

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V EXAMINATION – WINTER 2025****Subject Code:3152409****Date:02-12-2025****Subject Name:Microcontrollers Architecture, Interefacing and Applications****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
Q.1 (a) List 16-bit registers of 8051.	03
(b) Define machine cycle & its importance in 8051 microcontroller.	04
(c) Draw the internal block diagram of 8051 microcontroller. State the main features of 8051 microcontroller.	07
 Q.2 (a) Define ALU and state its importance.	 03
(b) Write a short note on BCD.	04
(c) Explain different addressing modes of 8051 with example.	07
OR	
(c) Explain MUL & DIV instructions with example.	07
 Q.3 (a) Why delay are required in programming?	 03
(b) Explain 8051 timer operation in mode 2 .	04
(c) Write an assembly language program to continuously blink alternate LEDs connected to PORT 1.	07
OR	
Q.3 (a) Define bits of IE register of 8051 microcontroller.	03
(b) Write assembly language program for delay.	04
(c) Explain subroutine with a suitable example.	07
 Q.4 (a) What do you mean by stack? Explain in brief w.r.t 8051.	 03
(b) What is software delay? Where it is necessary?	04
(c) Write a note on TMOD and TCON register.	07
OR	
Q.4 (a) Discuss tri-state logic.	03
(b) Explain difference between ADD and ADDC instructions.	04
(c) State difference between interrupt and polling? Explain external interrupts of 8051.	07
 Q.5 (a) Draw schematic diagram of 4 to 1 multiplexer.	 03
(b) Explain indirect addressing mode with example.	04
(c) Explain keyboard interfacing with 8051 microcontroller.	07
OR	
Q.5 (a) Draw pin diagram of 16 X 2 LCD.	03
(b) Explain JZ and CJNE instructions.	04
(c) Explain LCD interfacing with 8051 microcontroller.	07