

BSc Compse 2nd Sem  
Assignment 3:- Boolean Algebra and its applications

Q1) State and ~~proof~~<sup>prove</sup> De Morgan's Law for any two elements  $a$  and  $b$  in a Boolean Algebra  
(i)  $(a+b)' = a' \cdot b'$  (ii)  $(a \cdot b)' = a' + b'$

Q2) Prove that no Boolean algebra can have exactly three <sup>distinct</sup> elements.

Q3) Show that in a Boolean algebra  $B$   
 $a+b = b$  implies  $a \cdot b = a$  and  $a' \cdot b' = 0$  where  
where  $a$  and  $b \in B$ .

Q4) a) Define Truth table.

b) Construct the truth table for a function  
 $f(x, y, z)$  are given by

$$f(x, y, z) = xyz' + x'y' + (x+y'z)'$$

Q5: What is gate? Explain different types of gates along with Truth table and logical symbols.

Q6: Write short notes on ~~Exor~~  
~~Exor~~ Exclusive OR gate

⊙ To be completed by next assignments.