List of Experimental Set-up

For Batch 2011 and onwards

LAB- (ANALOG DEVICES & CIRCUITS)

1. Study of Zener regulator as voltage regulator
2. Study of Half wave, full wave & Bridge rectifiers.
3. To plot the input and output characteristics of CE configuration.
4. To study the characteristics of a Class- A amplifier.
5. To study the characteristics of Class- B amplifier.
6. To study the characteristics of Class- B push-pull amplifier.
7. To study the characteristics of complementary symmetry amplifier.
8. To study the response of RC phase shift oscillator and determine frequency of oscillation.
9. To study the response of Hartley oscillator and determine frequency of oscillation.
10. To study the response of Colpitt's oscillator and determine frequency of oscillation.
11. To study the response of Wien Bridge oscillator and determine frequency of oscillation

LAB- (DIGITAL CIRCUIT AND LOGIC DESIGN)

1. Study of Logic Gates: Truth-table verification of OR, AND, NOT, XOR, NAND and NOR gates.
   Realization of OR, AND, NOT and XOR functions using universal gates.
2. Realization Half Adder / Full Adder using Logic gates.
3. Realization Half Subtractor / Full Subtractor using Logic gates
4. Design 4-Bit Binary-to-Gray & Gray-to-Binary Code Converter.
5. Design 4-Bit magnitude comparator using logic gates. Multiplexer: Truth-table verification and realization of Half adder and Full adder using MUX.
6. Demultiplexer: Truth-table verification and realization of Half subtractor and Full subtractor using DEMUX.
7. Flip Flops: Truth-table verification of RS, JK , D, JK Master Slave Flip Flops.
8. Design MOD-7 Synchronous up-counter using JK/RS/D Flip Flops.

9. Shift Register: Study of shift right, SIPO, SISO, PIPO, PISO & Shift left operations using IC7495 chip.

LAB (OBJECT ORIENTED PROGRAMMING using C++)

1. [Classes and Objects] Write a program that uses a class where the member functions are defined inside a class.
2. [Classes and Objects] Write a program that uses a class where the member functions are defined outside a class.
3. [Classes and Objects] Write a program to demonstrate the use of static data members.
4. [Classes and Objects] Write a program to demonstrate the use of const data members.
5. [Constructors and Destructors] Write a program to demonstrate the use of zero argument and parameterized constructors.
6. [Constructors and Destructors] Write a program to demonstrate the use of dynamic constructor.
7. [Constructors and Destructors] Write a program to demonstrate the use of explicit constructor.
8. [Initializer Lists] Write a program to demonstrate the use of initializer list.
9. [Operator Overloading] Write a program to demonstrate the overloading of increment and decrement operators.
10. [Operator Overloading] Write a program to demonstrate the overloading of binary arithmetic operators.
11. [Operator Overloading] Write a program to demonstrate the overloading of memory management operators.
12. [Typecasting] Write a program to demonstrate the typecasting of basic type to class type.
13. [Typecasting] Write a program to demonstrate the typecasting of class type to basic type.
14. [Typecasting] Write a program to demonstrate the typecasting of class type to class type.
15. [Inheritance] Write a program to demonstrate the multilevel inheritance.
16. [Inheritance] Write a program to demonstrate the multiple inheritance.
17. [Inheritance] Write a program to demonstrate the virtual derivation of a class.
18. [Polymorphism] Write a program to demonstrate the runtime polymorphism.
19. [Exception Handling] Write a program to demonstrate the exception handling.
20. [Templates and Generic Programming] Write a program to demonstrate the use of function template.
21. [Templates and Generic Programming] Write a program to demonstrate the use of class template.
22. [File Handling] Write a program to copy the contents of a file to another file byte by byte. The name of the source file and destination file should be taken as command-line arguments.
23. [File Handling] Write a program to demonstrate the reading and writing of mixed type of data.

LAB (ANALOG COMMUNICATION SYSTEMS)

- Generation of DSB & DSB-SC AM signal using balanced modulator & determine modulation Index & detection of DSB using Diode detector.
- Generation of SSB AM signal & detection of SSB signal using product detector.
- To generate a FM Signal using Varactor & reactance modulation.
- Detection of FM Signal using PLL & foster seelay & resonant detector.
- To Study Super heterodyne AM receiver and measurement of receiver parameters viz. sensitivity, selectivity & fidelity.
- To study the circuit of PWM & PPM modulator & Demodulator
- Study of Frequency Division Multiplexing / Demultiplexing with sinusoidal & audio inputs Using DSBSC.
- Generation & study of Analog TDM at least 4 channels.
- Sampling Theorem & Reconstruction of Signal from its samples using Natural Sampling, Flat Top Sampling & Sample & Hold Circuits & effect of duty cycle.
- To draw & study Polar plots & polarization of Helical, Ground plane, Yagiuda & dipole Antenna & calculate
- Antenna gain, Antenna beam width, Element current & Front-back ratio of antenna.
- To study Antenna matching using stubline.
- To study a transmission line attenuation & frequency characteristics.

