Total No. of Questions—**8**] [Total No. of Printed Pages—**5**

Seat No.	

[5668]-158

S.E. (Electrical Engineering) (II Sem.) EXAMINATION, 2019

NETWORK ANALYSIS

(2015 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*) Use the simplification technique, find V_x as shown in Fig. 1. [7]

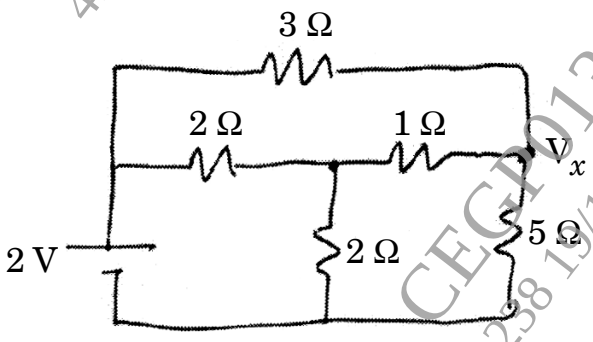

Fig. 1

P.T.O.

(*b*) Draw Dotted diagram and find total reactance as shown in Fig. 2. [6]

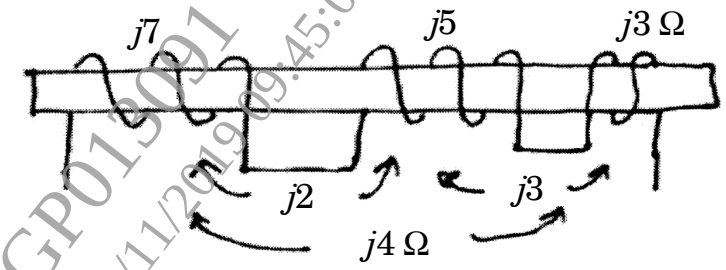

Fig. 2

Or

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

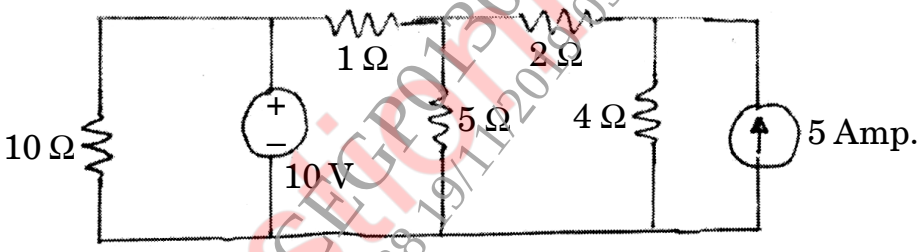

Fig. 3

(*b*) Develop the Tie Set B matrix, consider 1, 4, 5 Branches are forming Tree . [6]

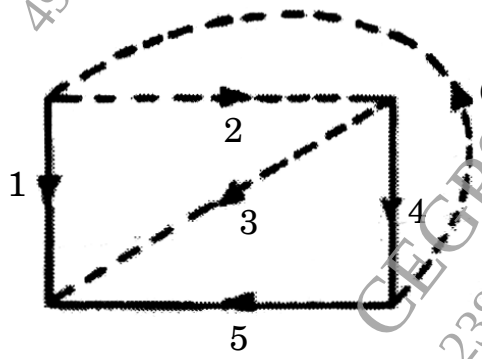

Fig. 4

3. (*a*) For the circuit shown in Fig. 5, if switch S is opened at $t = 0$, solve for V, dV/dt. [7]

Fig. 5

(*b*) Obtain F(S) for the wave shown in Fig. 6. [6]

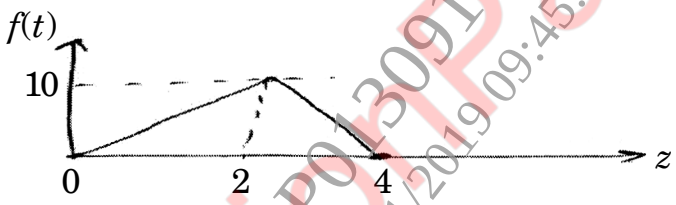

Fig. 6

Or

4. (*a*) The switch is changed from point *a* to *b* at $t = 0$, determine voltage across 1 ohm resistance at $t = 3$ sec using Classical Theory. [7]

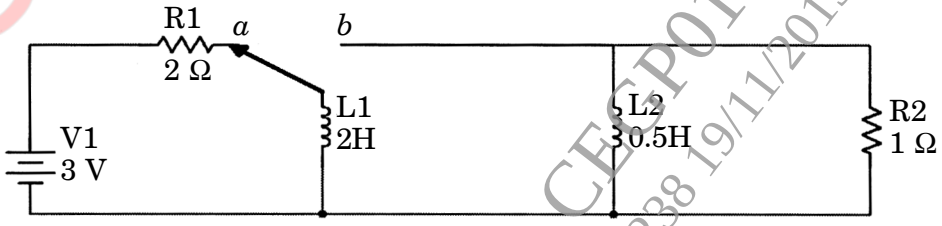

Fig. 7

(*b*) 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. [6]

