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C16-AEI-503

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BOARD DIPLOMA EXAMINATION, (C-16)

MARCH/APRIL—2021

DAEI - FIFTH SEMESTER EXAMINATION

MICROCONTROLLERS AND APPLICATIONS

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. Write any six features of microcontroller 8051.
2. What is the address stored in the PC (Program Counter) and SP (Stack Pointer) when 8051 is reset?
3. Draw the bit pattern of program status word of 8051.
4. List any two differences between machine level and assembly level programming.
5. Write the instruction format of 8051.
6. State the function of Fetch cycle, Execute cycle and Instruction cycle.

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7. Define the term debugging and list any two dynamic debugging techniques.
8. If the external frequency of the 8051 microcontroller is 11.0592 MHz, find out its Machine cycle frequency.
9. Write any three features of 8257.
10. List and name three different types of interfacing peripheral ICs.

PART—B

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. Draw the pin diagram of 8051 and explain the functionality of each pin. 5+5=10
12. Explain internal memory and external memory organization of 8051. 5+5=10
13. What are the various addressing modes available in 8051? Explain with examples. 10
14. Explain about the following instructions of 8051 and mention the register values after the execution of the instruction : 2×5=10
 - (a) SWAP A where source A = 47H
 - (b) XRL A, R_n where A = 0FH, R_n = 08H
 - (c) RR A where A = 98H, carry flag (CY) = 1
 - (d) INC DPTR where DPTR = 16FFH
 - (e) SUBB A, source byte where source byte = 43H, A = 65H, CY = 1

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15. Write an ALP to transfer a block of data which lies at 30H – 37H to new location 50H – 57H. 10
16. (a) List the various types of symbol used in drawing the flow charts. 5
- (b) Write an ALP to find 2's complement of a number $(1011\ 1100)_2$. 5
17. Draw the functional block diagram of 8255 and explain the functions of each block. 4+6=10
18. Draw and explain the schematic diagram of stepper motor interface with 8051 microcontroller. 5+5=10

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A.A.N.M & V.V.R.S.R POLYTECHNIC, GUDLAVALLERU, KRISHNA

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