



UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

SECOND SEMESTER EXAMINATIONS, MAY 2015

COURSE NO : **CE 278**
COURSE NAME: **INTRO. TO MICROPRO. & CONTROL SYSTEMS**
CLASS : **CE II** TIME: **3 HOURS**

Name: Index Number:

INSTRUCTIONS: Attempt **All** questions in **SECTIONS A**, **SECTION B** and **SECTION C**. You are advised not to spend more than 1 hour on SECTION A.

SECTION A

Answer All Questions on the question paper by circling or ticking (✓) the correct answers. Each question carries **0.5** Mark. An incorrect answers attracts a **-0.5** Mark so do not guess.

- A 32-bit processor has _____.
 - 32 registers.
 - 32 I/O devices.
 - 32 Mb of RAM.
 - 32-bit registers.
- Pipelining improves CPU performance due to _____.
 - Reduced memory access time.
 - Increase clock speed.
 - The introduction of parallelism.
 - Additional functional units.
- A 32-bit address bus approximately allows access to a memory of capacity of _____.
 - 64 Mb.
 - 16 Mb.
 - 1 Gb.
 - 4 Gb.
- Given that the subprogram PUTC displays a character in the AL register, the effect of the following instruction:
MOV AL, 'C';
SUB AL, 2;
CALL PUTC;
 - Is to display 2.
 - Is to display 'C'.
 - Is to display 'a'.
 - Is to display a blank.
- Which of the following is an illegal instruction.
 - OR bx, bx;
 - INC AL, 1;
 - ADD ax, 30;
 - MOV ax, 30000;
- To copy the hexadecimal number A to the BH register you write _____.
 - MOV 0bh, ah;
 - MOV bh, 0a;
 - MOV bh, ah;
 - MOV bh, [ah];
- The effect of the following instructions below:
MOV ah, 2h;
INT 21h;
is to
 - Read a character into AL.
 - Read a character into DL.
 - Display the character in AL.
 - Display the character in DL.

- c) Z dw 50 dup (0);
 d) Small dd 40 dup (0);
34. Which of the following is NOT a MASM directive.
 a) .STACK
 b) DB
 c) .MODEL
 d) C
35. Programs are written in assembly language because they _____.
 a) Run faster than HLL programs.
 b) Are portable.
 c) Easier to write than machine code programs
 d) They allow the programmer access to registers or instructions that are not usually provided by a HLL.
36. The instruction INC I where I is a memory variable involves _____.
 a) A memory read operation.
 b) A memory write operation.
 c) A memory read and a memory write operation.
 d) Only an arithmetic operation.
37. The program counter _____.
 a) Stores the address of the instruction that is currently being executed.
 b) Stores the next instruction to be executed.
 c) Stores the address of the next instruction to be executed.
 d) Stores the instruction that is being currently executed.
38. In the 8086 processor, an example of a non-maskable interrupt is _____.
 a) Trap.
 b) RST 6.5.
 c) INTR.
 d) RST 7.5.
39. What is the output of the following code:
 PUSH AL;
 a) Decrement SP by 2 & push a word to stack.
 b) Increment SP by 2 & push a word to stack.
 c) Decrement SP by 2 & push a word to stack.
 d) Illegal.
40. What is the output of the following code:
 AX=3707h, BH=151 decimal.
 DIV BH;
 a) AL= 65H, AH=94 decimal.
 b) AL=5EH, AH=101 decimal.
 c) AH=E5H, AL=5EH.
 d) AL=56H, AH=5EH.

[TOTAL=40 marks]

SECTION B

Answer All Questions

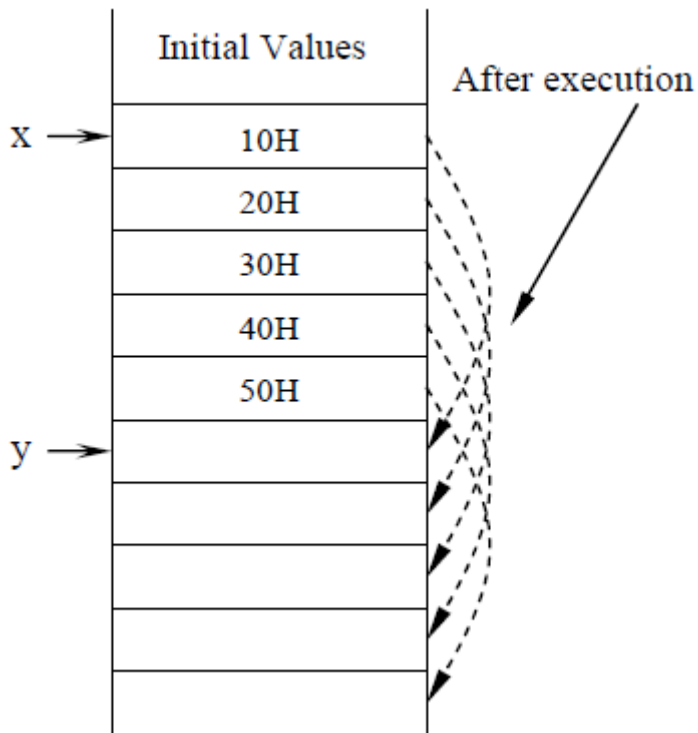
- Q1. List in a tabular form the groups of internal registers in 8086 microprocessor and their abbreviations and lengths. Describe the primary function of each register.
- Q2. State (5) differences between 8080 and 8088 microprocessors.
- Q3. Name four (4) assembler directives of 8086 and explain them briefly with an example of how each is used in a programme.
- Q4. Use the assembler structure declaration directive to define the personal information given below:
- FName: 20 Characters
LName: 25 Characters
Age: 2 bytes
ID: 4bytes
- Q5. List five (5) properties of the 8085 Microprocessor.
- Q6. What are the main blocks in BIU and EU?
- Q7. What differentiates a Microprocessor from a Microcontroller?
- Q8. Bring out the differences between 8086 and 8088 processors.
- Q9. State five (5) features of 8080 microprocessor.
- Q10. Describe the operation performed by the instruction **OUT 47h, AL**.

[TOTAL= 50 marks]

SECTION C

Answer only ONE question here

1. Using the 8086 instruction set and given the array [00E5h, 00EAh, 00C4h, 00B4h, 002Ch], write an ALP to compute the average of numbers in array after which you subtract from each element of array.
2. Using the 8086 instruction set, write an ALP to transfer a block of bytes from one memory location to another leaving the bytes in two's compliment. Use the scenario given in the diagram below.



[30 marks]

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