

## CSE-3105 (Microprocessors and Micro-controller)

Date: 11 June 2020

### Topics of Lecture 12, Lecturer 13 and Lecture 14:

Q1. What are the uses of stacks in various applications of microprocessors?

Q2. How can you declare stack in Assembly Language program? How many memories are allocated for the declaration of stack? What are the sizes of default memory allocation?

Q3. Explain the memory mapping scenario with segment (SS) and offset (SP) for stack declaration and operation with proper diagram.

Q4. Explain the operation of PUSH and POP instructions with example.

Q5. Why is it required to store FLAG register into stack? Explain with example.

Q6. What are the activities of PUSHF and POPF instructions? Explain briefly.

Q7. Solve the following problems by using necessary figures:

(i)

- AX = 3245H
- BX = 1234H
- CX = ABCDH
- SP = FEH

PUSH AX  
PUSH CX  
POP BX  
AX = ?  
BX = ?  
CX = ?  
SP = ?

(ii)

- AX = 3245H
- BX = 1234H
- CX = ABCDH
- SP = FEH

PUSH BX  
PUSH CX  
POP BX  
POP AX  
PUSH CX  
PUSH BX  
POP CX  
PUSH AX  
POP BX  
AX = ?  
BX = ?  
CX = ?  
SP = ?

(iii)

- AX = 3245H
- BX = 1234H
- CX = ABCDH
- SP = FEH

PUSH BX  
PUSHF  
POPF  
PUSH CX  
POP BX  
POP AX  
PUSH CX  
PUSH BX  
POP CX  
PUSH AX  
POP BX  
AX = ?  
BX = ?  
CX = ?  
SP = ?

Q8. Suppose the stack segment is declared as follows:

.STACK 100H

- (i) What is the hex content of SP when the program begins?
- (ii) What is the maximum hex number of words that the stack may contain?
- (iii)

Q9. Suppose that AX= 1234h, BX= 5678h, CX = 9ABCh, and SP= 0100h. Give the contents of AX, BX, CX, and SP after executing the following instructions:

PUSH AX

PUSH BX

XCHG AX,CX

POP CX

PUSH AX

POP BX

Explain the above working process with proper diagram.