Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
PDDC - SEMESTER–VI • EXAMINATION – Winter 2016

Subject Code: X60902   **Date:25/10/2016**

Subject Name: Microcontroller & Interfacing

TIme: 10.30 AM - 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) What is serial data transmission? How it is done in the microcontroller 8051?   **[7]**
Q.1 (B) Explain the working of DPTR, Program Counter and PSW registers in details.   **[7]**

Q.2 (A) Which are the different types of interrupts available in microcontroller 8051? Explain each interrupts in brief.   **[7]**
Q.2 (B) With a suitable block diagram, explain the architecture of 8051 microcontroller.   **[7]**
OR
Q.2 (B) Explain four modes of timer's operation in brief along with appropriate example for 8051 controller.   **[7]**

Q.3 (A) Explain the Functions of the following Pins of 8051 :-
1. PSEN 2. ALE 3. INT0 4 INT1 5. XTAL1 6 XTAL2   **[7]**
Q.3 (B) Explain Addressing modes of 8051 microcontroller along with a suitable example.**[7]**
OR
Q.3 (A) Write an ALP to add a block of 5 data bytes, stored in internal RAM starting at location 40h and store the result at location 45h (consider carry).   **[7]**
Q.3 (B) Explain the following instructions with suitable examples:-
1. ORL A, @Rp 2. DIV AB 3. LJMP ladd   **[7]**

Q.4 (A) Discuss different types of CALL and RET instructions of 8051.   **[7]**
Q.4 (B) Write a short note on available data types in embedded C.. **[7]**
OR
Q.4 (A) Write an 8051 program in embedded C to blink the LED connected to pin P1.5 at a suitable delay interval.   **[7]**
Q.4 (B) With the neat diagram, explain how LCD display can be interfaced to microcontroller 8051.   **[7]**

Q.5 (A) Discuss the RAM structure of 8051 microcontroller. **[7]**
Q.5 (B) Draw and explain interfacing circuit of unipolar stepper motor with 8051 microcontroller using transistor drivers.   **[7]**
OR

Q.5 (A) Give a complete scheme to interface in 8 bit ADC to 8051 microcontroller. **[7]**
Q.5 (B) What is PWM? Explain how 8051 can be used to control speed of D. C. motor using this technique. **[7]**

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