Roll No. .....

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BE (3<sup>rd</sup> Semester) Examination, Nov.-Dec., 2017

(New Scheme)

## Digital Electronics and Logic Design

Time Allowed: 3 hours

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Maximum Marks: 80

Minimum Pass Marks: 28

Note: (i) Part (a) of each question is compulsory. Attempt any two parts from (b), (c) and (d) of each question. Answer should be brief and to the point.

(ii) The figures in the right-hand margin indicate marks.

1. (a) Why is gray code used in K-map?

[2]

(b) A seven-bit Hamming code is received IS 0010001. Assuming that even parity has been used, check of it is correct, if not, find the correct code.

[7]

[7]

(c) Simplify the logical expression, using K-map  $F = \prod M (0, 2, 5, 7, 8, 10, 13, 15)$ 

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TC-267

(Turn Over)

(d)	Simplify the following Boolean expression, using Quine-McCluskey method:	[7]
	$F(A, B, C, D, E, F) = \Sigma M(20, 28, 52, 60)$	•
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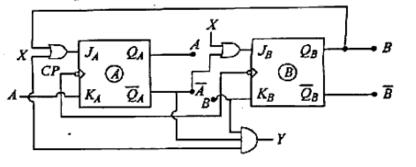
- 2. (a) What do you mean by Fan-In? [2]
  - Explain the characteristics of digital IC's. [7]
  - (c) Explain the Schottky TTL. [7]
  - (d) Draw the circuit of an C-MOS and explain its operation. [7]
- 3. (a) What is the difference between binary arithmetic and Boolean algebra addition? [2]
  - (b) What do you mean by code converter? Explain binary to BCD conversion. [7]
  - (c) Implement the following Boolean function, using 8:1 MUX: [7]  $F(A, B, C, D) = \sum M(0, 1, 3, 4, 8, 9, 15)$ 
    - () Explain hook-ahead carry adder. [7]
- (a) What is the difference between combinational and sequential circuit? [2]
  - (b) Convert the R-S flip-flop to J-K flip-flop. [7]
  - (c) Design a synchronous gray mod-6 counter. [7]
  - (d) Design a counter by using T flip-flop with an irregular binary count sequence of 1, 2, 5, 7. [7]
- 5. (a) What is the difference between Mealy and Moore machine? [2]

(b) A combinational circuit is defined by the function

$$F_1 = \sum m(1, 5, 7)$$
  
 $F_2 = \sum m(5, 6, 7)$ 

implement the circuit with a PLA.

- (c) Design a Moore sequential machine and perform analysis of these circuit.
- (d) Find the type of circuit and analysis the procedure perform these synchronous sequential circuit.



[7]

[7]

[7]

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