KFUPM - ELECTRICAL ENGINEERING DEPARTMENT
EE-200 – Digital Logic Circuit Design (section 05)

Student Name:
Student Number:

You MUST SHOW your work – correct results without showing leading work do not count!

Problem 1 (20 points): It is required to complete the following table – showing the needed calculations in the area below the table.

		Signed-Magnitude	1's complement	2's complement
What is the **minimum number of bits** required for representing -60 and +60?	-60			
	+60			
What are the signed number representations for -60 and +60 using $n = 10$ bits?	-60			
	+60			

Problem 2 (20 points): Perform the following **unsigned** arithmetic operations using the designated bases **without** converting to decimal. Verify your result by converting the numbers to decimal and then performing the operation in decimal.

(a) $(54)_{16}$ * $(20)_{16}$

(b) $(11011.0111)_2$ + $(11.1101)_2$