LAB(ELECTRONIC MEASUREMENT & INSTRUMENTATION)

- Measurement of Inductance by Maxwell's Bridge.
- Measurement of small resistance by Kelvin's Bridge.
- Measurement of Capacitance by Schering Bridge.
- Measurement of Frequency by Wein Bridge.
- Measurement of medium resistance by Wheat Stone's Bridge.
- Determination of frequency & phase angle using C.R.O.
- To find the Q of a coil using LCR-Q meter.
- To determine output characteristic of a LVDT and determine its sensitivity.
- Study characteristics of temperature transducer like Thermocouple, Thermistor and RTD with implementation of small project using signal conditioning circuit.
- Study characteristics of Light transducer like Photovoltaic cell, Phototransistor and Pin Photodiode with implementation of small project using signal conditioning circuit.
- To study input- output characteristics of a potentiometer and to use two potentiometers as an error detector.

- To study transmitter- receiver characteristics of a synchro set to use the set as control component.
- To study the operation of a d-c positional servo system and to investigate the effect of damping and supply voltage on its response.
- To study the operation of an a.c. position servo-system and to obtain effects of supply voltage and system parameter on its transient response.
- To study a stepper motor and control its direction speed and number of steps with the help of a microprocessor.

LAB (Signal & Systems Using MATLAB / MENTOR DSP)

- Generation of continuous and Discrete Unit step signal.
- Generation of exponential and Ramp Signal in Continuous and Discrete Domain.
- Continuous and Discrete time Convolution.
- Adding and subtracting two Given Signals (Continues as well as Discrete Signals)
- To generate a random binary wave.
- To Generate a Random Sequences with arbitrary distribution, means and Variances for following:
- Rayleigh Distribution
- Uniform distribution
- Gaussian distribution.
- To Plot Probability density functions. Find Mean and Variance for the above distribution
- To study Power Spectrum Density
- To study Difference Equation to develop elementary signal function modules (m-files) for unit sample, unit step, exponential and unit ramp sequences.
- To develop program modules based on operation on sequences like signal shifting, signal folding, signal addition and signal multiplication.
- To develop program for discrete convolution and correlation.
- To develop program for finding response of the LTI system described by the difference equation.
- To develop program for computing inverse Z-transform.

LAB (DIGITAL SIGNAL PROCESSING)

Perform the following exercises using MATLAB

1. To develop elementary signal function modules (m-files) for unit sample, unit step, exponential and unit ramp sequences.
2. Write a program in MATLAB to generate standard sequences.
3. Write a program in MATLAB to compute power density spectrum of a sequence.
4. To develop program modules based on operation on sequences like signal Shifting, signal folding, signal addition and signal multiplication.
5. Write a program in MATLAB to verify linear convolution.
6. Write a program in MATLAB to verify the circular convolution.
7. To develop program for finding magnitude and phase response of LTI system Described by system function H(z).
8. To develop program for finding response of the LTI system described by the difference equation.
9. To develop program for computing inverse Z-transform.
10. To develop program for computing DFT and IDFT.
11. To develop program for conversion of direct form realization to cascade form realization.
12. To develop program for cascade realization of IIR and FIR filters.
13. To develop program for designing FIR filter.
14. To develop program for designing IIR filter.
15. To write a MATLAB program for noise reduction using correlation and autocorrelation methods.
16. To write a MATLAB programs for pole-zero plot, amplitude, phase response and impulse response from the given transfer function of a discrete-time causal system.
17. Write a program in MATLAB to find frequency response of different types of Analog filters.
18. Write a program in MATLAB to design FIR filter (LP/HP) through Window technique
    a. Using rectangular window
    b. Using triangular window

LAB (LINEAR INTEGRATED CIRUIT)

1. To study differential amplifier configurations.
2. To measure the performance parameters of an Op amp.
3. Application of Op amp as Inverting and Non Inverting amplifier.
4. To study frequency response of an Op Amp
5. To use the Op-Amp as summing, scaling & averaging amplifier.
6. To use the Op-Amp as Instrumentation amplifier
7. Design differentiator and Integrator using Op-Amp.
8. Application of Op Amp as Log and Antilog amplifier. Design Low pass, High pass and Band pass 1st order butterworth active filters using Op Amp.

