



C09-EC-603

**3759**

**BOARD DIPLOMA EXAMINATION, (C-09)  
MARCH/APRIL—2016  
DECE—SIXTH SEMESTER EXAMINATION  
MICROCONTROLLERS**

*Time : 3 hours ]*

*[ Total Marks : 80*

**PART—A**

3×10=30

**Instructions :** (1) Answer **all** questions.  
(2) Each question carries **three** marks.  
(3) Answers should be brief and straight to the point and shall not exceed *five* simple sentences.

1. What are the interrupts of 8051?
2. Specify the functions of program counter and data pointer register.
3. Classify the instruction set of 8051.
4. Define opcode and operand of an instruction with example.
5. State the functions of the following instructions :  
(a) DAA  
(b) SWAP
6. What is the concept of nesting of subroutine?
7. Write a program to add two 8-bit numbers 30H and 22H and store the result in the register R1.
8. State any three features of programmable DMA controller 8251.

9. Determine the control word of 8255 corresponding to the following port configurations :

Port A and Port C<sub>U</sub> as output port in mode 0

Port B and Port C<sub>L</sub> as input port in mode 0

10. List any three features of communication interface (8251).

**PART—B**

10×5=50

**Instructions :** (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. (a) Draw the block diagram of 8051 microcontroller. 6  
(b) Define fetch cycle and execution cycle. 4
12. (a) Explain timers and counters of 8051. 5  
(b) Explain the organization of internal RAM of 8051. 5
13. (a) Explain data transfer instructions of 8051. 5  
(b) Explain RLA and RRA instructions. 5
14. Define an addressing mode. Explain all the addressing modes of 8051.
15. (a) Write a program to multiply two 8-bit numbers stored in the locations 2400H and 2401H. Store the result in the locations 2402H and 2403H. 5  
(b) Explain the single-step and breakpoint debugging techniques. 5
16. Write a program to arrange the series of ten 8-bit numbers in the ascending order. Let the series of 8-bit numbers begins from the location 2400H. Store the result from the same location 2400H onwards.
17. Explain the interface of 8255 with 8051 microcontroller with a neat circuit.
18. Explain the functional block diagram of DMA controller 8257.

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