



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

CS/IT 2K 306/PTCS 2K 305—ELECTRIC CIRCUITS AND SYSTEMS

Time : Three Hours

Maximum : 100 Marks

- I. (a) Compare nodal and mesh analysis of circuits with an example.
 (b) Explain the advantages of Laplace transform to Network problems. Give examples.
 (c) State and derive Thevenin's theorem and Norton's theorem.
 (d) Write the conversion formula with neat sketches for the following :—
 1 Star-Delta
 2 Delta-star.
 (e) Draw a neat sketch of Wiens bridge and explain its principle of operation.
 (f) Voltages V_1 and V_2 at the ports of a 2 port networks are given by :

$$V_1 = 60 I_1 + 20 I_2 ; V_2 = 20 I_1 + 40 I_2$$
 Find Y and ABCD parameters of the network.
 (g) Compare analog control system with digital control system.
 (h) Explain the characteristics of open-loop and closed-loop control systems. (8 × 5 = 40 marks)
- II. (a) Find the current through the Galvanometer in the circuit shown by mesh method.

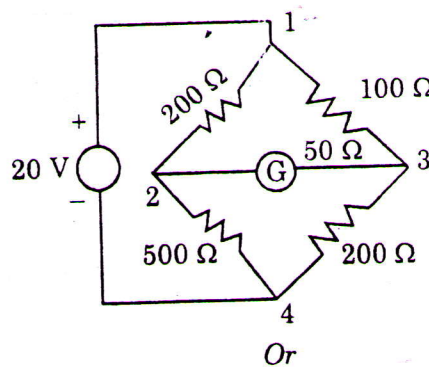


Fig. 1.

- (b) State and prove all the properties of Laplace transform.

Turn over



III. (a) Explain the principles of 3 ϕ circuits with balanced and unbalanced loads with neat sketches.

Or

(b) Determine the equivalent resistance between AB of the circuit shown in the figure below :

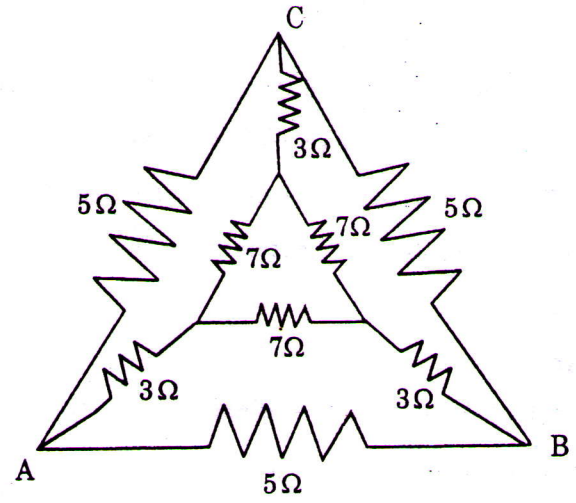


Fig. 2.

IV. (a) Draw a neat circuit diagram of Adersons bridge and explain its principle of separation. Obtain the condition for bridge balance.

Or

(b) Obtain the Impedance and admittance parameters of the 2 port networks.

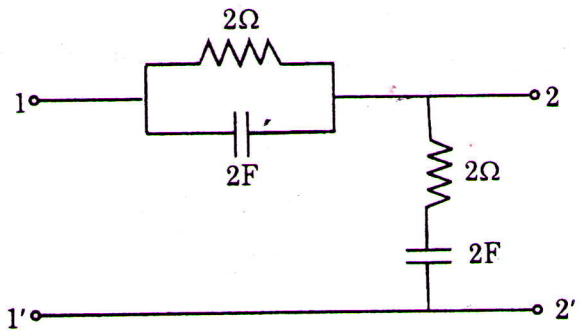


Fig. 3.

V. (a) Explain the features of signal flow graph and block diagram reduction technique with an example.

Or

(b) Write short notes on :

- 1 Systems Engineering.
- 2 Root lows technique.

(4 \times 15 = 60 marks)