9. Design Phase shift oscillator using Op-Amp.
10. Design Wein Bridge oscillator using Op-Amp.
11. Application of Op Amp as Sawtooth wave generator.
12. Application of Op Amp as Zero Crossing detector and window detector.
13. Application of Op Amp as Schmitt Trigger.
14. Design a series regulators with an error amplifier to provide an output voltage of 5 volt at a load current of 1.5 Amp. Use a 741 Op-Amp and specify the Zener voltage necessary transistor gain and the maximum power dissipation of the transistor.
15. Design a delay circuit using 555.
16. To examine the operation of a PLL and to determine the free running frequency, the capture range and the lock in range of PLL.
17. Verification of hardware results obtained using SPICE.

LAB (DIGITAL COMMUNICATION SYSTEM)

1. Study of Time Division Multiplexing system.
2. Study of pulse code modulation and demodulation.
3. Study of delta modulation and demodulation and observe effect of slope overload.
4. Study pulse data coding techniques for various formats.
5. Data decoding techniques for various formats.
6. Study of amplitude shift keying modulator and demodulator.
7. Study of frequency shift keying modulator and demodulator.
8. Study of phase shift keying modulator and demodulator.
9. Error Detection & Correction using Hamming Code
10. Digital link simulation; error introduction & error estimation in a digital link using MATLAB (SIMULINK)/ communication simulation packages.

LAB (HARDWARE PROGRAMME & INTERFACING)

Any Eight Experiments each from Part A and Part-B

Part-A: List of Experiments using 8085/8086:

1. Study of 8085 and 8086 Microprocessor Kits.
2. Write a program to add two 8-bit number using 8085.
3. Write a program to add two 16-bit number using 8085.
4. Write a program to subtract two 8-bit number using 8085.
5. Write a program to subtract two 16-bit number using 8085.
6. Write a program to multiply two 8 bit numbers by repetitive addition method using 8085.
7. Write a program to sort series using bubble sort algorithm using 8085.
8. Write a program to copy 12 bytes of data from source to destination using 8086.
9. Write a program to find maximum and minimum from series using 8086.

10. Write a program to control the operation of stepper motor using 8085/8086 microprocessors and 8255 PPI.
11. Write a program to control speed of DC motor using 8085/8086 microprocessors and 8255 PPI.

Part-B: List of Experiments using 8051:

1. Study of 8051/8031 Micro controller kits.
2. Write a program to add two numbers lying at two memory locations and display the result.
3. Write a program for multiplication of two numbers lying at memory location and display the result.
4. Write a Program to arrange 10 numbers stored in memory location in Ascending and Descending order.
5. Write a program to show the use of INT0 and INT1.
6. Write a program of Flashing LED connected to port 1 of the Micro Controller
7. Write a program to generate a Ramp waveform using DAC with micro controller.
8. Write a program to interface the ADC.
9. Write a program to control a stepper motor in direction, speed and number of steps.
10. Write a program to control the speed of DC motor.
11. Interfacing of high power devices to Micro-controller port-lines, LED, relays and LCD display.

For Batch 2004 onwards

LAB- (ELECTRONIC DEVICES AND NETWORKS)

1. Study of Half wave, full wave & Bridge rectifiers.
2. Study of simple capacitive, T & filters
3. Study of Zener regulator.
4. To plot the input and output characteristics of CE configuration.
5. To plot the input and output characteristics of CB configuration.
6. Determination of h- parameters of a transistors using output characteristics.
7. Design of transistor biasing circuits.
8. Study of frequency response of RC coupled amplifier.
9. Study of an emitter follower circuit.
10. To plot JFET characteristics in CS configuration.
11. Study of frequency response of CS- FET amplifier.
12. Design of constant K filters.
13. Design of m- derived filters.

LAB- INSTRUMENTATION

1. Measurement of Inductance by Maxwell's Bridge.
2. Measurement of small resistance by Kelvin's Bridge.
3. Measurement of Capacitance by Schering Bridge.
4. Measurement of Frequency by Wein Bridge.
5. Measurement of medium resistance by Wheat Stone's Bridge.
6. Determination of frequency & phase angle using C.R.O.
7. To find the Q of a coil using LCR-Q meter.
8. Study of Resonance.

