

Duration: 3hrs

Total Marks: 80

- Note:**
1. Q. no. 1 is compulsory
 2. Solve any three questions from the rest
 3. Make suitable assumptions wherever applicable

Q. no. 1. Answer any four

(20)

- a. Draw the diagram of a three input AND gate and write the truth table and logic expression.
- b. Convert $(247)_{10}$ in to octal and Hex equivalent.
- c. Explain what DCTL logic family is?
- d. Realize a half adder logic circuit using gates.
- e. What is a latch? Explain.

Q. No. 2.

- a. Perform the following subtraction using 2's complement method. **(10)**
 - i. $01000-01001$
 - ii. $01100-00011$
- b. Write short note on characteristics of digital IC. **(10)**

Q.No.3

- a. Explain the TTL logic with the help of TTL NAND gate realization. **(10)**
- b. Minimize the four variable logic function using K map **(10)**
 $f(A,B,C,D)=AB\bar{C}D + \bar{A}BCD + \bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}\bar{D} + A\bar{C} + A\bar{B}C + \bar{B}$

Q. No. 4.

- a. Minimize the following logic function and realize using NAND and NOR gate **(10)**
 $f(A,B,C)=\sum m(0,1,4,6,8)$
- b. Design a 6 bits binary to BCD converter using multiplexer. **(10)**

Q. No. 5

- a. Write short note on J-K master slave Flip flop. **(10)**
- b. Design a three bits asynchronous binary counter using flip flop. **(10)**

Q. No. 6

(20)

Write short not on **any 2**

- i. A 3 bit R-2R D/A converter
- ii. Dual slope A/D converter
- iii. Classification of memory
