



MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY

FINAL EXAMINATION
JANUARY 2016 SEMESTER

SUBJECT CODE : IED24103
SUBJECT TITLE : MICROPROCESSOR BASED SYSTEM
LEVEL : DIPLOMA
TIME / DURATION : 2.00pm – 4.30pm
(2 ½ HOURS)
DATE : 19 MAY 2016

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
 2. This question paper is printed on both sides of the paper.
 3. This question paper consists of TWO (2) sections. Section A and B.
 4. Answer ALL questions in Section A. For Section B, answer FOUR (4) questions only.
 5. Please write your answers on the OMR Form and answer booklet provided.
 6. Answer all questions in English.
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THERE ARE 6 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (TOTAL: 20 MARKS)**MULTIPLE CHOICE QUESTIONS****INSTRUCTION: Answer ALL questions****Use OMR Form provided**

1. The basic function of register is to?
 - A. Hold the operand
 - B. Hold the operator
 - C. Hold both the operator and operand
 - D. None of the given

2. `mov [1234], ax` is an example of
 - A. Direct addressing
 - B. Base register indirect
 - C. Base+index
 - D. None of the given

3. All the addressing mechanisms in iAPX88 return a number called _____ address.
 - A. Effective address
 - B. Physical address
 - C. Direct address
 - D. None of the given

4. The extension of assembly language file is
 - A. .doc
 - B. .com
 - C. .lst
 - D. .asm

5. Register are storage cell
 - A. Outside the processor
 - B. Both inside and outside the processor
 - C. Inside the processor
 - D. None of the given

6. By default CS is associated with
- A. SS
 - B. BP
 - C. CX
 - D. IP
7. Register whose each bit specify a different meaning is
- A. Accumulator Register
 - B. Pointer Register
 - C. Index register
 - D. Flag register
8. Instructions performing actions in assembly language are called
- A. imperative statements
 - B. declarative statements
 - C. directive statements
 - D. none of the above
9. In 8085 microprocessor, the value of the most significant bit of the result following the execution of any arithmetic or Boolean instruction is stored in the:
- A. carry status flag
 - B. auxiliary carry status flag
 - C. sign status flag
 - D. zero status
10. What is the content of Stack Pointer?
- A. Address of the current instruction
 - B. Address of the next instruction
 - C. Address of the top element of the stack
 - D. None of the above
11. Intel release some 4 bit processors in the beginning
- A. True
 - B. False
12. Special instruction change processor behavior
- A. True
 - B. False

13. The CX and DX registers are also called general registers

- A. True
- B. False

14. The A of AX stands for Assembler

- A. True
- B. False

15. The parity is either odd or even

- A. True
- B. False

16. The errors that can be pointed out by the compiler are:

- A. Syntax errors
- B. Semantic errors
- C. Logical errors
- D. Internal errors

17. A system program that sets up an executable program in main memory ready for execution

- A. Assembler
- B. Linker
- C. Loader
- D. Load and go

18. The linker is:

- A. Same as loader
- B. Required to create a load module
- C. User source code as input
- D. Always used before programs are executed

19. Which of the following are language processors

- A. Assembler
- B. Compilers
- C. Interpreters
- D. all of these

20. In which addressing mode, the operand is given explicitly in the instruction itself
- A. Absolute mode
 - B. Immediate mode
 - C. Indirect mode
 - D. Index mode

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SECTION B (Total: 80 marks)**INSTRUCTION: Answer any Four (4) questions**

Please use the answer booklet provided.

Question 1

a) Differentiate between effective address and physical address?

(10 marks)

b) Explain the Address Bus, Data Bus and Control Bus, and briefly describe the purpose of each Bus.

(10 marks)

[Total 20 marks]

Question 2

a) What is the difference between code label and data label?

(10 marks)

b) Explain what is addressing modes? List the seven addressing modes available in the 8088 architecture.

(10 marks)

[Total 20 marks]

Question 3

a) What are the first and the last physical memory addresses accessible using the following segment values?

1. 1000
2. 0FFF
3. 1002
4. 0001

(10 marks)

b) Write a program to add four numbers using offset plus register indirect addressing

(10 marks)

[Total 20 marks]

Question 4

Analyze the following program, state how the control is passing on from one instruction to the other till the end of the program. Also explain the overall purpose of the program:

(20 marks)

```

002 [org 0x0100]
003         jmp start
004
005 data:    dw 60, 55, 45, 50, 40, 35, 25, 30, 10, 0
006 swap:    db 0
007
008 bubblesort:  dec cx
009           shl cx, 1
010
011 mainloop:   mov si, 0
012           mov byte [swap], 0
013
014 innerloop:  mov ax, [bx+si]
015           cmp ax, [bx+si+2]
016           jbe noswap
017
018           mov dx, [bx+si+2]
019           mov [bx+si], dx
020           mov [bx+si+2], ax
021           mov byte [swap], 1
022
023 noswap:    add si, 2
024           cmp si, cx
025           jne innerloop
026
027           cmp byte [swap], 1
028           je mainloop
029
030           ret
031
032 start:     mov bx, data
033           mov cx, 10
034           call bubblesort
035           mov ax, 0x4c00
036           int 0x21
037

```

Question 5

a) Write a program that take two numbers and multiply them using **SHL** (Shift Left) and **SHR** (Shift Right) Instruction.

(10 marks)

b) A combination of 8 bits is called a byte. What is the name for 4 bits and 16 bits?

(10 marks)

[Total 20 marks]

END OF EXAMINATION PAPER