Total No. of Questions : 8]

SEAT No. :

PB4531

[Total No. of Pages :3

[6261]-44
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) ***Answers Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8.***
2) ***Neat diagrams must be draw wherever necessary.***
3) ***Assume Suitable data if necessary.***

Q1) a) What are the applications of Flip-Flop? Explain shift register. **[6]**

b) Design a sequence generator to generate the sequence. **[6]**
.....1, 3, 5, 7, 1.....

c) Desgin the 2-bit synchronous UP counter using T - F/F. **[6]**

OR

Q2) a) Explain S-R Flip-Flop and J-K Flip Flop using NOR gate. **[6]**

b) Convert the following Flip Flops **[6]**
i) D to T
ii) Jk to D

c) Draw and explain 4 bit Ripple down Counter. **[6]**

Q3) a) Implement the following Boolem function using PAL. **[6]**
$F1 = \sum m(0,3,5,7,9,10,11,14,15)$
$F2 = \sum m(2,3,12,14)$

b) Draw block diagram of PLA device and explain in detail. **[6]**

c) What is ASM chart? Design ASM chart for 3-Bit gray code sequence with up-down conditions. **[5]**

OR

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Q4) a) Implement gray to binary code using PLA. **[6]**

b) Implement the following Boolean functions using PAL **[6]**

$X1(A, B, C, D) = \sum m(0,2,6,7,8,9,12,13)$

$X2(A, B, C, D) = \sum m(3,6,7,11,14,15)$

c) What is ASM Chart? State & Explain basic components of ASM chart. Also explain the salient features of ASM chart **[5]**

Q5) a) Draw and explain the operation of TTL NAND gate using 2-bit input. **[6]**

b) Explain with a neat diagram CMOS NAND gate **[6]**

c) Define the following terms and mention its standard value for TTL logic family. **[6]**

i) Noise immunity
ii) Power Dissipation
iii) Figure of Merit

OR

Q6) a) Draw and explain CMOS invertor. **[6]**

b) Explain TTL open collector. **[6]**

c) Compare CMOS and TTL logic family. **[6]**

Q7) a) For memory operations draw digital circuits using ALU and shift registes. **[6]**

b) What is Microprocessor? List different applications of Microprocessor. **[6]**

c) What are the different types of buses used in Microprocessor? **[5]**

OR

Q8) a) Explain in brief basic arithmetic operations using ALU IC 74181. **[6]**

b) Write a short note on **[6]**

i) Address Bus

ii) Data Bus

iii) Control Bus

c) Write a short note on Memory organization of Microprocessor. **[5]**