

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III(OLD) EXAMINATION – SUMMER 2019

Subject Code: 130701

Date: 01/06/2019

Subject Name: Digital Logic Design

Time: 02:30 PM TO 05:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a)  $(ADD)_{16} = ( \quad )_{10} = ( \quad )_8 = ( \quad )_4 = ( \quad )_2 = ( \quad )_{\text{binary}} = ( \quad )_{\text{gray}}$  07  
(b) What is the significance of a Karnaugh map for solving combinational circuits? 07  
Solve  $f(a,b,c,d) = (5,7,12,13,14,15)$  using a K map
- Q.2** (a) Explain the  $(r-1)$ 's complement method of operation using example 07  
(b) Discuss canonical and standard form of representation. 07
- OR**
- (b) What is positive and negative logic? Give one example of each. 07
- Q.3** (a) Use NOR gate as a universal gate and construct all basic gates from it. 07  
(b) Construct a Full Adder from a Half Adder. 07
- OR**
- Q.3** (a) Use NAND gate as a universal gate and construct all basic gates from it. 07  
(b) Implement a binary to Gray converter. State its significance. 07
- Q.4** (a) How does an encoder circuit work? Explain in terms of symbol, block diagram and truth table. 07  
(b) Write a short note on Arithmetic, Logic and Shift operations. 07
- OR**
- Q.4** (a) How does a multiplexer circuit work? Explain in terms of symbol, block diagram and truth table. 07  
(b) Show the working of Shift Register using symbol, block diagram and truth table. 07
- Q.5** (a) What is a PLA circuit? Explain in details about it. 07  
(b) Explain about any one Flip Flop circuit using its symbol, block diagram, truth table and characteristics equation. 07
- OR**
- Q.5** (a) Explain about a synchronous counter using 3 bits. 07  
(b) Classify memories. Describe in details about any one type. 07

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