Name of the Program: B. Sc. TE-2 yr, 2nd Semester   03 May, 2023

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Final Examination   **Summer Semester : 2021 – 2022**
Course Number: EEE 4689   **Time : 3 Hours**
Course Title: Peripherals and Microprocessor Based   **Full Marks: 150**
Design

There are **08 (Eight)** questions. Answer any **06 (Six)** questions. The symbols have their usual meanings.

1. Describe the Adder-Subtraction unit of SAP-I. Illustrate with the operation of selective **25** switch.

2. For the following Program stored in RAM (Figure: 2(a)) with the help of the given **25** instruction set (Figure :2(b)) find out the operational state of each of the unit of SAP-1 Computer. Write down the contents of ALU, Register B, Accumulator and Output register after the execution of the program.

Address	Content
0000	00011010
0001	00101011
0010	00110000
0011	01010000
0100	11110000
0101	
0110	
0111	
1000	
1001	
1010	00001000
1011	00001001
1100	
1101	
1110	
1111	

Instruction	code
Load Address to Accumulator	0001
Load Address to Reg. B	0010
Add	0011
Sub	0100
Output Register	0101
Stop	1111
No Operation	0000

Figure: 2(a)   Figure: 2(b)

3. Write n assembly Language Program to take a single character input and show it. Write **25** an Assembly Language program that will ask the user for two inputs and return the Addition.

4. Design an 8-Bit RAM using SR flip-flop. Store 11010100 in the RAM.　　**25**

5. Design an 8-bit decoder.　　**25**

6. Explain the 8086 architectures. How many ALU's are there in an 8086 computer. What are the purposes of that? Write a program that will print '*' 80 times using LOOP command.　　**25**

7 How does 8086 architectures afford parallelism? Illustrate with proper example. If the CS register holds 0720H and IP holds 0005H then what will be the physical address? If you have 16 GB Memory then how many address bits you will need.　　**25**

8 In 8086 computer what is the size of the address bus. Illustrate with Proper mathematical explanation. Fill up the following table (Table-I) for the following code.　　**25**

```
.DATA
B_ARRAY  DB  'H','E','L','L','O','!','!'
W_ARRAY  DW  'E','E','E','4','6','8','9'
```

	MEMORY	DATA		MEMORY	DATA
B_ARRAY	201H	'H'		300H	
B_ARRAY+1			W_ARRAY+2		'E'
	203H			304H	
B_ARRAY+3		'L'	W_ARRAY+6		'4'
		'O'			'8'
	206H		W_ARRAY+10		
B_ARRAY+6		'!'		312H	'9'

(Table-I)