

Total No. of Questions : 8]

SEAT No. :

P-9701

[Total No. of Pages : 2

[6179]-244A

S.E. (Computer Engineering)

DIGITAL ELECTRONICS AND LOGIC DESIGN

(2019 Pattern) (Semester - III) (210245)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Assume suitable data, if necessary.

Q1) a) What are the advantages of M S JK flip flop? Explain the working of MS J-K flip flop in detail. [6]

b) State different types of shift registers. Give its applications. [6]

c) Draw and explain 3-bit asynchronous down counter using JK flip flop. Also draw the necessary timing diagram. [6]

OR

Q2) a) Compare synchronous and Asynchronous counter. [6]

b) Explain how JK flip is converted into. [6]

i) D FF

ii) T FF

c) Write short note on Ring counter. [6]

Q3) a) Draw and explain the general structure of PLA. [6]

b) Implement following Boolean function using PAL [6]

$$F(A, B, C, D) = \sum m(0, 1, 3, 15)$$

c) Draw the state diagram, state table, and ASM chart for a 2-bit binary counter having one enable line E such that E = 1 counting enabled and E = 0 counting disabled. [5]

OR

P.T.O.

- Q4)** a) What is an ASM Chart? Name the elements of an ASM chart and define each of them. [6]  
b) Implement BCD to Ex-3 code converter using PAL. [6]  
c) What is the difference between PAL and PLA. [5]

- Q5)** a) With the help of a neat diagram, explain the working of two - input TTL NAND gate. [6]  
b) Define the following terms and mention the standard values for TTL logic Family. [6]  
i) Power dissipation  
ii) Noise margin  
iii) Propagation Delay  
c) Draw and explain the circuit diagram of CMOS inverter. [6]

OR

- Q6)** a) Compare TTL and CMOS logic family. [6]  
b) What is logic family? Give the classification of logic family and also write important characteristics of CMOS. [6]  
c) Explain the wired logic output of TTL with neat diagram. [6]

- Q7)** a) What is system bus? Draw microprocessor bus structure and explain in brief. [6]  
b) Write a short note on following with respect to microprocessor. [6]  
i) Address Bus  
ii) Data Bus  
iii) Control Bus  
c) Explain the Memory organization of the microprocessor. [5]

OR

- Q8)** a) What is microprocessor? List different applications of microprocessor. [6]  
b) Write a short note on ALU IC 74181. [6]  
c) With the help of a block diagram explain the fundamental units of a microprocessor. [5]

\*\*\*