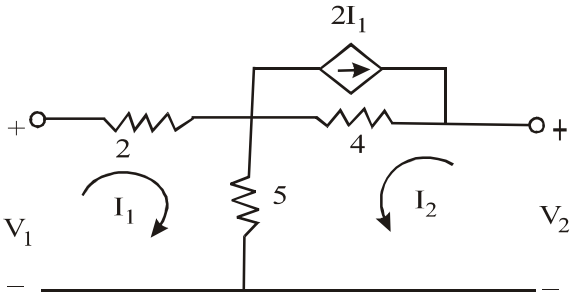

Fig. (8)

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(*b*) For the network shown in Fig. (9) find hybrid parameters : [6]

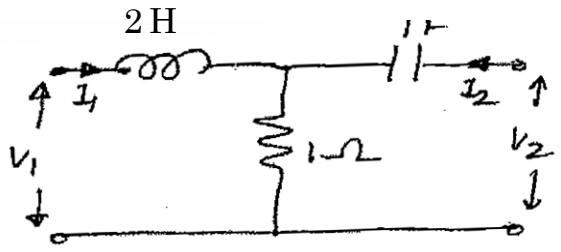

Fig. (9)

Or

6. (*a*) In the circuit shown in Fig. (10) find transmission parameters :[6]

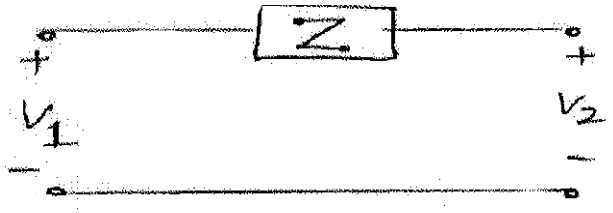

Fig. (10)

(*b*) Develop the relationship between transmission parameter and hybrid parameters. [6]

7. (*a*) For the network shown in Fig. (11), find the voltage transfer function : [6]

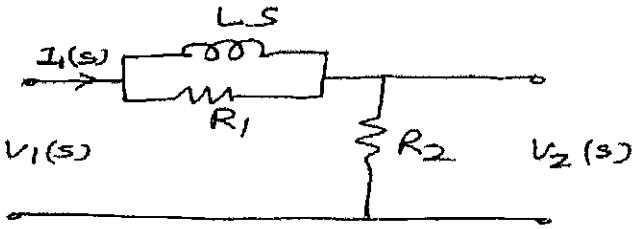

Fig. (11)

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(*b*) Develop the relation of anti-resonant frequency in parallel resonance circuit, also develop the relation of impedance offered by parallel resonant circuit. [6]

Or

8. (*a*) Find driving point impedance of given network : [6]

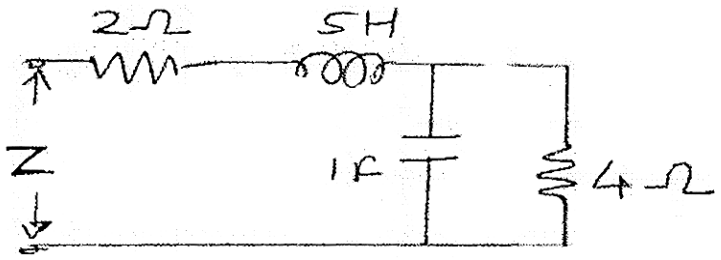

Fig. (12)

(*b*) A high pass filter is constructed from two capacitors 1 micro farad each and 15 millihenry inductance, find design resistance and cut-off frequency. [6]

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