

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V EXAMINATION – SUMMER 2025****Subject Code:3152409****Date:28-05-2025****Subject Name:Microcontrollers Architecture, Interefacing and Applications****Time:02:30 PM TO 05:00 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

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| Q.1 | (a) Compare Microcontroller and microprocessor. | 03 |
| | (b) Discuss Multiplexer and Demultiplexer. | 04 |
| | (c) Draw block diagram of 8051 microcontroller. | 07 |
| Q.2 | (a) Compare Flip-Flop and Latch. | 03 |
| | (b) Discuss internal memory organization of 8051. | 04 |
| | (c) List various SFRs in 8051 with their importance. | 07 |
| | OR | |
| | (c) Explain 8051 interfacing with external ROM. | 07 |
| Q.3 | (a) Compare synchronous and asynchronous circuits. | 03 |
| | (b) Define assembler directives in 8051 and explain any three. | 04 |
| | (c) List various arithmetic instructions for 8051. Explain any three. | 07 |
| | OR | |
| Q.3 | (a) Describe PSW register. | 03 |
| | (b) Describe SJMP and LJMP in 8051 with an example. | 04 |
| | (c) Describe IO port programming in 8051. | 07 |
| Q.4 | (a) Explain LED interfacing with 8051. | 03 |
| | (b) Define interrupts. List 8051 interrupts. | 04 |
| | (c) Describe steps to access code ROM space in 8051C | 07 |
| | OR | |
| Q.4 | (a) Describe tri-state logic. | 03 |
| | (b) Write a C program to generate PWM with 50 % duty cycle with fixed time period. | 04 |
| | (c) Explain steps to program timer 0 and 1 in 8051 using C. | 07 |
| Q.5 | (a) Draw only, schematic showing stepper motor interfacing with 8051. | 03 |
| | (b) Draw schematic showing interfacing of a seven-segment display with Port 2 of 8051. | 04 |
| | (c) Describe 4X4 keyboard interfacing with 8051 with a neat schematic. | 07 |
| | OR | |
| Q.5 | (a) Draw pin description of 8051 uC. | 03 |
| | (b) Describe 8051 interrupt programming in C. | 04 |
| | (c) Explain ADC 0808 interfacing with 8051. | 07 |
