Assignment:-1: Circuit Concept

1. Explain in brief about Lumped circuit elements called resistor and capacitor.
2. How does a voltmeter differ from an ammeter?
4. Define : Mutual Inductance
5. Write a short note on Cathode Ray Oscilloscope.
1. Explain WYE-DELTA transformation in brief with necessary equations and circuit diagrams.
2. Determine the voltage across the 20 Ohm resistor in the following circuit of Figure with the application of superposition theorem.

![Circuit Diagram](attachment:circ1.png)

3. Find the voltage Vx using superposition theorem. All resistor values are in ohm.

![Circuit Diagram](attachment:circ2.png)

4. For the circuit shown in following figure, use the superposition theorem to find io.

![Circuit Diagram](attachment:circ3.png)

5. State Norton's theorem.
7. Give the Classification of Electric Network.
1. Write about Differential amplifier using Op-amp with necessary circuit diagram and equations.
2. Explain Inverting & Non-Inverting Amplifier.
3. Briefly explain operational amplifiers. Enlist and explain practical properties of OP-AMP.
4. Describe low pass active filter using Operational amplifier with necessary diagrams and equations.
5. Explain ideal characteristics of ideal Op-Amp in detail.
6. Explain the working of a bandpass filter. Find out its bandwidth.
1. For the switching function \( F = A(A' + B) \), draw a corresponding set of logic blocks and write the truth table.

2. Write Short note on SR, D, JK and T flip flop with circuit diagram and truth table.

3. Draw only ISO-7 layer model block diagram of an OSI for computer Networks.

4. Classify the types of Computer network? Explain each one of them in brief.

5. For the logic expression \( Z = A'B + AB' \) (i) Obtain the truth table. (ii) Name the operation performed (iii) Realize this operation using AND, OR, NOT gates (iv) Realize Same operation using only NAND gates

6. Classify network topologies and draw each one of them.

7. Draw the block diagram of a multiplexer circuit and label the pins.

8. Reduce the given function using K-map. \( F(A, B, C, D) = \Sigma m(1,3,5,7,8,9,13,14) \).

9. Reduce the given function using K-map, \( F = \Sigma m(1,3,5,9,11,13) \)

10. Obtain a minimum Boolean expression for \( F(A, B, C, D) = \Sigma m(1, 3, 4, 5, 6, 7, 10, 12) \)

11. Reduce the given Boolean expression using K-map \( F(A, B, C) = \Sigma m(0,2,3,5) \).
Assignment:-5: Signal Processing

1. Draw only functional block diagram of signal processing system. Explain each blocks.
2. Explain in brief Product Modulation and Demodulation with necessary diagrams.
3. Define the following Terms. (a) Interference (b) Noise Margin
4. What do you understand about multiplexing? Explain any one of the Multiplexing technique.
5. Give the classification of signals.
6. State and explain Sampling theorem.
1. Explain in detail Pulse modulation with necessary diagrams.
2. Write short note on Cellular communication system.
3. Define Waveguide (Types of waveguide), Transmission lines and Antenna (Yagi - Uda antenna).
4. Define the following terms: (a) Reflection (b) Directivity (c) Isotropic Radiator.
5. Draw block diagram of digital communication system.
6. Write short note on AM demodulation.
7. State the need of modulation and what are the other advantages of modulation in communication system?
8. Draw and explain the block diagram of super heterodyne AM radio receiver.
Assignment:-7: Control Systems

1. Explain any four rules of Block diagram reduction for control system with necessary block diagrams.
2. Give brief classification of feedback control systems.
3. Classify the Control systems.
5. Explain digital control system with necessary block diagrams also give its advantages.