**University of Asia Pacific**

**Department of Computer Science & Engineering**

**Mid-Semester Examination Fall-2020**

**Program: B. Sc. Engineering (3rd Year/ 1st Semester)**

Course Title: Microprocessors & Assembly Language. Course No. CSE 311 Credit: 3.00 Time: 1.00 Hour. Full Mark: 60 There are **Four** Questions. **Answer three questions.**

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| 1. | a. | What are the basic **components** of a microprocessor? Draw the block diagram of a whole computing system and mention each section. Why is **clock** mandatory in digital circuit? | **[10]** |
|  | b. | Write some lines by yourself about **pipelining concept** that has implemented elementary basis in 8086 architecture. How does the processor get speedup by this feature? | **[10]** |
| 2. | a. | Explain the role of **AX** and **DX** registers by **MUL, DIV** operations and **IN,OUT** operations, | **[10]** |
|  | b. | How does **SP** is used to operate stack by using **PUSH** and **POP** instructions, Write in your own words , if possible give an example. | **[10]** |
| 3. | a. | Write an assembly code to solve the following **expression**  **C=XA+YB**  Here A, B and C are memory variables, you can define those in program. On the other hand X and Y are the constants.  Where  X= (last digit of your registration number MOD 2)  Y=(last digit of your registration number MOD 2 )  [You can find out this part manually, example 5 MOD 2= 1] | [10] |
|  | b. | What is the difference between **MOV** and **XCHG** Opcode? What is the role of Temp registers during XCHG operation? Give an example of sample code. | [10] |
|  |  | OR |  |
| 4. | a. | Define the six **conditional flags**, with the conditions those reflect. | **[10]** |
|  | b. | ADD AX, BX. Where, AX = 8000H, BX = (Last four digits of your Phone number)H. After the execution of the instruction show the status of the flags CF, PF, ZF, SF, OF Flags. | **[10]** |