



**BITS Pilani**

Hyderabad Campus

Department of Electrical Engineering



# Digital Design

## First Semester 2020-21

### Tutorial : 03

# K-Maps

# Digital Design Tutorial : 03

- 1, Plot the Boolean express  $X = AB + A\overline{B} + BC$  and minimize expression from the Map.

# Digital Design Tutorial : 03

## 2. Minimize using K-map

$$F(A, B, C) = \sum m(0, 1, 4, 5) = \bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}C + A\bar{B}\bar{C} + A\bar{B}C$$

# Digital Design Tutorial : 03

## 3. Minimize using K-map

$$F(A, B, C) = \sum m(0, 1, 4, 5) = \bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}C + A\bar{B}\bar{C} + A\bar{B}C$$

# Digital Design Tutorial : 03

4. Minimize using K-map

$$F(P,Q,R,S) = \sum(0,2,5,7,8,10,13,15)$$

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# Digital Design Tutorial : 03

5. Minimize using K-map  $F(A,B,C,D) = \prod M(0, 1, 5, 7, 8, 9, 15)$

# Digital Design Tutorial : 03

6. Minimize using K-map ( dc stands for Don't Care Condition)

*zero-set(0, 1, 5, 7, 8, 9, 15)*

*one-set(2, 3, 4, 6, 11, 12)*

*dc(10, 13, 14)*

# Digital Design Tutorial : 03

7. Find the POS simplification for the following Karnaugh map  
(dc stands for Don't Care Condition)

*zero-set(0, 1, 5, 7, 8, 9, 15)*

*one-set(2, 3, 4, 6, 11, 12)*

*dc(10, 13, 14)*



# Digital Design Tutorial : 03

8. Design a circuit which has a 5-bit binary input (A, B, C, D, E), with A being the MSB (Most Significant Bit). It must produce an output logic High for any prime number detected in the input data.

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