BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-III INFORMATION TECHNOLOGY : SUMMER : 2025
SUBJECT: MICROPROCESSORS & MICROCONTROLLERS

Day : Monday
Date : 19/05/2025

S-29246-2025

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B.

1) All questions are **COMPULSORY.**
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data if necessary.

Q.1 Breakdown the role of inter-process communication in ensuring efficient multiprocessing. **(10)**

OR

Q.1 Describe how 8086 processor accesses 1 Mbyte memory with dual bank architecture. **(10)**

Q.2 Illustrate the operation of MESI protocol of cache coherence in Intel Pentium processor with example involving multiple processors. **(10)**

OR

Q.2 Break down the integer pipeline stages of Intel Pentium processor and explain their significance in instruction execution. **(10)**

Q.3 Justify the use of ARM architecture in mobile and embedded systems. **(10)**

OR

Q.3 Evaluate the significance of ARM's evolution from ARMv7 to ARMv11 in terms of performance and energy efficiency. **(10)**

Q.4 Describe in detail the role of Special Function Registers (SFRs) in 8051 microcontroller. **(10)**

OR

Q.4 Analyze the differences between 8051 microcontroller's internal and external RAM and ROM memory access. **(10)**

Q.5 Identify the purpose of data memory and program memory in AVR microcontrollers. How does the ATmega16 differ from ATmega32 microcontroller? List atleast three points of difference. **(10)**

OR

Q.5 Justify the choice of AVR microcontrollers over other 8-bit microcontrollers for beginner level projects. Also discuss the importance of different types of AVR microcontrollers for specific applications. **(10)**

Q.6 Explain the difference between a microcontroller and a microprocessor in the context of Arduino Uno and Raspberry Pi Pico. Compare the hardware specifications of both. **(10)**

OR

Q.6 Breakdown the process of setting up the Arduino IDE for programming the Arduino Uno. **(10)**

* * * *