B.E.(with Credits)-Regular-Semester 2012 - Electronics Engineering Sem VI

# EN605 - Microcontrollers & Its Applications

P. Pages : 2 **GUG/W/16/5379**

Time : Three Hours * 3 5 4 9 * Max. Marks : 80

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Notes : 1. All questions carry equal marks.
2. Illustrate your answers wherever necessary with the help of neat sketches.

**1.** a) What are the advantages and disadvantages of using Harvard architecture in 8051? **8**

b) Explain PSW SFR. Give the application & differences between carry and overflow flags. **8**

**OR**

**2.** a) What is the function of the bits PSW.3 and PSW.4? Find the value of the PSW register after the execution of the instructions. **8**

MOV A, ≠ 95
ADD A, ≠ 120.

b) How does 8051 differentiate internal and external memory. **8**

**3.** a) Discuss in detail the various modes of operation of Timers. **8**

b) Explain how in serial communication mode 0 expands I/O lines with the help of shift. **8**

**OR**

**4.** a) Explain interrupt priority of 8051 microcontroller in detail. How priority can be changed using IP function register? **8**

b) Explain TCON, SCON, TMOD and PCON function registers of 8051 microcontroller in detail. **8**

**5.** a) Explain the various addressing modes of 8051 with the help of appropriate example of each. **8**

b) Ten hexadecimal numbers are stored in internal RAM 40H onwards. Write an 8051 assembly language program to find the largest number and store it in register $R_4$. **8**

**OR**

**6.** a) Explain the following instructions of 8051 microcontroller. **8**

i) CJNE destination, source, label. ii) MUL AB

iii) INC @ Rp iv) SETB P2-0

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| | b) | Write an 8051 assembly language program to convert a binary number stored in external RAM location 3000H to its equivalent BCD number and store the result in internal RAM 20H. | **8** |
| **7.** | a) | Interface 4 digit seven segment display with 8051 and write a program to display BCD number 5 4 3 2 on it. | **8** |
| | b) | Interface 8-bit DAC with microcontroller 8051. Write a program to generate triangular wave using DAC. | **8** |

**OR**

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| **8.** | a) | Explain frequency measurement using 8051 microcontroller. Write an assembly language program of the same. | **8** |
| | b) | Write a program in 8051 to transfer the message HELLO serially at 9600 baud, 8 bit data, 1 stop bit. | **8** |
| **9.** | a) | What is the difference between 89C51 microcontroller and 89S51 controller? How ATMEGA 8 is different from AT89C51 microcontroller? | **8** |
| | b) | What are the amount of programming memory available for the 89C51 microcontroller? What is the In system programming for 89S51 microcontroller? | **8** |

**OR**

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|---|---|---|---|
| **10.** | a) | Describe in detail the features of AT 89C2051 microcontroller. | **8** |
| | b) | Explain the flash memory of AT 89C2051 microcontroller. | **8** |

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