Computer Organization and Architecture Group Assignment

OD21 IT , OD21 COE 1 AND 2

DATELIEN: 21 APRIL 2022

1. At the integrated circuit level, what are the three principal constituents of a computer system

2. Explain Moore's law.

3. List and explain the key characteristics of a computer family

4. A benchmark program is run on a 40 MHz processor.The executed program consists of 100,000 instruction executions, with the following instruction mix and clock cycle count:

Instruction Type	Instruction Count	Cycles per Instruction
Integer arithmetic	45000	1
Data transfer	32000	2
Floating point	15000	2
Control transfer	8000	2

Determine the effective CPI, MIPS rate, and execution time for this program.

5. a. On the IAS, what would the machine code instruction look like to load the contents of memory address 2?
b. How many trips to memory does the CPU need to make to complete this instruction during the instruction cycle?

6. On the IAS, describe in English the process that the CPU must undertake to read a value from memory and to write a value to memory in terms of what is put into the MAR, MBR, address bus, data bus, and control bus.