COE 561, Term 111

Digital System Design and Synthesis

HW# 1

Due date: Saturday, Oct. 15

# Consider the following OBDD with the variable ordering {a, b, c}. Reduce it based on **Reduce** function to obtain the ROBDD. Show the details of your work.

# 

# Consider the function f= a (b+c)(d+e):

## Draw the **ROBDD** for the functionusing the variable order {a, b, c, d, e}.

## Draw the **ROBDD** for the functionusing the variable order {b, d, a, c, e}.

## Comment on the difference between the two obtained ROBDDS and what heuristic do you suggest one should choose in selecting a variable order.

# Consider the two functions f=a⊕b⊕c and g=b⊕ c’⊕ d:

## Compute the function f.g based on orthonormal basis expansion.

## Draw the **ITE DAG** for the function f⊕g. Show the details of the ITE algorithm step by step. Use the variable order {a, b, c, d}

# Consider the following given matrix representing a covering problem:

## 

## Find a **minimum cover** using **EXACT\_COVER** procedure. Show all the details of the algorithm. Assume the following order in branching selection when needed: C1, C2, C3, C4, C5, C6.

# Consider the function. Using recursive paradigm, determine if the function F is **tautology** or not. You need to choose the right variable for expansion to minimize computations.

# Consider the function

## Compute the **complement** of the function using the recursive complementation procedure outlined in section 7.3.4. You need to choose the right variable for expansion to minimize computations.

## **C**ompute all the **prime implicants** of the function using the method outlined in section 7.3.4. You need to choose the right variable for expansion to minimize computations.