

Total No. of Questions : 8]

SEAT No. :

P-7593

[Total No. of Pages : 2

**[6180]-109**  
**T.E. (E&TC)**  
**MICROCONTROLLERS**  
**(2019 Pattern) (Semester - I) (304184)**

*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) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Use of Calculator is allowed.*
- 5) *Assume Suitable data if necessary.*

- Q1)** a) Describe operation of PIC18F4550 microcontroller with block diagram. [6]
- b) Draw and explain program memory organization of PIC18F4550. [6]
- c) Explain the POR and BOD modes of reset in PIC18F4550. [6]

**OR**

- Q2)** a) Draw and explain the concept of data memory organization in PIC18F4550 [6]
- b) State features of PIC18F4550 Microcontroller. [6]
- c) Explain the flag structure (PSW) of PIC18F4550 in detail. [6]
- Q3)** a) Explain the timer 2 with block schematic, compare Timer 0,1 and 2. [9]
- b) Describe the block schematic of compare mode of operation with applications in PIC18F4550 [8]

**OR**

- Q4)** a) State features of ADC, Draw and explain block schematic of ADC in details with function of Control registers in PIC18F4550. [9]
- b) Write a program for 2.5 KHz and 75 % duty cycle PWM generation with  $N = 4$ , use  $F_{osc} = 10\text{MHz}$ . [8]

**P.T.O**

- Q5)** a) Draw port structure of PIC18F4550 and comment on SFRs used in Programming. [6]
- b) Draw an interfacing diagram of LED with PIC18F4550 using port D and write program to display ring counter. [6]
- c) Draw an interfacing diagram of Home protection system with LED, Key, Motion Sensor, LCD, buzzer and relay connected to various port lines of PIC18F4550. [6]

**OR**

- Q6)** a) Draw an interfacing diagram of 4×4 keypad and write short program for checking key is closed or open. [6]
- b) State specifications of LCD and draw an interfacing diagram with PIC18F4550. [6]
- c) Explain step wise procedure and design methodology of PIC18F4550 test board. [6]
- Q7)** a) Explain the use of BRGH register for calculation of baud rate with UART transmitter block diagram. [9]
- b) State features of RTC, draw an interfacing diagram with PIC18F4550. [8]

**OR**

- Q8)** a) State features of Rs232, explain with diagram I2C mode of MSSP structure in PIC18F4550. [9]
- b) State features of EEPROM, draw an interfacing diagram with PIC18F4550. [8]