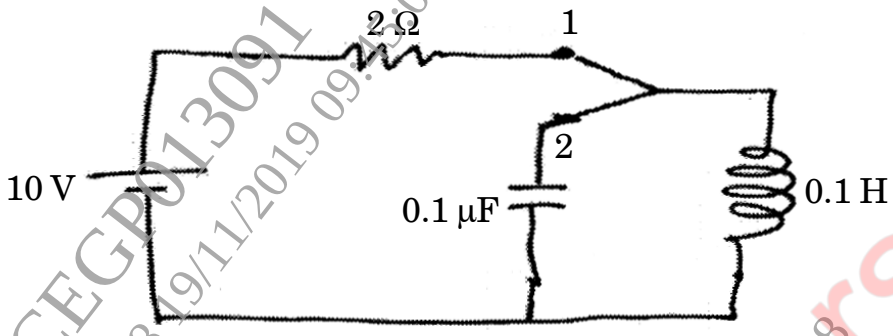

Fig. 8

5. (*a*) Find Z parameter for the circuit as shown in Fig. 9. [6]

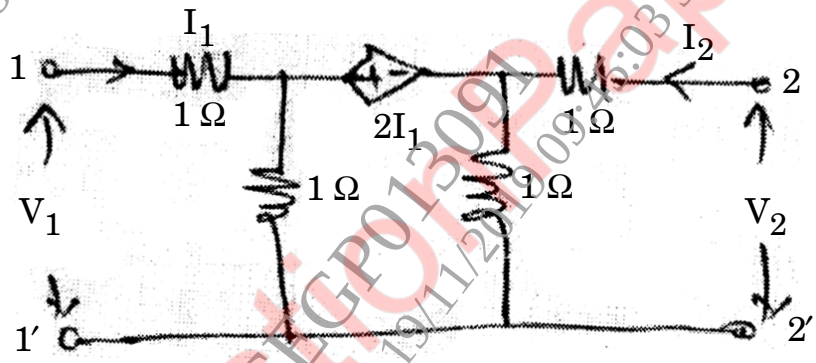

Fig. 9

(*b*) Develop the relationship between Z parameter and Y parameter. [6]

Or

6. (*a*) Find Transfer Function of network as shown in Fig. 10. [6]

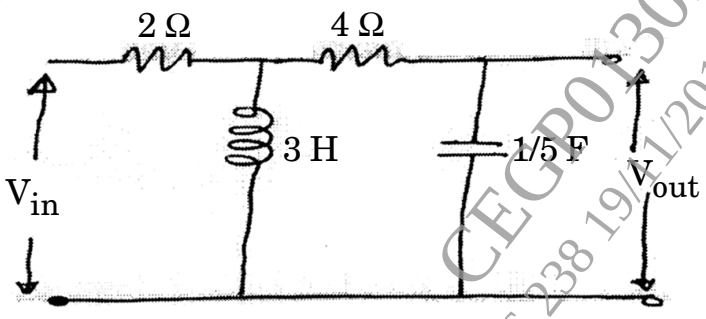

Fig. 10

(*b*) Obtain Z parameter of network as shown in Fig. 11. [6]

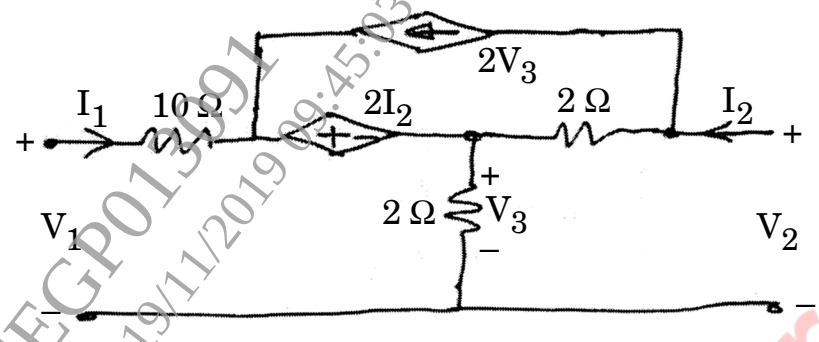

Fig. 11

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

(*b*) A low pass filter is composed of symmetrical π section. Each series arm and shunt arm is 0.02 Henry and 2 microfarad. Find cut-off frequency and design resistance. [6]

Or

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

(*b*) A HPF section is constructed from two capacitors 1 microfarad each and 15 millihenry find cut-off frequency and design resistance. [6]