[5058] - 354

T.E. (Electronics Engineering)

MICROCONTROLLERS AND APPLICATION

(2012 Course) (304203) (End Semester) (Semester - I)

Time : 2½ Hours]   *[Max. Marks :70*

Instructions to the candidates:

1) *Answers the Q.1 OR Q.2 and Q.3 OR Q.4 and Q.5 OR Q.6 and Q.7 OR Q.8.*
2) *Answer any four questions.*
3) *Neat diagrams must be drawn wherever necessary.*
4) *Figures to the right side indicate full marks.*
5) *Use of Calculator is allowed.*
6) *Assume Suitable data if necessary.*

Q1) a) Explain how Microcontroller is suitable for embedded system. **[6]**

b) Describe in detail the interrupt structure of 8051 Microcontroller. **[6]**

c) What are the addressing modes of PIC 18FXXX Microcontroller? Explain with suitable Example? **[8]**

OR

Q2) a) Explain the Logic Analyzer, Assembler and Compiler. **[6]**

b) Explain the following instruction with suitable example. **[6]**

i) CJNZ

ii) MOVC A, @ A+PC

iii) ORL A, Rn

c) Draw and Explain the PIC 18FXXX Microcontroller architecture. **[8]**

Q3) a) What are the different timer modes and their applications of PIC 18FXXX? **[8]**

b) Draw an interfacing diagram and write an Embedded C Program to interface 16×2 LCD with PIC 18FXX Microcontroller to display the "SPPUPUNE" message on second row fifth position. **[8]**

OR

Q4) a) Draw and Explain the interrupt structure for the PIC 18FXX microcontroller. **[8]**

b) Write a C18 Program to toggle only the PORTB. 4 bit continuously every 50ms. Use timer1, 16 bit mode. Assume that XTAL = 8MHZ. **[8]**

Q5) a) Explain the MSSP with 12C Master mode. **[8]**

b) Write a PIC 18 C Program to send the two message "Low Speed" and "High Speed" to the serial port. Assume that SW is connected to pin PORTC. 0, monitor its status and set the baud rate as follows. **[8]**

SW = 0 9600 baud rate

SW = 1 38400 baud rate

Assume that XTAL = 10MHZ for both case.

OR

Q6) a) Compare SPI and 12C Communication buses. **[8]**

b) Draw interfacing diagram and write a program for 12C based RTC with PIC18FXXX. **[8]**

Q7) a) Explain in brief various steps involved in designing data acquisition system. **[10]**

b) Design and Explain how DC Motor Speed can be controlled using PWM? **[8]**

OR

Q8) a) What are design consideration to design Digital voltmeter? Design the Digital voltmeter using PIC microcontroller to measure the voltage range 0 V to 300 DC Volt. Draw the block diagram and flow chart. **[12]**

b) Design a frequency counter with the help of block diagram. **[6]**

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