

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER- V (New) EXAMINATION – WINTER 2019

Subject Code: 2150907

Date: 04/12/2019

Subject Name: Microprocessor and Microcontroller Architecture & Interfacing

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.

- Q.1** (a) List four major differences between a microprocessor and microcontroller. **03**
 (b) Only draw pin diagram of 8085 Microprocessor. **04**
 (c) Explain the architecture of 8085 microprocessor with functional block diagram. **07**
- Q.2** (a) Explain (1) ALU (2) INTR (3) ALE with respect to 8085 microprocessor. **03**
 (b) Explain basic differences (1) Von Neumann and Harvard architecture (2) CISC and RISC **04**
 (c) What is multiplexing? Explain multiplexing for address and data bus for 8085 microprocessor with neat diagram. **07**
- OR**
- Q.3** (c) Explain editor, assembler, compiler and linker. **07**
 (a) Explain TOMB in detail for 8051 microcontroller. **03**
 (b) Draw and explain memory organization of 8051 microcontroller. **04**
 (c) Draw and explain the functional block diagram of 8051 microcontroller. **07**
- OR**
- Q.3** (a) Draw only pin diagram of 8051 microcontroller. **03**
 (b) Explain IE and PSW SFR of 8051 microcontroller. **04**
 (c) Write detail functional work of listed pins in 8051 (1) ALE / $\overline{P}ROG$ (2) $\overline{P}SEN$ (3) RXD & TXD (4) \overline{RD} & \overline{WR} **07**
- Q.4** (a) What is jump range? Explain short absolute and long absolute jump using appropriate instruction. **03**
 (b) Explain POP and PUSH instructions w.r.t. 8051. **04**
 (c) Explain various addressing modes of 8051 instructions with suitable example **07**
- OR**
- Q.4** (a) Compare MOVX and MOVC **03**
 (b) Explain any two bit level instruction with example. **04**
 (c) Write an assembly language program to convert 8 bit two digit BCD number system into hexadecimal number system. **07**
- Q.5** (a) Discuss the different types of interrupts available with 8051, state their priorities. **03**
 (b) Write an 8051 assembly or embedded C program to create frequency of 2.5 KHz on P2.5. use timer 0 in mode 2 to create delay. Assume crystal frequency = 11.0592 MHz. **04**
 (c) Explain the interfacing of multiple 7 segment display. **07**
- OR**
- Q.5** (a) Write short note on "interfacing of A/D converter with 8051 microcontroller. **03**
 (b) Only draw 4×4 matrix keyboard connection diagram interfacing with 8051 microcontroller. **04**
 (c) Discuss how the speed and direction of DC motor can be controlled using microcontroller. **07**
