

**EGERTON UNIVERSITY**

**UNIVERSITY EXAMINATIONS**

**NJORO CAMPUS**

**FIRST SEMESTER 2013/2014**

**SECOND YEAR EXAMINATION FOR THE AWARD OF DEGREE IN COMPUTER SCIENCE**

**COMP 202: ASSEMBLY LANGUAGE PROGRAMMING**

**STREAM:** ICEN Y3S1 **TIME:** 2 HOURS

**DAY:** FRIDAY: 3.00 P.M. - 5.00 P.M **DATE:** 13/12/2013

**Instructions**

Answer question one and any other two questions

**Question one (30 marks)**

1. Explain any two advantages of assembly language over machine language. [ 4 marks ]
2. Define a computer bus and discuss the various computer in the 8085 microprocessor.

[5 marks]

1. Write a program that adds series of ten numbers stored in memory with the starting address as 8500H. [6 marks]
2. With the aid of the attached 8085 instructions set, show the OP codes for the following 8085 source code starting at memory location 8400H.

 8400 MVI D,00H

 MVI A,00H

 LXI H, 8500H

 MOV B,M

 INX H

 MOV C,M

 LOOP ADD B

 JNC NEXT

 INR D

 NEXT DCR C

 JNZ LOOP

 STA 8502H

 MOV A,D

 STA 8503H

 RST 0

1. What is the function of the code?
2. Comment the source code.

**[15 marks]**

**Question Two(20 marks)**

1. Write a program that arranges numbers in ascending order. [8 marks]
2. Discuss about the following data transfer schemes;
3. Direct Memory Acces (DMA) [3 marks]
4. Interrupt driven Input/Output [3 marks]
5. Programmed Input/Output [3 marks]
6. Polled Input/Output [3 marks]

**Question Three (20 marks)**

1. Discuss why an 8085 assembly source code is not portable. [3 marks]
2. Discuss any three 8085 microprocessor addressing modes. [6 marks]
3. Write an assembly program that multiplies two 8-bit numbers. [6 marks]
4. Carry out the following arithmetic operation and show the status of the flag register.

 1 0 1 1 1 1 1 1**2** + 1 1 1 1 1 1 1 1**2**

 [5 marks]

**Question four(20 marks)**

1. What is a subroutine? [2 marks]
2. Explain the difference between asynchronous and synchronous data transfer mode.

[4 marks]

1. Write a program that adds two 8-bit numbers. [5 marks]
2. With examples discuss about any three classifications of 8085 instructions. [9 marks]

**Question Five(20 marks)**

1. What is an interrupt signal? [2 marks]
2. Write a program that subtracts two 8 bit numbers. [6 marks]
3. Discuss the following 8085 features
4. The ALU
5. The Flag Register
6. The register structure

[12 marks]

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