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| **Course Name:** | Microprocessor and Embedded Systems | **Course Code:** | | EEE 4103 |
| **Semester:** | Summer 2021-2022 | **Section:** | | O |
| **Faculty Name:** | MD. ALI NOOR | | | |
|  |  |  | |  |
| **Assignment No:** | 1 **(individual submission consisting of 10 marks)** | | | |
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| **Student Name:** | **SIDDIKY, MD SHAMIM** | | | |
| **Student ID:** | **20-42649-1** | **Program Name:** | | **BSc in CSE** |
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| **Submission Link (MS forms):** | | | | |
| **Submission Date:** | **11/06/2022** | **Due Date:** | **02/06/2022** | |

**Question: Complete the following table after going through the datasheet of the following processors:**

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| --- | --- | --- | --- | --- |
|  | **ATMega328P** | **STM32F401xE** | **PIC24FJ64GA004** | **PIC33FJ32GP302** |
| **Architecture type** | RISC 8-bit | RISC 32-bit | Modified Harvard  16-bit | Modified Harvard 16-bit |
| **Number of pins** | 28 | 48 | 44 | 28 |
| **Processing Speed (MIPS)** | 1MIPS per MHz | 105 DMIPS/1.25 DMIPS/MHz | Up to 16 MIPS | Up to 40 MIPS |
| **Program flash memory (bytes)** | 32 Kbytes | 512 Kbytes | 64 Kbytes | 32 Kbytes |
| **Operating voltage range (V)** | 1.8V - 5.5V | 1.7V - 3.6V | 2.0V – 3.6V | 3.3V (±10%) |
| **No. of PWM channels** | 6 | 4 | 5 | 4 |
| **Communication Interfaces** | 1. Programmable serial USART  2. Master/slave SPI serial interface  3. Byte-oriented 2-wire serial interface  4. Two 8-bit Timer/Counters with separate pre-scaler and compare mode | 1. Up to 3 x I2 C interfaces  2. Up to 3 USARTs (2 x 10.5 Mbit/s,  1 x 5.25 Mbit/s)  3. SDIO interface  4. Advanced connectivity: USB 2.0 full-speed  device/host/OTG controller with on-chip  PHY | 1. 8-Bit Parallel Master/Slave Port  2. Two 3-Wire/4-Wire SPI modules  3. Two I2C modules support Multi-Master/Slave  mode and 7-Bit/10-Bit Addressing  4. Up to 4 External Interrupt Sources | 1. Parallel Master Port  2. Two UART modules  3. Two 4-wire SPI modules  4. I2C module (100K, 400K and 1Mbaud) with  SMbus support |