COE 561, Term 101

Digital System Design and Synthesis

HW# 1

Due date: Sunday, Oct. 24

# 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+bc)(a’+cd):

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

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

## 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+bc)(a’+cd) and g=(a+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, C7, C8.

# 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.