



(غير مسموح باستخدام الآلة الحاسبة المبرمجة و الغير مبرمجة)

**Answer the following questions**

**Question (1)**

(10 Marks)

(1.a) Read the following statements, then check [✓] or [×] in front of each. Rewrite the wrong sentence after corrections.

- 1- Compiler is a program that transforms the whole program to machine code before its execution. [ ]
- 2- Microsoft Office and Just Basic are two examples of system software. [ ]
- 3- Physical devices that computer is made of are referred to computer software. [ ]
- 4- Machine language is the only language that a CPU understands. [ ]
- 5- Assembly language is an example of high level languages. [ ]
- 6- Hard disk can be considered as an input device. [ ]
- 7- Alphabetic data can't be stored as binary code. [ ]
- 8- RAM is a type of memory which can hold data even there is no power to the computer. [ ]

(1.b) Describe briefly, with the aid of suitable sketches, how a computer program is executed?

**Question (2)**

(11 Marks)

(2.a) Given the two binary numbers  $A = 10010001$  and  $B = 10001111$ , perform the following operations:

- Convert the two numbers to their HEXADECIMAL equivalent.
- Convert the two numbers to their OCTAL equivalent.
- Convert the two numbers to their DECIMAL equivalent.
- Obtain the summation of the two numbers in binary form.
- Obtain C that is equal to  $A - B$ .

**Question (3)**

(12 Marks)

(3.a) Draw the logic diagram, write the truth table, and Boolean algebra for the following logic gates:

- 3-input OR gate.
- 2-input NAND gate.
- 3-input bubbled OR gate.
- X-OR gate.

(3.b) Draw the logic diagram and write the truth table for:

- Half-Adder.
- Full-Adder.
- 2-bit digital comparator.

(3.c) Draw the block diagram to execute the arithmetic operations  $S = A + B$  and  $D = B - A$ .

where,  $A = A_3A_2A_1A_0$  and  $B = B_3B_2B_1B_0$ .

**Question (4)**

**(12 Marks)**

**(4.a) What are the phases required to produce a program?**

**(4.b) Draw a flowchart to find the largest of three numbers A, B, and C.**

**(4.c) Write a basic program to:**

**A-Input the student name, mark1, mark2, mark3 and compute the average and the Grade for N students,**

**B- Obtain GRADE where,**

**Average < 50          fail**

**50 = Average < 65    pass**

**65 = Average < 75    good**

**75 = Average < 85    very good**

**85 = < Average        Excellent**

**C- Print name, Average, Grade**

**Good Luck ..... Examiners Committee**