LAB III (OBJECT ORIENTED PROGRAMMING)

To write following programs in C / C++ :

1. Using basic statements like control statements , looping statements, various I/O statements and various data structures.
2. Creating classes in C++ for understanding of basic OOPS features.
3. Representing concepts of data hiding, function overloading and operator overloading.
4. Using memory management features and various constructors and destructors.
5. Representing Inheritance, virtual classes and polymorphism.
6. Writing generic functions.
7. File handling programs.

LAB-ANALOG ELECTRONICS

1. To study the various coupling techniques for transistor amplifiers.
2. To study the characteristics of a Class- A amplifier.
3. To study the characteristics of Class- B amplifier.
4. To study the characteristics of Class-C amplifier.
5. To study the characteristics of Class- AB amplifier.
6. To study the characteristics of Class- B push-pull amplifier.
7. To study the characteristics of complementary symmetry amplifier.
8. To study transistor series voltage regulator with current limit and observe current fold-back characteristics.
9. To study the response of RC phase shift oscillator and determine frequency of oscillation.
10. To study the response of Hartley oscillator and determine frequency of oscillation.
11. To study the response of Colpitt's oscillator and determine frequency of oscillation.
12. To study the response of Wien Bridge oscillator and determine frequency of oscillation.

LAB (DIGITAL ELECTRONICS)

1. (a) Verification of the truth tables of TTL gates, e.g., 7400, 7402,7404, 7408, 7432,7486.

   (b) Design, fabrication and testing of low frequency TTL clocks using NAND gates.

2. (a) Verification of the truth table of the Multiplexer 74150.

   (b) Verification of the truth table of the De-Multiplexer 74154.

3. Design and verification of the truth tables of half adder and full adder circuits using gates 7483.

4. Study and verification of the operations of ALU 74181 with regards to addition / subtraction / comparison.

5. Design fabrication and testing of differentiator and integrator circuits using OP AMP.

6. Design fabrication and testing of clipper and clamper circuits using OP AMP.

7. Design fabrication and testing of

(a) Monostable multivibrator of t=0.1 msec.approx.) using 74121/123. Testing for both positive and negative edge triggering, variation in pulse with and re-triggering.

(b) Free running multivibrator at 1 KHz and1 Hz using 555 with 50% duty cycle. Verify the timing from theoretical calculations. 8. Design fabricate and test a switch debouncer using 7400.

9.(a) Design and test of an S-R flip-flop using TOR/NAND gates.

(b) Verify the truth table of a J-K flip-flop (7476)

(c) Verify the truth table of a D flip-flop (7474) and study its operation in the toggle and asynchronous modes.

10. Operate the counters 7490, 7493 and 74192. Verify the frequency division at each stage. With a low frequency clock (say 1 Hz) display the count on LEDs.

11. (a) Verify the truth table of decoder driver 7447 / 7448. Hence operate a 7 segment LED display through a counter using a low frequency clock.

(b) Repeat the above with the BCD to Decimal decoder 7442 and an array of LEDs.

LAB: LINEAR CONTROL SYSTEMS

At least eight of the following experiments are to be performed :

1. To study input- output characteristics of a potentiometer and to use two potentiometers as an error detector.

2. To study transmitter- receiver characteristics of a synchro set to use the set as control component.

3. To study the operation of a d-c positional servo system and to investigate the effect of damping and supply voltage on its response.

4. To study the operation of an a.c. position servo-system and to obtain effects of supply voltage and system parameter on its transient response.

5. To design different compensation network for the given cut off frequencies and to plot frequency response of these networks.

6. To use operational amplifiers as multiplier, summer, inverter and integrator.

7. To simulate a servo-system and obtain its characteristics with the use of controllers.
8. To study control action of light control device.

9. To study details of a magnetic amplifier and to obtain input-output characterization of this amplifier.

10. To study details of a two winding a-c servometer and to obtain its T-N

characteristics.

11. To study PID- controller and to obtain the effect of proportional, integral and derivative control action.

12. To study details of an analog computer and solve a given second order differential equation using it.

13. To generate a sine-wave using a given analog computer with specified amplifier and frequency.

14. To study a stepper motor and control its direction speed and number of steps with the held of a microprocessor.

15. To obtain dynamic characteristics of a given solar cell array and to obtain the point of operation for maximum power transfer to the load.

