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B.E. Semester III EXAMINATION (November-2024)

Subject Code: CT304-N **Subject Name: Digital Electronics**
Date: 16/11/2024 **Time:12.30 to 3.30 PM** **Total Marks: 70 Marks**

Instructions:
1. **All questions are compulsory.**
2. **Figures to the right indicate full marks.**
3. **Use of scientific calculator is permitted.**
4. **Indicate clearly, the options you attempt along with its respective question number.**
5. **Use the last page of main supplementary for rough work.**

Section-I

Q:1 Attempt Following.

(A) Explain D'Morgan's theorems in detail. [5]
(B) Explain Excess-3 code in detail. [5]
(C) Convert octal 623.77 to decimal, binary and hexadecimal. [5]

OR

Q:1 (C) Convert hexadecimal 2AC5.D to decimal and octal. [5]

Q:2 Answer the following question.

(A) Write a short note about Full adder. [5]
(B) Write a short note about Multiplexer. [5]

OR

Q:2 (A) Write a short note about Magnitude comparator. [5]
(B) Write a short note about decoder. [5]

Q:3 Answer the following question.

(A) Write down a short note about 3 variable k-map using one example. [5]
(B) Implement following Boolean function using only AND and NOT gates. [5]
(1) F=x'z'+y'z'+yz'+xyz

OR

Q:3 (A) Perform binary subtraction with the following binary numbers using 1's and 2's complement. (a) 11010-1101. [5]
(B) Explain NAND gate as universal gate. [5]

P.T.O

Section II

Q:4 Attempt following.

(A) Explain difference between combinational circuits and sequential circuits. [5]

(B) Write down a short note about T flip flop. [5]

(C) Write down a short note about SR flip-flop. [5]

OR

Q:4 (C) Write a short note about 4 bit binary ripple counter. [5]

Q:5 Answer the following question.

(A) Write down a short note about PLA. [5]

(B) Explain the Moore model of the state diagram. [5]

OR

Q:5 (A) What is ROM? Explain types of ROM memory. [5]

(B) Write a short note about bidirectional shift register with neat diagram. [5]

Q:6 Answer the following question.

(A) Write a short note about flash ADC. [5]

(B) Write a short note about R-2R ladder type DAC. [5]

OR

Q:6 (A) Enlist the Specifications of the Digital to Analog Converters (DAC). [5]

(B) Write a short note on Dual slop type Analog to Digital Converters (ADC). [5]