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Total No. of Pages: 02
Total No. of Questions: 09

B. Tech.(CSE)(IT) (Sem.-3rd)
DIGITAL CIRCUITS AND LOGIC DESIGN
Subject Code: CS-205
Paper ID: [A0453]

Time: 3 Hrs.

Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:

1. *SECTION - A is Compulsory consisting of TEN questions carrying TWO marks each.*
2. *SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.*
3. *SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions*

SECTION-A

(10x2=20)

1.
 - a) What is FPGA?
 - b) Realize AND gate using NOR gates only.
 - c) Define 1's and 2's complements.
 - d) Differentiate between synchronous and asynchronous counters.
 - e) Name three types of TTL gates?
 - f) Which flip flop is preferred for data transfer?
 - g) What is a ring counter?
 - h) What is the difference between Moore and Mealy machine?
 - i) Why we need shift registers?
 - j) Convert 33333 into hexadecimal numbers.

SECTION-B

(4x5=20)

2. Explain the working of master slave JK flip flop.
3. Design a mod-6 up counter.
4. What is a Multiplexer Tree? Why is it needed? Draw the block diagram of a 32:1 Multiplexer Tree and explain how input is directed to the output in this system.
5. State and prove De Morgan's theorem.
6. Draw and explain the operation of TTL inverter.

SECTION – C

(2x10=20)

7. a) Explain working of three state TTL.
b) Write the expression for Boolean function
 $F(A, B, C): \sum m(1, 4, 5, 6, 7)$ in standard POS form.
8. a) Differentiate between static MOS and Dynamic MOS RAM. Draw the circuit of a static MOS RAM cell and explain its working.
b) Explain the difference in operation of a monostable and a stable multi vibrator?
9. a) What is a BCD code? What are its advantages and disadvantages?
b) Prove that if $A + B = A + C$ and $A' + B = A' + C$, then $B = C$.

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