

**B.Tech Odd Semester (CBCS) Exam.,
December—2016**

INFORMATION TECHNOLOGY

(5th Semester)

Course No. : IT-503

(Microprocessor and Microcontrollers)

Full Marks : 75

Pass Marks : 30

Time : 3 hours

- Note :*
1. Attempt **one** question from each Unit.
 2. Begin each answer in a new page.
 3. Answer parts of a question at a place.
 4. Assume reasonable data wherever required.
 5. The figures in the margin indicate full marks for the questions.

UNIT—I

1. (a) What do you mean by address bus? 2
- (b) Why is the data bus bidirectional? 2
- (c) What is the function of the accumulator in 8085? 2

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(Turn Over)

- (d) How many memory locations can be addressed by a microprocessor with 14 address lines? 2
 - (e) Define microprocessors. 2
 - (f) Why is 8085 processor called an 8-bit processor? 2
 - (g) Explain the function of ALU and IO/M signals in the 8085 architecture. 3
2. (a) Explain in detail about 8085 programmable registers. 10
 - (b) List four applications of micro-processor-based system. 2
 - (c) Explain the use of ALE. 3

UNIT—II

3. (a) Explain the different instruction formats with examples. 6
 - (b) Explain the difference between a JMP instruction and a CALL instruction. 3
 - (c) Write a short note on CMP instruction. 3
 - (d) List the various instructions that can be used to clear accumulator in 8085 microprocessor. 3
4. (a) List five categories of 8085 instructions that manipulate data. 5

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(3)

- (b) Write the instructions to load the hexadecimal numbers 65H in register C and 92H in the accumulator A. Display the number 65H at PORT0 and 92H at PORT1. 5
- (c) Define two-byte instruction with one example. 2
- (d) Specify the content of the register and flag status given with initial values as the following instructions are executed. Specify also the output at PORT0 : 3
- | A | B | S | Z | CY |
|----|----|---|---|----|
| 00 | FF | 0 | 1 | 0 |
- MVI A, F2H
MVI B, 7AH
ADD B
OUT PORT0
HLT

UNIT—III

5. (a) List the major components of 8259A interrupt controller and explain its functions. 7
- (b) Explain how the 8237 DMA controller transfers 64 Kbytes of data per channel with 8 address lines. 8

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(4)

6. (a) Describe the functional block diagram of 8255 and list the necessary conditions to generate INTR when port A of the 8255A is set up as an output port in mode 1. 10
- (b) What are the different hardware interrupts? Which interrupt has the highest priority and which interrupt has the lowest priority? 5

UNIT—IV

7. (a) List the different addressing modes available in 8086. 6
- (b) Write a short note on flags of 8086 microprocessor. 5
- (c) What are the different functional units in 8086? 2
- (d) What are the various segment registers in 8086? 2
8. (a) Discuss about the different segment registers with their job in 8086 microprocessor. 5
- (b) Explain the operating modes of 8086 in brief. 5
- (c) Draw the block diagram of 8086 microprocessor. What are the jobs of the different processors in 8086? 5

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(5)

UNIT—V

9. (a) How many I/O ports are placed in microcontroller 8051? 2
- (b) Mention the capacity of internal RAM and internal ROM of 8051. 2
- (c) What is the stack memory placed in 8051? 2
- (d) How many timer/counter available in 8051? Mention the different types of modes of timer/counter operation. 3
- (e) What is the use of TMOD register? Write about the different bits of TMOD register of 8051 microcontroller. 6
10. Draw the pin diagram of 8051 microcontroller and explain the function of various signals. 15

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