

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VII • EXAMINATION – WINTER • 2014****Subject Code: 172001****Date: 25-11-2014****Subject Name: Microcontrollers and Embedded Systems****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) Interface a Stepper motor with 8051. Give the logic for half-step sequence. **07**  
(b) Draw & explain different MCU support devices for PIC18f452. **07**
- Q.2** (a) Draw & explain the H-bridge circuit for DC motor interfacing. **07**  
(b) Explain in detail the functions of FSR, BSR & Table pointer registers. **07**
- OR**
- (b) Explain the memory organization of PIC18f452. **07**
- Q.3** (a) How can we interface 8051 with RS-232? Explain the importance of RI & TI flags. **07**  
(b) Give the bit configuration of PIE1 & T1CON SFRs of PIC18f452. **07**
- OR**
- Q.3** (a) Explain the bit pattern of TMOD & TCON registers of 8051. **07**  
(b) Draw internal structure of PORTB of PIC18f452 & explain all its pin functions. **07**
- Q.4** (a) State & explain the instructions related to machine control operations & subroutines of PIC18f452. **07**  
(b) Write an 8051 C program to increment P1 port with a delay of 2 seconds. XTAL=24MHz. **07**
- OR**
- Q.4** (a) Write an ALP for PIC18f452 to find largest number from an array of 7 numbers starting at 200H. **07**  
(b) What is checksum byte? Why is checksum operation performed & how? **07**
- Q.5** (a) A switch is connected to P2.5. If SW=0 generate 75% duty cycle & SW=1 generate 50% duty cycle on P2.7. XTAL=12MHz. **07**  
(b) Write an ALP for PIC18f452 to convert from binary to ASCII & display values on PORTB & PORTC. **07**
- OR**
- Q.5** (a) Write a subroutine to setup Timer 1 of PIC18f452 in 16-bit mode with internal clock at 10 MHz to generate a 100ms delay. **07**  
(b) Write an 8051 C program to transmit "RTOS" serially at 56kbps. XTAL=11.0592MHz. **07**

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