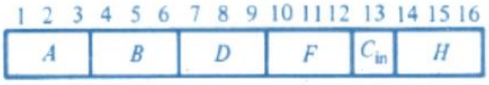
American International University Bangladesh (AIUB)
Department of EEE, Faculty of Engineering
Spring 2023-2024
Microprocessor and Embedded Systems (EEE 4103)
Section D, Final Term Quiz 2

Date: 29/04/2024

1. Write a 16-bit control word for the following micro-operations:
   a) R5 ←R4 – R2
   b) R6 ← R2 XOR R4
   c) R6 ←R1+R4



) Control word

Binary code	Function of selection variables					
	A	B	D	F with $C_{in} = 0$	F with $C_{in} = 1$	H
0 0 0	Input data	Input data	None	$A, C \leftarrow 0$	$A + 1$	No shift
0 0 1	$R1$	$R1$	$R1$	$A + B$	$A + B + 1$	Shift-right, $I_R = 0$
0 1 0	$R2$	$R2$	$R2$	$A - B - 1$	$A - B$	Shift-left, $I_L = 0$
0 1 1	$R3$	$R3$	$R3$	$A - 1$	$A, C \leftarrow 1$	0's to output bus
1 0 0	$R4$	$R4$	$R4$	$A \vee B$	—	—
1 0 1	$R5$	$R5$	$R5$	$A \oplus B$	—	Circulate-right with C
1 1 0	$R6$	$R6$	$R6$	$A \wedge B$	—	Circulate-left with C
1 1 1	$R7$	$R7$	$R7$	$\overline{A}$	—	—

2. Draw the diagram of a 4-bit status register that has four status bits - carry, sign, zero and overflow flags. Find the four status bits performing the addition operation of the following two numbers of 8-bits :
   Number A: (100 + last digit of your middle 5-digit ID number)
   Number 2: (120 + last digit of your ID middle 5-digit ID number)