Sarhad University of Science and Information Technology, Peshawar
Department of CS/IT

Final Term Lab Examination 2025
Microprocessor Architecture & Assembly Language
4th Semester

Total Marks: 30 **Instructor: Muhammad Danish Ali**

Name: Ahmad **Registration Number:** SU-23-01-001-005

Note: Attempt all questions, each question carries equal marks.

Q1. Choose the Correct Answer **[CLO-1]**

1. **What does the JG instruction do?**
   A) Jump if less than
   B) Jump if greater
   C) Jump if equal
   D) Jump always
   Answer: A
2. **What is the purpose of the instruction mov bl, 3 in the program?**
   A) It stores the result of comparison
   B) It clears the BL register
   C) It loads the value 3 into BL for comparison
   D) It adds 3 to AL
   Answer: C
3. **What is the purpose of the CMP AL, BL instruction?**
   A) To add AL and BL
   B) To compare AL with BL
   C) To multiply AL and BL
   D) To move BL into AL

Answer: B

4. **What is the value of AL immediately after mov al, 8 executes?**
   A) 0
   B) 1
   C) 8
   D) 3
   Answer: C
5. **What instruction stops the program execution?**
   A) MOV
   B) CMP
   C) JG
   D) HLT
   Answer: D

Q2. Write an assembly program to multiply two signed 8-bit numbers: 73H and 10H, using registers AL and BL. Show the result in AX. **[CLO-2]**

Answer:

```
mov al, 73h
mov bl, 10h
cbw
imul bl
```

Q3. Write an assembly program to divide an unsigned 16-bit number 0021H by 0005H. Use AX as the dividend and BX as the divisor. **[CLO-2]**

Answer:

```
mov ax, 0021h
mov bx, 0005h
xor dx, dx
div bx
```

Q4. Write an assembly program to display the message "Microprocessor and Assembly Language" on the screen. **[CLO-2]**

Answer:

```
mov ah, 09h
mov dx, offset msg
int 21h
int 20h

msg db 'Microprocessor and Assembly Language$', 0
```

Q5. Write an assembly program that compares two values 5 and 6 in AL and BL registers. Use the JNE instruction to jump if they are not equal. Assign AL a value of 9 if not equal, otherwise 0. **[CLO-2]**

Answer:

```
mov al, 5
mov bl, 6
cmp al, bl
jne not_equal
mov al, 0
jmp done
not_equal:
mov al, 9
done:
```

Q6. Write an assembly program that compares two signed numbers 8 and 3 in AL and BL registers. Use the JG instruction to jump if AL is greater than BL. Set AL to 1 if greater, otherwise set AL to 0. End the program properly. [CLO-2]

Answer:

```
mov al, 8
mov bl, 3
cmp al, bl
jg greater
mov al, 0
jmp endp
greater:
mov al, 1
endp:
```