

Total No. of Questions :8]

SEAT No. :

P3590

[5560]-544

[Total No. of Pages : 2

T.E. (Electronics Engineering)
MICROCONTROLLERS AND APPLICATIONS
(2015 Pattern) (Semester -I) (304204)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6 and Q7 or Q8.
- 2) Figures to the right side indicate full marks.
- 3) Assume suitable data, if necessary.

Q1) a) Explain the functions of following registers of 8051 microcontroller [4]

- i) Accumulator
- ii) Program Counter
- iii) DPTR
- iv) Stack Pointer

b) Interface LED 0 to LED 7 to port 1 of 8051 microcontroller. Write an assembly language program to turn ON LEDs from LED 0 to LED 7 sequentially with some delay and to turn OFF LEDs from LED 7 to LED 0 sequentially with some delay. [8]

c) Draw interfacing diagram to interface an 8bit DAC with 8051 microcontroller. Write an assembly language program to generate Ramp. Triangular and Sine waveform. [8]

OR

Q2) a) Draw and explain frequency counter using 8051 microcontroller. [4]

b) Explain different modes of operation of timer of 8051 microcontroller. [8]

c) Explain the following development tools [8]

- i) Assembler
- ii) Compiler
- iii) IDE
- iv) Emulators

P.T.O.

- Q3) a)** Explain in brief the following peripherals of PIC18FXXX microcontroller
i) Timers ii) I/O Ports [8]
b) Explain various oscillator options in PIC18FXXX microcontroller. Explain how to select the oscillator options. [8]

OR

- Q4) a)** Draw the structure of Status register and RCON register of PIC18FXXX microcontroller. Explain the function of each bit in above registers. [8]
b) Explain different reset sources in PIC18FXXX microcontroller. [8]

- Q5) a)** With the help of diagram explain reading and writing the data on port pin of PIC18FXXX microcontroller. [8]
b) Calculate timer count and write an embedded C program to generate square wave of frequency 2 KHz using timer 0 on PORT A.3 pin of PIC18FXXX microcontroller. Assume crystal frequency of 10 MHz. [8]

OR

- Q6) a)** Interface LED 0 and LED 1 to PORT B.0 and PORT B.1 pin of PIC18FXXX microcontroller. Write an embedded C program to turn ON and OFF alternate LED. [8]
b) Explain PWM generation in PIC18FXXX microcontroller. Explain the calculation of value of PR2 register for PWM generation. Explain the steps for programming the CCP module for PWM generation. [8]

- Q7) a)** Explain MSSP structure with SPI mode in PIC18FXXX microcontroller. [8]
b) List the features of ADC of 18FXXX microcontroller. Write an embedded C program to convert analog into digital. Draw the flow chart. [10]

OR

- Q8) a)** Explain designing of home protection system. Draw and explain home protection system. [8]
b) Write short note on [10]
i) I2C
ii) SPI

