

GUJARAT TECHNOLOGICAL UNIVERSITY

P.D.D.C Sem-III Examination May 2011

Subject code: X31103

Subject Name: Microcontroller & Interfacing

Date: 25/05/2011

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) Describe the Architecture of 8051 with neat diagram. **07**
 (b) Write a program using interrupts to do the following: **07**
 (i) Receive data serially and sent it to P0,
 (ii) Have P1 port read and transmitted serially, and a copy given to P2,
 (iii) Make Timer 0 generate a square wave of 5 KHz frequency on P0.1
 Assume that XTAL = 11.0592. Set the baud rate at 4800.
- Q.2** (a) Discuss the Peripheral interface of 8051. **07**
 (b) Write a C Program to send 55H & AAH to all ports of the 8255 continuously. **07**
 Assume the base Address of the 8255 is 4000H.
- OR**
- (b) Explain the I/O Port Structures of 8051. **07**
- Q.3** (a) What is the maximum delay the Timer 0 produces when 8051 is operated at 12 **07**
 MHz?
 (b) Explain Quasi Bi-directional Ports of 8051. **07**
- OR**
- Q.3** (a) Explain PSW SFR. Give the application differences between carry & overflow **07**
 flags.
 (b) Write an 8051 C program to toggle only pin P1.5 continuously every 250 ms. **07**
 Use Timer 0, Mode 2 to create the delay.
- Q.4** (a) What do you mean by Keyboard de-bouncing? How Keyboard de-bouncing is **07**
 done by Software?
 (b) (i) Explain PUSH & POP instructions in brief. **04**
 (ii) Explain DS12887 RTC Interfacing in brief. **03**
- OR**
- Q.4** (a) Explain Interfacing of DAC in brief. **07**
 (b) (i) What address in the interrupt vector is assigned to INT0 and INT1? How **04**
 about the pin numbers on port 3?
 (ii) Explain the role of TCON.0 and TCON.2 in the execution of external **03**
 interrupt 0.
- Q.5** (a) What is the advantage of serial communication over parallel communications? **07**
 Explain SCON register in brief.
 (b) Two switches are connected to pins P0.1 and P0.2. They are also vectored to **07**
 interrupt location 0003H, i.e., INT0. Write a program to test which key is
 pressed, or to verify if both keys are pressed.
- OR**
- Q.5** (a) Explain Software & Hardware methods to start & stop Timers in 8051. **07**
 (b) Explain the counter functional unit of Microcontroller 8051 with relevant **07**
 diagrams.
