Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–V(New) • EXAMINATION – WINTER 2016**

**Subject Code:2152409 Date:22/11/2016**

**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.**

| | | | MARKS |
|---|---|---|---|
| **Q.1** | | **Discuss in brief with respect to MCS-51. (One Marks for Each)** | **14** |
| | **1** | RAM | |
| | **2** | ROM & EPROM | |
| | **3** | EEPROM | |
| | **4** | Accumulator | |
| | **5** | Stack Pointer | |
| | **6** | Program Counter | |
| | **7** | JUMP & CALL instructions | |
| | **8** | What is the use of flags in 8051 microcontroller? | |
| | **9** | What is meant by interrupt? | |
| | **10** | What is the use of RESET in a controller? | |
| | **11** | What are the I/O ports used in 8051 controller? | |
| | **12** | Arithmetic & Logical Unit | |
| | **13** | Clock Frequency | |
| | **14** | VLSI & ULSI | |
| **Q.2** | **(a)** | Discuss various applications of microcontroller in the field of Power electronics. | **03** |
| | **(b)** | Give comparison between microcontroller & microprocessor. | **04** |
| | **(c)** | Discuss internal architecture of 8085 microprocessor in detail. | **07** |
| | | **OR** | |
| | **(b)** | Discuss internal architecture of 8051 microcontroller in detail. | **07** |
| **Q.3** | **(a)** | Explain I/O read machine cycle operation with necessary diagrams. | **03** |
| | **(b)** | Explain memory read machine cycle operation with necessary diagrams. | **04** |
| | **(c)** | Enlist & explain different addressing modes of 8051 microcontroller. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Explain I/O write machine cycle operation with necessary diagrams. | **03** |
| | **(b)** | Explain memory write machine cycle operation with necessary diagrams. | **04** |
| | **(c)** | Draw only hardware diagram required for interfacing 4 seven segment display and 4 push buttons with 8051. Assume that only 11 I/O lines (P3.0-P3.7 and P2.0- P2.2) are free for interfacing the display and keyboard to microcontroller. | **07** |
| **Q.4** | **(a)** | List out various standards of Serial communication. | **03** |
| | **(b)** | What is subroutine? Discuss various parameter associated with it. | **04** |
| | **(c)** | Write a short note on Memory Mapping. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Explain concept of serial communication. | **03** |
| | **(b)** | Draw only interfacing of 8051 with external ROM. | **04** |

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|---|---|---|---|
| | **(c)** | Discuss Interfacing of microcontroller with LED in brief. | **07** |
| **Q.5** | **(a)** | Enlist interrupts associated with MCS-51. | **03** |
| | **(b)** | Compare Vectored & non Vectored interrupts. | **04** |
| | **(c)** | Write a short note on Analog to Digital Converter. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Enlist instructions for arithmetic operations available in MCS-51. | **03** |
| | **(b)** | Explain ADD and SBB instructions. | **04** |
| | **(c)** | Define Latency Time & Response Time with respect to 8051 microcontroller interrupts. | **07** |

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