PES UNIVERSITY

# Department of Computer Science & Engineering
# Microprocessor & Computer Architecture

## UNIT 1 Assignment Part 3

## Unit-1: Introduction to Microprocessor & ISA

AIM OF THE ASSIGNMENT: Implement arithmetic and logical operations using ARM assembly language.

ASSIGNMENT DESCRIPTION:

1) Implement the following functions in Assembly.

where out, a, b, c are all unsigned Integers of 32 bits wide

Assume that the variables are initialized with the following values:

a = 0xF0000000 b = 0xF1 c = 0x22

Verify the values assigned to out after these operations performed in each case.

**i)** out = (a + b) - c;

**ii)** out = a * (b+c);

**iii)** out = (a << 2) | (b & 15);

**iv)** out = (a >> 4) && (b << 16) && (c << 24) b)

2) Assume the following variables are signed Integers of 32 bits wide. They are to be initialized with the following values

i = -20 j = -48 k = 100 out = 0

Verify the values assigned to out after these operations are performed in each case.

**i)** out = (I >> 2) + (j >> 3);

**ii)** ii) out = (~I) ^ (~j) ^ (k) ; ; Please note that ^ is an ExOR operator, ~ is invert operator

**iii)** out = (i/2) + (j/4) + (k/4) ; perform this by using logical operations

**iv)** iv) out = (I << 2) + (j << 5) + (k << 8)