Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

DIPLOMA ENGG.- VIth SEMESTER–EXAMINATION – MAY/JUNE- 2012

Subject code: 362001/2362001 **Date: 26/05/2012**

Subject Name: Microcontrollers

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.**
4. **English version is considered to be Authentic**

Q.1 (a) Draw and explain the general block diagram of Microcontroller-8051. **07**

(b) Describe the function of Microcontroller-8051 instruction. **07**

1) MOV A,@R1
2) ADD A,35H
3) PUSH R7
4) XCH A,R1
5) CJNE A,#data,target
6) DEC @R0
7) DA A

Q.2

(a) Explain the function of each pin of port 3. **07**

(b) Explain the function of each bit of special function register PSW. **07**

OR

(b) (i) What is the function of $\overline{EA}$ pin? **03**

(ii)Explain the Microcontroller-8051oscillator and clock. **04**

Q.3

(a) (i) Explain Microcontroller is a "true computer on chip". **02**

(ii) In the ADD instruction ,when is CY raised? **02**

(iii)Write the difference between RAM and ROM. **03**

(b) Draw the diagram of external data RAM interfacing with Microcontroller-8051. **07**

OR

Q.3 (a) Explain interrupts in Microcontroller-8051. **07**

(b) Write a program to transfer the message "GTU" serially at 9600 baud rate. **07**

Q.4

(a) (i) Load R7 by data from external memory location A397H **03**

(ii)Explain the instruction MOVC and MOVX. **04**

(b) Explain the function of each bit of special function register TMOD. **07**

OR

Q.4 (a) (i)Write a program to multiply data10H and 25H and store result in R1. **03**

(ii)Write a program to separate the nibbles of given data byte at internal memory location 30H.Store lower nibble at 31H and higher nibble at 32H. **04**

(b) Explain the function of each bit of special function register SCON. **07**

Q.5

(a) Explain interfacing of LCD display with Microcontroller-8051 with interfacing diagram and program. **07**

(b) Assume that XTAL=11.0592MHz. Write a program to generate a square wave of 2KHz frequency on pin P1.5 using mode 1. **07**

OR

Q.5 (a) Explain interfacing of 8 bit ADC with Microcontroller-8051 with interfacing diagram and program. **07**

(b) Write a program to transfer a block of 16 data bytes available at internal memory location starting with address 20H to the new area starting with address 40H in reverse order. **07**

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