

Exam. Code: 0929
Sub. Code: 6913

1078
B. Engg. (Electronics & Comm. Engg.)
5th Semester
EC-505: Digital System Design

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Q. No. 1 which is compulsory and selecting atleast two questions from each Unit.

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I. Attempt the following: -

- What are the limitations of K-map?
- Which rows and columns can be removed while drawing the reduced prime implicant chart?
- How are Hamming code works formed?
- What are distinguishable states?
- What are the limitations of path-sensitizing fault-detection method? (5×2)

UNIT-I

II. (a) Reduce the following expression to the simplest possible POS form:

$$f = \sum m(6,9,13,18,19,25,27,29,31) + d(2,3,11,15,17,24,28)$$

(b) Obtain the prime implicants of the following expression using tabular iterative-consensus method:

$$f = \overline{A}B\overline{C}D + \overline{A}BCD + A\overline{B}\overline{C}D + A\overline{B}CD + \overline{A}BC\overline{D} + \overline{A}BCD + AB\overline{C}D + ABC\overline{D} \quad (5+5)$$

III. Minimize the following multiple output functions using tabulation method:

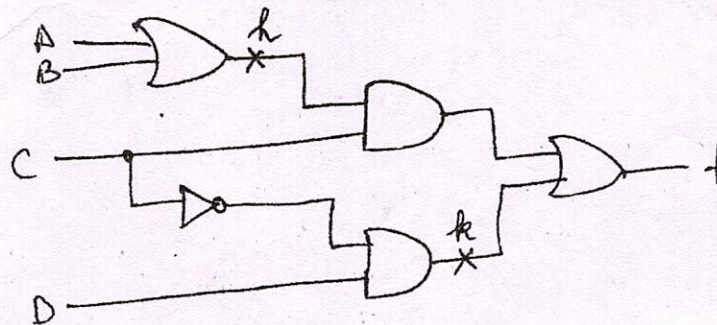
$$F_1 = \sum m(1,2,5,6,8,9,10)$$

$$F_2 = \sum m(2,4,6,8,10,12,15)$$

(10)

IV. (a) Given the 8-bit data word 10111001, generate 12-bit composite word for the Hamming code that corrects and detects single errors.

(b) Find tests to detect the faults h s-a-o and h s-a-1, k s-a-0 and k s-a-1.



(5+5)

P.T.O.

