Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

**G:\logo and QP Template\logo 3 Feb 2018 final.tif**

**End Semester Examination – Nov/Dec – 2018**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **14EC2015** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MICROCONTROLLER AND ITS APPLICATION** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course Outcome** | **Marks** |
| 1. | a. | With neat block diagram, explain the internal architecture of 8051 microcontroller in detail. | CO1 | 10 |
| b. | Write a program using 8051 microcontroller to sort an array in the ascending order. | CO3 | 7 |
| c. | Mention the format of 8051 instruction DJNZ & explain the function of the same. | CO3 | 3 |
| (OR) | | | |  |
| 2. | a. | Explain the memory mapping of program memory and data memory of 8051 controller. | CO1 | 5 |
| b. | Explain the various addressing modes of 8051 Microcontroller with an example. | CO3 | 10 |
| c. | Write a program for finding the largest number in an array using 8051 microcontroller. | CO3 | 5 |
|  |  |  |  |  |
| 3. | a. | Explain the various operating modes of Timer 1 of 8051 Microcontroller in detail. | CO1 | 12 |
| b. | Explain the functions of each bit of Timer Control Register(TCON) & Timer Mode Register(TMOD). | CO2 | 8 |
| (OR) | | | |  |
| 4. | a. | In detail, draw and explain the interrupt structure of 8051 microcontroller with its associated registers. | CO2 | 12 |
| b. | Explain the Mode 1 & Mode 2 operations of serial port of 8051 microcontroller in detail. | CO2 | 8 |
|  |  |  |  |  |
| 5. | a. | With block diagram, explain the internal architecture of 16C74A PIC microcontroller in detail. | CO1 | 15 |
| b. | Explain the functions of each bit positions of the status register of 16C74A PIC microcontroller in detail. | CO1 | 5 |
| (OR) | | | |  |
| 6. | a. | Mention the important features of Timer 0 module of 16C74A PIC microcontroller . | CO2 | 2 |
| b. | Draw the internal diagram of Timer 0 module of 16C74A PIC microcontroller and explain its interrupt generation concepts in detail. | CO2 | 12 |
| c. | Explain the operations of bit oriented instructions of 16C74A PIC microcontroller | CO3 | 6 |
|  |  |  |  |  |
| 7. | a. | In detail, explain how the serial port module of 16C74A PIC microcontroller can be configured in I2C bus mode with relevant diagrams. | CO2 | 16 |
| b. | Explain the functional bits of SPI status register of 16C74A microcontroller in detail. | CO2 | 4 |
| (OR) | | | |  |
| 8. | a. | What is meant by Baud Rate ? Mention the Baud rate for different operating modes of USART of 16C74A microcontroller. | CO2 | 4 |
| b. | Explain the asynchronous mode operations of USART of 16C74A microcontroller in detail | CO2 | 13 |
| c. | Mention the registers associated with ADC module of 16C74A PIC microcontroller and explain the uses of the same. | CO2 | 3 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. |  | With neat diagram, algorithm and program, explain the concepts of Sensor interfacing & signal conditioning process of the PIC microcontroller in detail. | CO3 | 20 |