

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2018****Subject Code:2152409****Date:20/11/2018****Subject Name:Microcontroller for Power Electronics****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) Explain the bits of PSW register of 8051. **03**
(b) Explain role of microcontroller for power electronics converters. **04**
(c) Explain various addressing modes of 8051 microcontroller with any instruction. **07**
- Q.2** (a) What is multiplexing of data/address bus. **03**
(b) Draw RAM organization of 8051 microcontroller describing general purpose and special function register area. **04**
(c) Give comparison of microcontroller and microprocessor. **07**
- OR**
- (c) Explain MVI A,#05h machine cycle for 8085 microprocessor. **07**
- Q.3** (a) Define bits of IE register of 8051 microcontroller. **03**
(b) What is software delay? Where it is necessary? **04**
(c) Draw and explain internal architecture of 8085 microprocessor. **07**
- OR**
- Q.3** (a) What is interrupt vector table ? **03**
(b) Generate 100 microsecond delay by assembly language program assuming each instruction used being of 1 machine cycle. Take crystal frequency of 12 Mhz. **04**
(c) Explain interfacing of LCD display with 8051 microcontroller. **07**
- Q.4** (a) Draw pin diagram of 8051 microcontroller. **03**
(b) Define instruction cycle, machine cycle & T-state. **04**
(c) Explain interfacing of 7-segment display with 8051 microcontroller without 7447 decoder driver. **07**
- OR**
- Q.4** (a) List 3-byte instructions of 8051 instruction set. **03**
(b) In a semester, a student has to take six subjects. The marks of the midsem exam of a student are stored in RAM locations 47H onwards. Write assembly language program to find the average marks and output it on port 1. **04**
(c) Explain interfacing of 7-segment display with 8051 microcontroller with 7447 decoder driver. **07**
- Q.5** (a) List and define branching instructions of 8051 instruction set. **03**
(b) Explain any two arithmetic instruction of 8051 microcontroller. **04**
(c) Draw architecture of 8085 microprocessor and explain its registers. **07**
- OR**
- Q.5** (a) What is interrupt? Give general steps for attending any interrupt. **03**
(b) Explain any two logical instructions of 8051 microcontroller. **04**
(c) Explain timer of 8051 microcontroller. Explain mode 2 operation of timer. **07**