

# Assignment\_1\_Unit6

Saturday, September 16, 2023 1:45 PM

## Question 1:

- 1) Micro processor: it is the chip that perform the Arithimetic and logical operations for the system . it Consist of Arithimetic and logical unit , Control unit and its own Registers
- 2) Micro -Controller: it is a Chip that Contains (processor, memory and other peripherals) Connected together through a bus or multiple buses. it has a specific task to perform.
- 3) Embedded Systems: systems which are programmed to perform a Certain Function
- 4) Mechatronic System: System that integrate multiple fields together (Mechanical, electrical, Control )
- 5) n-bit processor: it is the processor that has n bits describing its bus width.

## Question 2:

Micro Processor	Micro Controller
<ul style="list-style-type: none"><li>- General purpose</li><li>- Consist of ALU, Registers, CU</li><li>- part of a bigger system that Can be programmed</li></ul>	<ul style="list-style-type: none"><li>- specific purpose</li><li>- Consist of MPUs, memory, peripherals</li><li>- Can be programmed directly.</li></ul>

## Question 3:

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<ul style="list-style-type: none"><li>• the instructions and memory are stored on the same part and accessed by the same bus.</li><li>• used in PC's</li></ul>	<ul style="list-style-type: none"><li>• the instructions and memory are stored on different places and accessed using different buses.</li><li>• used in MCU's not in PC's due to physical Constraints</li></ul>

## Question 4:

- ROM types:
- Masked ROMs: Can't be reprogrammed , only burned once by the manufacturer.
  - PROM: Can only be burned once by user.
  - EEPROM: Can be programmed and erased by UV light.

### Question 5:

- RAM Types : - Dynamic Ram: has to be refreshed "Capacitor based".  
 - Static Ram: doesn't need to be refreshed "transistor based".

### Question 6:

ROM Can't be Written on during normal Conditioned however it can be reburned during flashing using a programmer or debugger Circuit.

### Question 7:

Type	Volatile?	Writeable?	Erase size	Max Erase cycles	Cost(per Byte)	Speed
SRAM	Yes	Yes	1 Byte	unlimited	Very expensive	Very Fast
DRAM	Yes	Yes	1 Byte	unlimited	Moderate	Fast
NVRAM	Yes	Yes	1 Byte	unlimited	Very expensive	Very Fast
Masked ROM	No	No	-	-	Cheap	Slow
PROM	No	Yes, once	-	-	Cheap	Slow
EPROM	No	Yes → UV	entire mem	According to RM	Cheap	Slow
EEPROM	No	Yes	1 Byte	According to RM	Expensive	Moderate
Flash	No	Yes	section	According to RM	Moderate	Moderate