Unit-1

1) Explain Digital signal with diagram.

2) Explain Basic and Universal gates with the help of truth table and symbols.

3) Explain Exclusive -OR and Exclusive - NOR gate

4) What is Number System and explain their types.

5) Explain Binary-to-Decimal and Decimal-to-Binary Conversion.

6) Explain 1's complement and o's complement along with example..

7) Explain Binary Arithmetic with their operation. Addition Subtraction, Multiplication, Division

8) Explain Octal-to-Decimal, Decimal-to-Octal, Octal to Binary and Binary to Octal. Explain application of octal number system.

9) What is code and explain their types.

i) Straight Binary Code ii) Natural BCD code

iii) Excess-3 code iv) Gray code

v) Hexadecimal code. vi) Octal cade

vii) Alphanumeric Code

10) Explain the Error Detecting and error-correcting. Code.

11) What is Hamming code and explain it with an example.

Unit-2

1) Write a short note on combinational circuit..

2) Explain KARNAUGH-MAP representation of logic function

3) Explain don't care condition.

4) Explain Half-Adder and full-adder

5 Explain Half-Subtractor and Full-Subtractor.

6) Explain BCD to 7-segment Decoder.

7) Write a short note on Encoder.

8) Write a short note on Multiplexer.

9) Explain Demultiplexer.

10) Explain BCD-adder with diagram.

11) Explain BCD-subtractor with diagram.

12) Explain Arithmetic Logic Unit (ALU)

Unit-3

1) Explain sequential circuit.

2) Explain 1-Bit memory cell.

3) Explain Clock-SR Flip Flop and also explain application of flip flop.

4) Explain JKT-Flipflop.

5) Explain D-type Flip Flop.

6) Explain Shift Register

7) Explain application of shift Register. (ii) Parallel to serial

i) serial to parallel ii) Ring Counter (iv) Sequence Counter

8) Write a short note on Asynchronous Counter (Ripple).

9) Write a short note on Synchronous Counter (Ripple).

Unit-4

1) Explain ideal microprocessor with diagram.

2) Differentiate between 8-bit microprocessor and 16-bit microprocessor.

3) Explain the data bus.

4) Explain address bus and control bus.

5) Explain the program counter of microprocessor.

6) Write a short note on stack pointer and flag.

7) Explain the 8086 microprocessor architecture.

Unit-5

1) What is memory interface and Ilo interface?

2) Write a short note direct memory access.

3) Explain interrupts in 8086 microprocessor.

4) what is direct and indirect addressing made?

5) Explain relative and index addressing mode.

6) What is data transfer instructions?

7) Explain bit inherent and bit direct addressing mode.

8) Explain arithmetic and logical instruction.

9) Explain branch instruction and subroutine instruction.

10) Explain bit manipulation instruction.

11) Write a short note on assembler and compiler.

12) What is programming and debugging tools.?

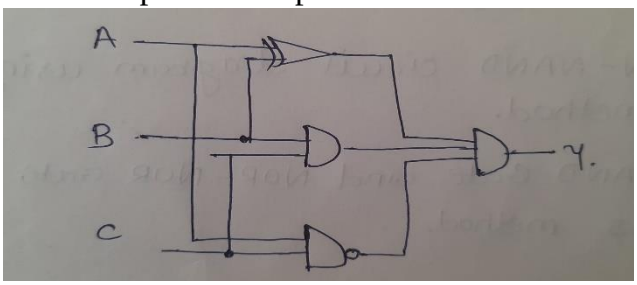
Unit 2

(1 Marks)

1. What are the types of Adder?
2. What is Arthmetic Logic Unit (ALU)?

(2 Marks)

3. How many boolean functions can be defined on n input variables ?
4. Define sum-of-Product (sop) method.
5. Define Product-of- Sum (pos) method.
6. Draw NAN-NAND cituit diagram using sop maethod.
7. Draw OR- AND Gate and NOR-NOR Gate using Pos method.
8. Write a sum--of-products representation of the following circuit.



9. What are the universal gates ?
10. What is Multiplexes & Give an example.
11. What are the Multiplexer's uses in Combinational logic DESIGN.
12. What are the Standard Ic's. multiplexers. ?
13. What is De-Multiplexes ? Give an example.
14. Draw the block diagram of Demultiplexer.
15. Explain the BCD Adder.
16. Draw the labelled diagram of One bit BCD Adder.
17. BCD Adder.
    a) 25+17
    b) 30+65
    c) 14+12
18. Explain the BCD substractor.
19. Draw the labelled diagram of one bit BCD Substractor of one bit BED Subtractor
20. BCD substractor.
    a. 58-32

b. 15-17
c. 6-9

21. Write the procedural steps for the design of combinational circuits.

22. Draw One to two- demultiplexer circuit

23. Draw two to one-multiplexes, circuit.

24. Draw a parity checker circuit for 3 bit binary word X1 X2 X3.

25. Define Parity Generators.

26. Make a 9-bit odd parity checker using single 74180 and an inverter.

(3 Marks)

1. What are the Standard representation for logic functions & Explain in details. Write each example.
2. Given the logic eqn.

   Y= (A + CB) (A+ overline A C)

   Draw a circuit using gates to realise the funct?
3. Find out whether it is possible to design the crecuit with only one type of gates. If yes, draw the circuits (in above example).
4. Convert following equations into canonical pos form
   a) Y=(A+B)(A+C)(B+C)
   b) Y= (A + B + C) (A+B+C)(A+B+C)
5. Draw k-map representation of logic funct of sop method.

   y= sum(1,3,6,8).

6. Draw K-map representation of logic function?.

   y= pi (2,4,5,9,11).

