



C16-EE-505

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BOARD DIPLOMA EXAMINATION, (C-16)

AUGUST/SEPTEMBER—2021

DEEE - FIFTH SEMESTER EXAMINATION

DIGITAL ELECTRONICS AND 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. Draw the symbols of AND, OR, NOT gates.
2. State the importance of parity bit.
3. Draw 3×8 decoder circuit.
4. Compare series and parallel adder in any three aspects.
5. List any three differences between asynchronous and synchronous counters.
6. State the need of a register and list the four types of registers.
7. List any six special function registers of 8051 microcontroller.
8. State the functions of the following :
  - (a) Data pointer
  - (b) Program counter

9. What is subroutine? Mention any three of its advantages.
10. List any six conditional JUMP instructions of 8051 microcontroller.

### PART—B

10×5=50

**Instructions :** (1) Answer *any five* questions.  
(2) Each question carries **ten** marks.  
(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. (a) Perform 2's complement method for  $(1101101)_2 - (1010)_2$ .  
(b) Convert  $(9A3B)_{16}$  into binary number.
12. Show that two half adders and an OR gate constitute a full adder.
13. Draw one bit digital comparator and explain its operation with truth table.
14. Explain the working of level triggered J-K flip-flop with a circuit diagram.
15. With a neat sketch, briefly explain the working of Universal Shift Register.
16. Draw and explain the bitwise description of TMOD and TCON registers.
17. Describe various addressing modes of 8051 microcontroller.
18. Write an assembly language program along with comments to add two 8-bit numbers stored in external memory locations 2400 H and 2401 H. Store the result in locations 2402 Hand 2403 H.

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