

Total No. of Questions :8]

SEAT No. :

**P2577**

[Total No. of Pages :2

**[5153] - 553**

**T.E. (E & TC)**

**MICROCONTROLLER AND APPLICATIONS  
(2012 Pattern) (Semester - I) (End Sem.) (304183)**

*Time : 2½ Hours]*

*[Max. Marks :70*

*Instructions to the candidates:*

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, 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) Differentiate RS232 and RS485 Serial Communication Protocol. [6]  
b) Explain the programming model of 8051. [6]  
c) Explain with example function of ALU in PIC for transfer of data. [8]

OR

- Q2)** a) Explain in depth use of I2C protocol and state any two difference between I2C and SPI. [6]  
b) Explain different addressing modes with example. [6]  
c) State features of PIC, draw and explain the data memory organization. [8]
- Q3)** a) Draw and explain the port structure of PIC with different registers used in programming. [8]  
b) Explain in detail PWM mode in PIC. [8]

OR

- Q4)** a) Differentiate between operating functions of Timer 0, 1 and 2 of PIC. Draw and explain functional diagram of Timer 0 of PIC. [8]  
b) Draw an interfacing diagram to display 'GANESH' on 4<sup>th</sup> position in line one and 'SPPU' at 5<sup>th</sup> position on second line, write an embedded C program. [8]

**P.T.O.**

- Q5)** a) Explain the SPI mode of MSSP structure used for serial communication. [8]
- b) Explain the use of PIC ADC to interface the motion sensors used for accepting the location and display on LCD. [8]

OR

- Q6)** a) Explain the use of BRG register for calculation of baud rate with USART block diagram. [8]
- b) State fetures of RTC and draw an interfacing diagram with PIC, write an initialization program. [8]
- Q7)** a) Draw Generalized block diagram of DAS and state its features. [8]
- b) Design a dC Motor controller circuit using PWM for motion control.[10]

OR

- Q8)** a) Design a frequency counter to display the pulses received from the tachometer. [8]
- b) Design a DMM Using PIC controller to display AC and DC values of Electrical signals. [10]

*EEE*