

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2152409****Date: 03/06/2019****Subject Name: Microcontroller for Power Electronics****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.

- Q.1** (a) Draw neat architecture of 8085 microprocessor. **03**
(b) Define the terms: address bus, data bus and control bus. **04**
(c) Draw and explain the internal block diagram of 8051. **07**

- Q.2** (a) Give the comparison of microprocessor and microcontroller. **03**
(b) Classify memory. Explain EPROM & EEPROM. **04**
(c) Define bits of SCON, TCON & PCON registers. **07**

OR

- (c) Explain SFR (Special Function Register) and PSW (Program Status Word). **07**
- Q.3** (a) Define the term Subroutines in accordance with 8051 microcontroller. **03**
(b) Explain I/O read-write machine cycle of 8051 microcontroller. **04**
(c) Why delay are required during programming and how they are generated? **07**

OR

- Q.3** (a) Draw only timing diagram for memory write cycle. **03**
(b) Discuss tri-state logic with necessary examples. **04**
(c) What is interrupt? Explain external interrupt with related SFRs. **07**

- Q.4** (a) Define the term Machine cycle. **03**
(b) Classify addressing modes of 8051 microcontroller & Explain any one in details. **04**
(c) It is required to generate a square wave with a frequency of 50 Hz at P2.2 pin of 8051. Assume that the crystal frequency is 12MHz. **07**

OR

- Q.4** (a) Give comparison between vectored and non-vectored interrupts. **03**
(b) Write a brief note on DAC. **04**
(c) It is required to generate a square wave with a frequency of 1 KHz at P0.0 pin of 8051. With necessary details explain various SFR settings required and write ISR to fulfill this. Assume that the crystal frequency is 12MHz. **07**

- Q.5** (a) What is key de-bounce issue and what are the solutions to avoid that? **03**
(b) Explain: LJMP, XCHD, CJNE, NOP **04**
(c) Explain keyboard interfacing with 8051 and draw flow chart to detect and identify key activation. **07**

OR

- Q.5** (a) Explain the Interfacing of LED with 8051. **03**
(b) Write short note on assembler directives. **04**
(c) Explain role of Accumulator, Stack Pointer & Program Counter in any microprocessor/ Controller. **07**
