



DHH-003-015202

Seat No. _____

M. Sc. (Sem. II) (CBCS) (Electronics) Examination

May / June – 2015

**Paper - VI : Introduction to Embedded
Microcontrollers**

Faculty Code : 003

Subject Code : 015202

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions:** (1) All questions carry equal marks.
(2) Figures on right hand side indicate marks.

- 1. Answer the following:(Any seven) 14**
- (i) Write any four applications of 8051 microcontroller.
 - (ii) List out the interrupts available in 8051 microcontroller.
 - (iii) Why we have to put a '#' sign before the value to load directly in register of 8051 chip?
 - (iv) What is the function of program counter register in 8051 microcontroller?
 - (v) Show the status of CY,AC and P flag after the execution of the following instructions:
MOV A, #9CH
ADD A, #64H
 - (vi) In P3, which pins are used for RxD and TxD?
 - (vii) Give one example of register indirect addressing mode.
 - (viii) Find the period of the machine cycle in case of crystal frequency 11.0592 MHz and 20MHz in 8051 based system.
 - (ix) Which directive is always used for ASCII strings?
 - (x) What does the term embedded system mean?
- 2. Answer the following:(Any Two) 14**
- (a) Explain ACALL, LCALL and SJUMP, LJUMP instructions with examples. 7
 - (b) Draw and explain the block diagram of 8051 microcontroller. 7
 - (c) Explain PUSH and POP instructions with examples. 7
- 3. Answer the following: 14**
- (a) Write a note on I/O ports of 8051 microcontroller. 7
 - (b) Write a note on Addressing modes of 8051 microcontroller. 7

OR

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- Answer the following:** 14
- (a) Write an assembly language program for 8051 to copy the value 55H into RAM memory locations 40H to 41H using (i) direct addressing mode, (ii) register indirect addressing mode without a loop, and (iii) with a loop. 7
- (b) Write an assembly language program for 8051 to get the x value from P1 and send x^2 to P2, continuously. 7
- 4. Answer the following:(Any Two)** 14
- (a) Explain ADD, DA and SUBB instructions with examples. 7
- (b) Write an assembly language program for 8051 to transfer value 41H serially (one bit at a time) via pin P2.1. Put two highs at the start and end of the data. Send the byte LSB first. And to bring in a byte of data serially one bit at a time via pin P2.7 and save it in register R2. The byte comes in with the LSB first. 7
- (c) Assume that register A has packed BCD, write a program to convert packed BCD to two ASCII numbers and place them in R2 and R6. 7
- 5. Answer the following:(Any Two)** 14
- (a) Write a program to create a pulse with pulse width of 2ms on P1.2 using Timer 0 with XTAL = 11.0592MHz. 7
- (b) Write a note on ADC0804 chip interfacing with 8051 chip. 7
- (c) Write a note on 4x4 matrix key-board interfacing with 8051 chip. 7
- (d) Write an assembly language program to send the message "Hello World" to LCD. 7
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