

**LAGOS CITY POLYTECHNIC, IKEJA**  
**SCHOOL OF ENGINEERING AND COMPUTER SCIENCE**  
**DEPARTMENT OF ELECTRIC AND COMPUTER ENGINEERING**  
**2016/2017 SEMESTER EXAMINATION**

|                      |                   |                          |                      |
|----------------------|-------------------|--------------------------|----------------------|
| <b>COURSE TITLE:</b> | LOGIC AND ALGEBRA | <b>NO OF QUESTIONS :</b> | 6                    |
| <b>COURSE CODE:</b>  | MTH 201           | <b>NO TIME ALLOWED:</b>  | 2Hrs                 |
| <b>FOR WHOM:</b>     | ND YR II CS       | <b>INSTRUCTIONS:</b>     | ANSWER ANY QUESTIONS |
| <b>COURSE CODE:</b>  | MTH 201           | <b>TIME ALLOWED:</b>     | 2Hrs                 |
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1. (a) Give precise definition of the following:  
 (i) Logic  
 (ii) Compound statement  
 (iii) Connectives  
 (iv) Tautology
- (b) Prove the following statements at the indicated conditions  
 (i)  $P \wedge (P \supset Q) \supset P$  is contradiction  
 (ii)  $(P \supset Q) \wedge (P \wedge \sim Q) \supset \sim P$  is tautology
- (c) Show that the statement if it is raining. Then the ground is wet and it is not true that it is raining 2nd the ground is not wet are equivalent by using the true table.
2. (a) In how many ways can the word DANIEL be arranged such that DAN must be together  
 (i) DAN must be together  
 (ii) DAN = must and  ${}^nP_r = 720$  find n.  
 (b) If  ${}^nC_r = 120$  and  ${}^nP_r = 720$  find n.  
 (c) A committee of 7 is to be formed from 8 men and 7 women. In how many ways can be done such that there are 4 men and 3 women are there  
 (i) At most 4 men are there  
 (ii) At most 4 women are there  
 (iii) At least 5 men are there  
 (iv) At least 5 women are there  
 (v) At most 3 women are there
3. (a) A student is to answer 5 questions from 8 questions, in how many ways can this be done?  
 (i) There is no restriction If  
 (ii) The first two questions are compulsory If  
 (iii) The first two questions are not compulsory
- (b) A committee of 6 men and 5 women is to be formed from 9 men and 8 women. In how many ways can this committee be formed such that 2 particular men and 3 particular women must NOT be there in the committee?
4. (a) Find the expansion of the following:

