



C14-EC-405

4459

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**MARCH/APRIL—2017**  
**DECE—FOURTH SEMESTER EXAMINATION**  
**MICROPROCESSOR AND MICROCONTROLLER**  
**PROGRAMMING**

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. List any six features of microprocessors.
2. Write any three comparisons between microprocessors and microcontrollers.
3. Define fetch cycle, execution cycle and instruction cycle.
4. Draw the format of TMOD register.
5. Classify the instruction set of 8051 based on their operation.
6. Describe the following instructions of 8051 :
  - (a) ADD A,R0
  - (b) ORL A,#23H

- \* 7. Write a program to perform 2's complement of an 8-bit data is in external RAM location 2400 H and save the result in 2401 H.
- 8. Define subroutine and mention its advantages.
- 9. List RS232 pins of DB 9 connector.
- 10. Explain how to use an 8051 timer as an event counter.

**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 functional block diagram of 8085 microprocessor. 5
- (b) Explain the functions of various registers in 8085 microprocessor. 5
- 12. (a) Explain the functions of various special function registers. 6
- (b) Explain briefly the memory organization of 8051. 4
- 13. Draw the pin diagram of 8051 microcontroller and explain the function of each pin. 10
- 14. Explain any five addressing modes of 8051 with two examples each. 10
- 15. (a) Explain the following instructions : 4
  - (i) MUL AB
  - (ii) DAA
- \* (b) Explain the conditional jump instructions of 8051 microcontroller with examples. 6
- 16. (a) Explain single-step and break-point debugging techniques. 5
- (b) Explain the execution of STA instruction using timing diagram. 5

- \* **17.** (a) Explain the use of PUSH and POP instructions. 5  
(b) Write a program to transfer block of ten 8-bit numbers available in external memory location starting from 2300 H onwards to 2500 H. 5
- 18.** (a) Explain briefly MAX 232 and MAX 233 interfacing with 8051. 5  
(b) Explain briefly how to program external hardware interrupts of 8051. 5

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