7. Representation of Truth Table on k- map using 3-variables. and find sop and pos equation.
8. What is combinational Circuit & Give an example
9. Draw the block diagram of Digital Multiplexer and Explain it.
10. Draw a combinationed logic circuit which can compare whether two bit binary numbers are Same or not.
11. Draw the black diagram of Multiplexer with Strobe Input Using NAND gates.

12. Implement the expression using al multiplexes.

F(A,B,C,D)=sum m(0,1,2,5,6,7,10,13)

13. Realise the logic function of 16-bits truth table, into 4-variable Truth table using 8:1 multiplexer.
14. . Draw the labelled diagram of 74181 ALU and Explain it
15. Draw a block diagram of 74180 Parity Generator.
16. Make a 16-bit even parity checker using two 74180s

(4 Marks)

17. Convert following Equations into canonical SOP form.
    a) Y=AB + AC +BC
    b) Y=AB + AC + BC
    c) Y=ABC +AB +BC
    d) Y=AB +BC AV
18. Implement the following multi-output combinational logic circuit using a 4 to 16-line decoder

F1 = Em(0, 1, 2, 3, 7, 9, 13, 14).

f2 = Em (2, 4, 6, 10, 12)

f3= Em (4, 5, 10, 13, 14).

19. Realise the functions of four variates using.

a) 8:1 multiplexes.

b) 16:1 multiplexers.

20. Design an 8-bit adder and substractor uing 7418 is in cascade. Show how it works if

a) A = 27 and B = 94

b) A = 54 and B = 15

(5 Marks)

15. Draw a combinational logic circuit of an eight input multiplexor where the inputs.

(D7, D6, D5, D4, D3, D2, D_1, Do).

Unit 3

(2 Marks)

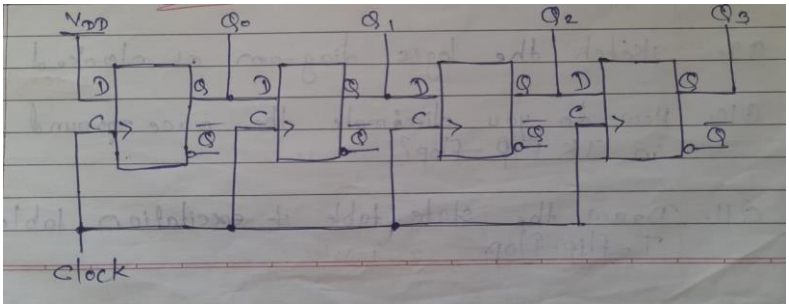
01. Mention Difference between the edge triggering & level triggering.
02. Write the characteristic equation of a JK flip-flop.
03. State difference between Moore & Mealy state machine.
04. How many flip-flop are required to builds binary counter that counts from 0 to 1023?
05. sketch the logic diagram of clocked SR-FF.
06. Draw the state table & excitation table of T-flip-flop.
07. Draw the block diagram for Moore model.
08. Write a Verilog model of full subtractor circuit.
09. Define latch.

(3 Marks)

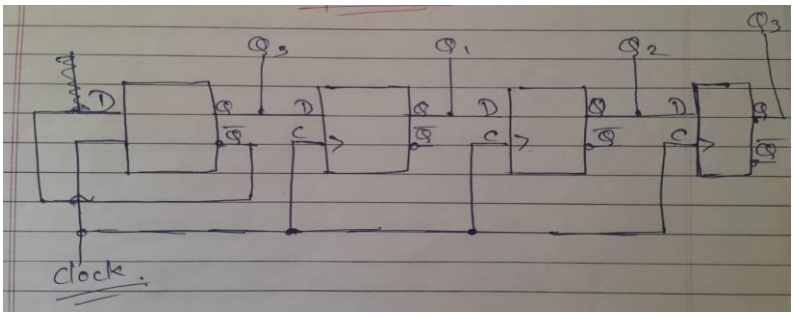
1. What is meant by programmable counter?. Mention it's application ?
2. Realise T-Flip-Flop from JK- flip-flop.
3. Convert JK-Flip-flop to T- flip-flop. B-Marks.
4. How do you eliminate the ground condition in Jk flip-flop?
5. A 4-bit binary ripple counter is operated with clock Frequency of 1kHz. What is the output Frequency of its third flip-flop?
6. Realize Jk flip-flop usind D flip-flop.
7. Design 3- input AND gate using verilog.

(4 Marks)

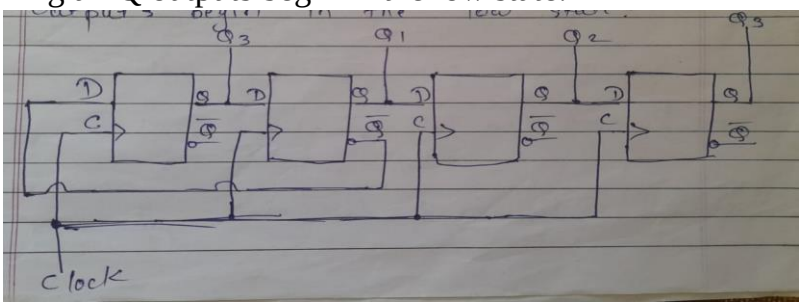
1. Compare the logic of synchronous counter & ripple counter.
2. Write the VHDL code for half adder.
3. Design a 3-bit ring counter and find the mod of designed counter.
4. Write short note on Digital clock.
5. Complete the timing diagram for this circuit, assuming all Q outputs begin in the low state.



6. What is the definition of a register in the context of digital circuitry ? Also, define and compare / contrast what is shift register is?
7. Complete the timing diagram, For this circuit assuming all Q output begin in the low state:



8. Complete the timing diagram for this circuit, showing propagation delays for all Flip-flops (delay time much less than the width of the clock pulse), assumming all Q outputs begin in the low state.



9. Explain the difference between serial digit dada and parallel digit data.