



(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 131654**

Roll No.

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## B. Tech.

### (SEM. VI) THEORY EXAMINATION, 2014-15 MICROCONTROLLERS

Time : 2 Hours]

[Total Marks : 50

**Note :** All questions are compulsory.

1 Attempt any two parts : **5×2=10**

- (a) What is the difference between Harvard architecture and Von-Neuman computer architecture ?
- (b) Discuss 8051 programming model with a block diagram?
- (c) Name the addressing modes of the following instructions :
  - (i) `MOVC A,@A+DPTR`
  - (ii) `MUL AB`
  - (iii) `MOV B, #04H`
  - (iv) `SUBB A, 45H`
  - (v) `DAA`

- 2** Attempt any two parts : **5×2=10**
- (a) Explain the memory organization in 8051 controller.
  - (b) What is stack? Explain with examples the PUSH and POP instructions.
  - (c) Write an assembly program in 8051 to add two 16 bit numbers stored in external memory. After addition store the results in internal data memory.
- 3** Attempt any two parts : **5×2=10**
- (a) Name the interrupts of 8051. How can they be enabled and disabled? How priority can be assigned?
  - (b) Explain in detail about SBUF and SCON reg.
  - (c) With a suitable block diagram explain the all timer mode and discuss the programming of mode 1 timer.
- 4** Attempt any two parts : **5×2=10**
- (a) Assume that IP register has all 0s. Explain what happens if both INT0 and INT1 are activated at the same time.
  - (b) Write a program to generate a triangular waveform using DAC.
  - (c) Write a program to control AC :  
Port 1 is connected to the temperature sensor. Microcontroller reads temperature sensor every 5 second. Port 3 pin 1 is connected to the air conditioner. Turn on A.C. if temperature is greater than 22 degree Celsius. (Turn on A.C. output port 1 and Turn off A.C. Output port 0).

5 Attempt any two parts :

**5x2=10**

- (a) Explain about MC68HC11 microcontroller.
- (b) Design a counter for counting the pulses of an input signal. The pulses to be counted are fed to pin 3.4. XTAL = 22MHz.
- (c) Using interface of 8255 PPI with MC 8051: Write a program to generate a square wave at bit 0 of port C.

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