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BCACAC 209

Credit Based Third Semester B.C.A. Degree Examination, April 2021 (2019-20 and Earlier Batches) MICROPROCESSORS

Time: 3 Hours Max. Marks: 80

Note: Answer any ten questions from Part – A and one full question from each Unit of Part – B.

PART - A

1. a) List any two features of 4004 microprocessor.

- $(10 \times 2 = 20)$
- b) Represent (76)₁₀ in packed and unpacked BCD format.
- c) Expand XMS and TPA.
- d) What is the use of SI and DI registers in string manipulation instructions?

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- e) What is the purpose of segment override prefix? Give an example.
- f) Differentiate LDS and LES instructions.
- g) List the four ASCII arithmetic instructions.
- h) What is the use of CBW instruction?
- i) Differentiate NOT and NEG instructions.
- j) What is the purpose of CALL instruction? Give an example.
- k) List any four conditional jump instructions.
- I) What is the use of NOP instruction?



PART - B

Unit - I

- 2. a) Explain the evolution of microprocessor from 4 bits to 8 bits.
 - b) Explain the following assembler directives:
 - i) DW

- ii) DUP
- iii) ENDS
- iv) PROC
- v) ASSUME.
- c) Write the block diagram of microprocessor based computer system and briefly explain each block. (4+5+6)
- 3. a) Write a note on:
 - i) BCD data
 - ii) Byte sized data.
 - b) Define Bus. With a suitable diagram, explain bus structure of a microprocessor based computer system.
 - c) List and explain various multipurpose registers of 8086.

(4+5+6)

Unit - II

- a) Explain any three data addressing modes with suitable diagrams and examples.
 - b) Explain the following instructions:
 - i) INS
 - ii) OUTS.
 - c) Suppose DS=2500H, SS=8500H, SI=0200H, BX=0350H, DI=0575H, BP=700H, determine the address accessed by each of the following instructions:
 - i) MOV AL, [BX+SI]
 - ii) MOV [BP], BX.

(6+5+4)

- 5. a) Explain the different program memory addressing modes.
 - b) Explain the operation of PUSH and POP instructions.
 - c) Explain the following string data transfer instructions with examples.

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- i) LODSB
- ii) MOVSB.

(6+5+4)



Unit - III

- 6. a) Explain different rotate instructions with examples.
 - b) Explain DAA and DAS instructions with suitable examples.
 - c) Explain LOOP, LOOPE and LOOPNE instructions with example. (6+5+4)
- 7. a) Explain different shift instructions with examples to each.
 - b) Explain MUL and DIV instruction with suitable examples.
 - c) Explain REP, REPE and REPNE instructions with example. (6+5+4)

Unit - IV

- 8. a) Explain NEAR and FAR calls with suitable diagrams:
 - b) Explain:
 - i) INT's ii) INT 3 iii) INTO.
 - c) Explain:
 - i) LOCK prefix ii) BOUND instruction.

(5+6+4)

- 9. a) Explain the role of RET. Compare it with IRET.
 - b) Explain:
 - i) ENTER and LEAVE instructions
 - ii) ESC
 - c) What is a microcontroller? Draw its block diagram.

(5+6+4)