16. To obtain T.F. of a field controlled d.c. servometer and to show its pole-zero configuration.

17. To obtain T.F. of an armature controlled d.c. servometer and to obtain its pole zero configuration.

18. To design, fabricate and to obtain characteristics of a high pass T type filter.
19. To design, fabricate and to obtain characteristics of low pass T type filter.

20. To design, fabricate and to obtain characteristics of band pass T type filter.

21. To design, fabricate and to obtain the characteristics of a composite low pass filter.

22. To design, fabricate and to obtain the characteristics of a composite high pass filter.

23. To design, fabricate and to obtain the characteristics of composite band pass filter.

LAB- ANALOG COMMUNICATION SYSTEMS

1. To obtain Amplitude modulated Envelop and determine depth of modulation
2. To study envelop detector for demodulation of AM signal and observe diagonal peak clipping effect.
3. Frequency modulation using voltage controlled oscillator.
4. Generation of DSB-SC signal using balanced modulator.
5. Generation of single side band signal
6. To generate a FM Signal and measure Depth of modulation.
7. Detection of FM Signal using PLL.
8. To Study Super heterodyne AM receiver and measurement of receiver parameters viz. sensitivity, selectivity & fidelity.
9. Familiarisation of PLL, measurement of lock and capture range, frequency demodulation, frequency multiplier using PLL.
10. Sampling Theorem & Reconstruction of Signal from its lsamples using Natural Sampling, Flat Top Sampling & Sample & Hold Circuits.
11. To study the circuit of PAM modulator & Demodulator
12. To study the circuit of PWM modulator & Demodulator
13. To study the circuit of PPM modulator & Demodulator

LAB : LINEAR INTEGRATED CIRUIT

1. To study differential amplifier configurations.
2. To measure the performance parameters of an Op amp.
3. Application of Op amp as Inverting and Non Inverting amplifier.
4. To study frequency response of an Op Amp
5. To use the Op-Amp as summing, scaling & averaging amplifier.
6. To use the Op-Amp as Instrumentation amplifier
7. Design differentiator and Integrator using Op-Amp.
8. Application of Op Amp as Log and Antilog amplifier
9. Design Low pass, High pass and Band pass 1^{st} order butterworth active filters using Op Amp.
10. Design Phase shift oscillator using Op-Amp.
11. Design Wein Bridge oscillator using Op-Amp.
12. Application of Op Amp as Sawtooth wave generator.
13. Application of Op Amp as Zero Crossing detector and window detector.
14. Application of Op Amp as Schmitt Trigger.
15. Design a series regulators with an error amplifier to provide an output voltage of 5 volt at a load current of 1.5 Amp. Use a 741 Op-Amp and specify the Zener voltage necessary transistor gain and the maximum power dissipation of the transistor.
16. Design a delay circuit using 555.

17. To examine the operation of a PLL and to determine the free running frequency, the capture range and the lock in range of PLL.

Lab : Microprocessor Lab.

1. Study of 8085 Microprocessor Kit.
2. Write a program to add two 8-bit number using 8085 .
3. Write a program to add two 16-bit number using 8085 .
4. Write a program to subtract two 8-bit number using 8085 .
5. Write a program to subtract two 16-bit number using 8085 .
6. Write a program to multiply two 8 bit numbers by repetitive addition method using 8085.
7. Write a program to multiply two 8 bit numbers by rotation method using 8085
8. Write a program to multiply 16-bit number with 8-bit number using 8085.
9. Write a program to generate fibonacci series using 8085.
10. Write a program to sort series using bubble sort algorithm using 8085.
11. Study 8086 Microprocessor kit
12. Write a program to copy 12 bytes of data from source to destination using 8086.
13. Write a program to find maximum and minimum from series using 8086.
14. Write a program to control the operation of stepper motor using 8085/8086 microprocessors and 8255 PPI.
15. Write a program for finding square of a number using look-up table and verify.
16. Write a program to control the temperature using 8085/8086 microprocessors and 8255 PPI.
17. Write a program to control the traffic light system using 8085/8086 microprocessors and 8255 PPI.
18. Write a program to control speed of DC motor using 8085/8086 microprocessors and 8255 PPI.

