



Term Evaluation (Odd) Semester Examination September 2025

Roll no.....

Name of the Course: BCA

Semester: Vth

Name of the Paper: Introduction to Microcontrollers

Paper Code: (TBC 503)

Time: 1.5 hour

Maximum Marks: 50

Note:

- (i) Answer all the questions by choosing any one of the sub-questions
- (ii) Each question carries 10 marks.

Q1. (10 Marks)

a. Explain difference between Microprocessor and Micro-controller. (CO1)

OR

b. Explain the role of C and assembly languages in microcontroller programming. What are the advantages and limitations of each? (CO2)

Q2. (10 Marks)

a. Draw and describe the basic architecture of a microcontroller, highlighting the role of the CPU, memory, and I/O ports. (CO1)

OR

b. What is an Integrated Development Environment (IDE), and how does it simplify microcontroller programming and debugging. (CO2)

Q3. (10 Marks)

a. Compare different microcontroller families such as PIC, AVR, and ARM in terms of architecture, features, and typical applications. (CO1)

OR

b. Describe the basic structure of a microcontroller program in C. Write a simple example program (e.g., blinking an LED). (CO2)

Q4. (10 Marks)

a. What are development tools (e.g., IDEs, compilers, debuggers) used in microcontroller programming, and why are they important in the design process? (CO1)

OR

b. Discuss common debugging techniques in embedded systems. How do simulators and in-circuit debuggers assist in the process? (CO2)

Q5. (10 Marks)

a. List and explain at least three real-world applications of microcontrollers in fields like automotive, consumer electronics, and industrial control. (CO1)

OR

b. What are digital and analog I/O operations in microcontrollers? Explain with examples how microcontrollers interface with external devices such as sensors and switches. (CO2)