D 51491 (Pages 4) Name.....

Reg. No.....

THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2008

Computer Science Engineering

CS 04 306—ELECTRIC CIRCUITS AND SYSTEMS

(2004 Admissions)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

I. (a) Using nodal analysis find the power dissipated in the 6Ω resistor of the circuit shown in Fig. 1.

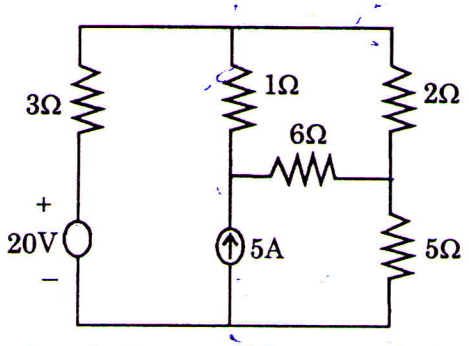

Fig. 1.

(b) Find the driving point admittance of the network shown in Fig.2.

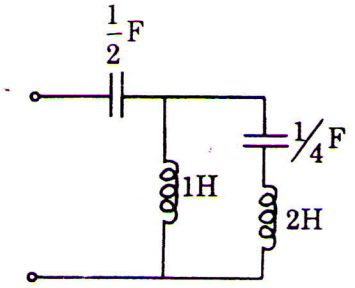

Fig. 2.

(c) For the series parallel circuit shown in Fig. 3. determine (i) the total impedance ; (ii) the voltage across each branch ; (iii) the phase angle.

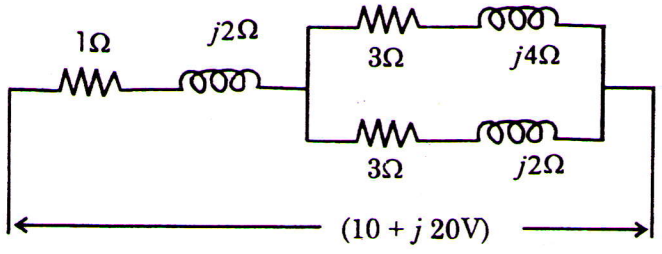

Fig. 3.

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(d) Determine the maximum power delivered to load in the circuit shown in Fig. 4.

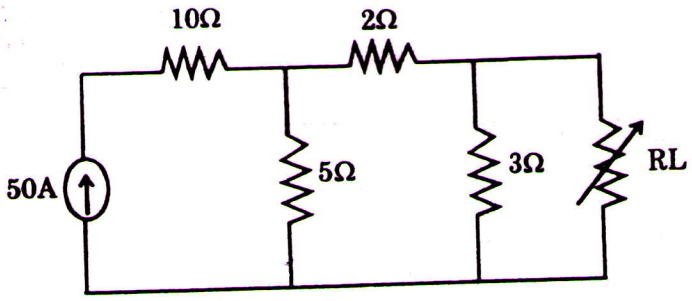

Fig. 4.

(e) Draw and explain Anderson's bridge.

(f) Find the Z parameters of the circuit shown in Fig. 5.

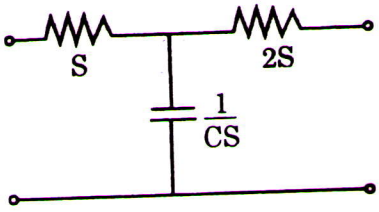

Fig. 5.

(g) Write and *five* block diagram reduction techniques.

(h) Explain the following terms :—

(i) Bode plot ;

(ii) Gain margin ;

(iii) Phase margin.

(8 × 5 40 marks)

II. (a) For the circuit shown in Fig. 6. find the ratio of output voltage to the input voltage.

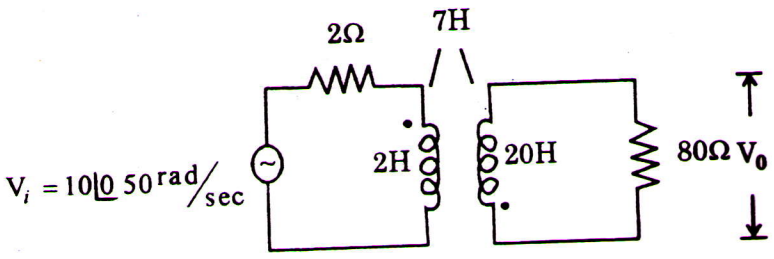

Fig. 6.

(15 marks)

Or

(b) Explain the following terms in detail with examples :

(i) Incidence matrix. (ii) Tie set matrix.

(iii) Trees. (iv) Cut set.

(15 marks)

III. (a) Determine the Thevenin and Nortan's equivalent circuits with respect to terminals *ab* for the circuit shown in Fig. 7.

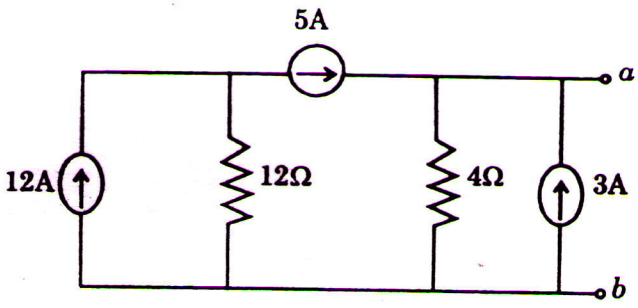

Fig. 7.

(15 marks)

Or

(b) Three impedanc $Z_1 = 20 \angle 30° \Omega$, $Z_2 = 40 \angle 60° \Omega$ and $Z_3 = 10 \angle -90° \Omega$ are delta connected to a 400 V, 3ϕ system. Determine : (i) phase currents ; (ii) line currents and (iii) total power consumed by the load.

(15 marks)

IV. (a) Find the admittance and hybrid parameters for the circuit shown in Fig. 8.

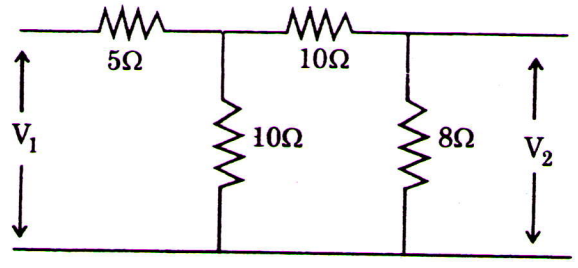

Fig. 8.

(15 marks)

Or

(b) Explain the Schering bridge in detail.

(15 marks)

Turn over