

	<p style="text-align: center;"><b>ADAMAS UNIVERSITY</b>  <b>END-SEMESTER EXAMINATION : JANUARY 2021</b>          (Academic Session: 2020 – 21)</p>		
<b>Name of the Program:</b> (Example: B. Sc./BBA/MA/B.Tech.)	<b>B.Tech</b>	<b>Semester:</b> (I/III/ V/ VII/IX)	<b>III</b>
<b>Paper Title :</b>	<b>Switching Circuit &amp; Logic Design</b>	<b>Paper Code:</b>	ECS42105
<b>Maximum Marks :</b>	<b>40</b>	<b>Time duration:</b>	<b>3 Hrs.</b>
<b>Total No of questions:</b>	<b>08</b>	<b>Total No of Pages:</b>	<b>01</b>
(Any other information for the student may be mentioned here)			

*Answer all the Groups*

**Group A**

**Answer all the questions of the following**

**5 × 1 = 5**

1. a) What are basic properties of Boolean algebra?
- b) State the distributive property of Boolean algebra.
- c) Reduce  $A'B'C' + A'BC' + A'BC$ .
- d) Define duality property.
- e) State the limitations of Karnaugh Map.

**GROUP –B**

**Answer any three of the following**

**3 × 5 = 15**

2. Reduce  $AB + (AC)' + AB'C (AB + C)$ .
3. Design a half adder using NAND –NAND logic.
4. Using 8 to 1 multiplexer, realize the Boolean function  
 $T = f(w, x, y, z) = \Sigma(0,1,2,4,5,7,8,9,12,13)$
5. Design a full adder circuit using only NOR gates.

**GROUP –C**

**Answer any two of the following**

**2 × 10 = 20**

6. Draw the logic diagram of full subtractor and explain its operation.
7. What are called don't care conditions? What is a prime implicant? What is an essential implicant?
8. Explain various steps in the analysis of synchronous sequential circuits with suitable example.