National University of Computer and Emerging Sciences, Lahore Campus

Course:	Digital Logic Design	Course Code:	EE-227
Program:	BS (Computer Science)	Semester:	Spring 2021
Duration:	20 Minutes	Total Marks:	15
Paper Date:	14-June-2021	Weight	3 %
Section:	D	Page(s):	2
Exam:	Quiz 1	Reg. No.	

Instruction/Notes: Calculators are strictly not allowed in all exams
Plagiarism will be dealt seriously causing an F in course

1- **In an 8 bit number system, solve $(27)_8 + (8.2)_{10} = (\quad)_{16}$ (Show Working)**

2- **Prove the identity $A\overline{D} + \overline{A}B + \overline{C}D + \overline{B}C = (\overline{A} + \overline{B} + \overline{C} + \overline{D})(A + B + C + D)$**

3- **Optimize the following expressions T= $(\overline{A} + \overline{B} + D)(\overline{A} + \overline{D})(A + B + \overline{D})(A + \overline{B} + C + D)$**

Sum-of-products = ∑m ( )

Product of-sums forms: ∏M ( )

Use only given **KMaps** to optimize the function into:

(i) Product of Sums (POS) form

AB \ CD	00	01	11	10
00				
01				
11				
10				

T(A,B,C,D) = _____

(ii) Sum of Products (SOP) form

AB \ CD	00	01	11	10
00				
01				
11				
10				

T(A,B,C,D) = _____