LAB : MICROWAVE ENGINEERING

1. Study of microwave components and instruments.
2. Measurement of crystal characteristics and proof of the square law characteristics of the diode.
3. Measurement of klystron characteristics. 4. Measurement of VSWR and standing wave ratio.
4. Measurement of Dielectric constants.
5. Measurement of Directivity and coupling coefficient of a directional coupler.
6. Measurement of Q of a cavity.
7. Calibration of the attenuation constant of an attenuator.
8. Determination of the radiation characteristics and gain of an antenna.
9. Determination of the phase-shift of a phase shifter.
10. Determination of the standing wave pattern on a transmission line and finding the length and position of the short circuited stub.

LAB: DIGITAL COMMUNICATION

1. Study of Time Division Multiplexing system.
2. Study of pulse code modulation and demodulation.
3. Study of delta modulation and demodulation and observe effect of slope overload.
4. Study pulse data coding techniques for various formats.
5. Data decoding techniques for various formats.
6. Study of amplitude shift keying modulator and demodulator.
7. Study of frequency shift keying modulator and demodulator.

8. Study of phase shift keying modulator and demodulator.

9. Error Detection & Correction using Hamming Code
10. Digital link simulation; error introduction & error estimation in a digital link using MATLAB (SIMULINK)/ComSim.

LAB: MICRO CONTROLLER

1. Study of 8051/8031 Micro controller kits.
2. Write a program to add two numbers lying at two memory locations and display the result.
3. Write a program for multiplication of two numbers lying at memory location and display the result.
4. Write a program to check a number for being ODD or EVEN and show the result on display.
5. Write a program to split a byte in two nibbles and show the two nibbles on display.
6. Write a Program to arrange 10 numbers stored in memory location in Ascending and Descending order.
7. Write a program to find a factorial of a given number.
8. Study of Interrupt structure of 8051/8031 micro controllers.
9. Write a program to show the use of INT0 and INT1.
10. Write a program of Flashing LED connected to port 1 of the Micro Controller
11. Write a program to generate a Ramp waveform using DAC with micro controller.
12. Write a program to interface the ADC.
13. Write a program to control a stepper motor in direction, speed and number of steps.
14. Write a program to control the speed of DC motor.
15. Interfacing of high power devices to Micro-controller port-lines, LED, relays and LCD display.

LAB : DIGITAL SIGNAL PROCESSING USING MATLAB™

Perform the following excercises using MATLAB™

1. To develop elementary signal function modules (m-files) for unit sample, unit step, exponential and unit ramp sequences.
2. To develop program modules based on operation on sequences like signal shifting, signal folding, signal addition and signal multiplication.
3. To develop program for discrete convolution and correlation .
4. To develop program for finding response of the LTI system described by the difference equation.
5. To develop program for computing inverse Z-transform.
6. To develop program for finding magnitude and phase response of LTI system described by system function H(z).
7. To develop program for computing DFT and IDFT .
8. To develop program for computing circular convolution.
9. To develop program for conversion of direct form realization to cascade form realization.
10. To develop program for cascade realization of IIR and FIR filters.
11. To develop program for designing FIR filter.
12. To develop program for designing IIR filter.

LAB (VLSI DESIGN)

Combinational Design Exercises

1. Design of Gates
a. Design of AND gate
b. Design of OR gate
c. Design of XOR gate
2. Design of XOR gate using other basic gates
3. Design of 2:1 Mux using other basic gates
4. Design of 2 to 4 Decoder
5. Design of Half-Adder, Full Adder, Half Substract or, Full Substractor
6. Design of 3:8 Decodre

7. Design of 8:3 Priority Encoder
8. Design of 4 Bit Binary to Grey code Converter
9. Design of 4 Bit Binary to BCD Converter using sequential statement
10. Design an 8 Bit parity generator (with for loop and Generic statements)
11. Design of 2,s Complementer for 8-bit Binary number using Generate statements

Sequential Design Exercises

12. Design of all type of Flip-Flops using (if-then-else) Sequential Constructs
13. Design of 8-Bit Shift Register with shift Right, Rhisft Left, Load and Synchronous reset.
14. Design of Synchronous 8-bit Johnson Counter.
15. Design of Synchronous 8-Bit universal shift register (parallel-in, parallel-out) with 3- state output (IC 74299)
16. Design of 4 Bit Binary to BCD Converter using sequential statement.
17. Design
a. Mod 3 Counter
b. Mod 5 Counter
c. Mod 7 Counter
d. Mod 8 Counter
e. Mod 16 counter
f. 4 Bit Johnson counter
18. Design a decimal up/down counter that counts up from 00 to 99 or down from 99 to 00.
19. Design 3-line to 8-line decoder with address latch
20. Design of ALU