MODEL PAPER

B.Sc (Three year) Degree Examinations.

SEMISTER-III ELECTRONICS

Paper-III DIGITAL ELECTRONICS

Time: 3 Hrs   MaxMarks:75

PART-A

Answer any FIVE Questions   5x5 =25Marks.

1. (a) Convert ($3A.2F)_{16}$ in to decimal.
   (b) Convert ($1011.111)_2$ to Octal.

2. Give NOR gate implementation for OR,AND and NOT gates?
3. Simplify the Boolean expressions.

$$\text{(i) } Y = A\,B\,C + A\,\overline{B} + A\,B\,\overline{C}$$

$$\text{(ii) } Y = A\,C\,D + \overline{A}\,B\,C\,D$$

4. Discuss the working of parallel Binary Adder?
5. Explain the working of a 4 : 1 line multiplexer with the help of logic diagram?
6. Describe the working of D Flip-Flop. How it is obtained from the JK Flip-Flop?
7. Draw the logic diagram for 4-bit SIPO shift register and explain its working?
8. How does the architecture of PLA differ from PAL and PROM?

PART-B

Answer ALL Questions   10X5 =50marks.

9. a) Discuss in detail about Binary, Decimal and Hexadecimal number systems. What are the avantages of Decimal and Hex systems over Binary?

(OR)

   b) What is Gray code. Write Gray code for any 4-bit binary number. Give the advantage of Gray code over binary System.

10. a) Discuss about the postulates and theorems of Boolean Algebra?

(OR)

   b) Reduce the following expression using K-map and implement in universal logic? $\sum m(0,1,4,5,6,7,9,11,15)+d(10,14)$

11. a) Explain the working of Half adder and Full adder with the help of logic diagrams and truth tables?   (OR)

   b) Explain the working of TTL NAND gate and CMOS NOR gate?

12. a) Explain the working of Master – Slave JK Flip-Flop .How Race Condition is eliminated in it?

(OR)

   b) With the help of logic diagram explain the working of 3- bit asynchronous UP/DOWN Counter?

13. a) Draw the Block diagram of PLA and explain about each stage?

(OR)

   b) A 3-input,4-output combinational circuit has the following output functions. Implement the Circuit
   $A(x,y,z)=\sum m(1,2,4,6)$ $B(x,y,z)=\sum m(0,1,3,6,7)$ $C(x,y,z)=)=\sum m(1,2,4,6,7)$
   $D(x,y,z)= \sum m(1,2,3,5,7)$

B.Sc (Three year) Degree Examinations.

SEMISTER-IV ELECTRONICS

Paper-IV ANALOG& DIGITAL I.C APPLICATIONS

Time: 3 Hrs   MaxMarks:75

PART-A

Answer any FIVE Questions   5x5=25Marks.

1.Explain the concept of virtual ground in OP-AMP?

2.Define slew rate of OP-AMP and derive slew rate expression for sinusoidal input?

3.Describe the working of inverting comparator using OP-AMP?

4.Draw OP-AMP Integrater circuit and explain how it works?

5.With the help of logic diagram explain about Binary-to-Gray code converter?

6.Explain the working of 4-bit synchronous counter and give its timing diagram?

7.Write about the specifications that help in selecting an A/D converter?

8.Explain how a shift register can be used as an UART?

PART-B

Answer ALL Questions   10X5 =50 marks.

9.a)With a neat circuit diagram explain the working of R-2R ladder type D/A converter?

(OR)

b)Give a detailed explanation on the working of successive approximation A/D converter?

10.a)Draw the OP-AMP inverting & non-inverting amplifier configurations.Explain their

working and obtain expressions for gain?

(OR)

b)Draw the pin diagram of IC555 timer and explain function of each pin?

11.a)Give the circuit for OP-AMP triangular wave form generator.Explain its operation and

obtain expression for frequency of triangular output?

(OR)

b)Describe the working of IC555 in Astable mode. Obtain expression for frequency of

oscillations?

12.a)Design Binary-to-BCD code converter using K-map reduction method. Give its logic

   diagram?

(OR)

b)With the help of J-K FF excitation table, design a synchronous Mod-5 counter?

13.a)With simplified logic diagram describe the operation of Digital clock?

(OR)

b)Explain how shift register works as serial to parallel and parallel to serial converter?

B.Sc- ELECTRONICS PRACTICALS

SCHEME OF VALUATION FOR ALL SEMESTERS

1.Principle/Statement --------------------------------2marks
2.Circuit diagram with component labelling-------5marks
3.Tabularform/Formula/Modelgraph----------------
6marks(3+2+1)
4.Observations---12marks
5.Calculations/Graph/Result------------------------
10marks(5+3+2)
6.Viva--5marks
7.Record---10marks
                              TOTAL= 50marks