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**BCACAC 209**

**Credit Based Third Semester B.C.A. Degree Examination,  
October/November 2017  
(Common to all Batches)  
MICROPROCESSORS**

Time : 3 Hours

Max. Marks : 80

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

**PART – A**

1. a) Represent 358 in packed and unpacked BCD form. (10×2=20)
- b) If CS = 3456H and IP = ABCDH; find the physical address of the next instruction to be executed.
- c) In the real mode, show the starting and ending addresses of segment with segment register value is AB00H.
- d) Which registers remove from stack with POPA instruction ?
- e) Choose an instruction that requires BYTE PTR and WORD PTR.
- f) Identify the Addressing mode of the following.
- i) MOV AX, [BX + 10H]
- ii) MOV AX, [BX + SI + 20H].
- g) What is the Value of AX and Carry flag after the execution of following instructions ?
- MOV AX, 1234H
- MOV CL, 04H
- ROR AX, CL

P.T.O.



- h) Write the function of CBW and CWD instructions.
- i) List the instructions used to control Interrupt flag.
- j) Write the length of SHORT, NEAR and FAR jump instructions.
- k) Write the start and end address of Interrupt Vector in real mode.
- l) What is a Microcontroller ? List any two applications of Microcontroller.

## PART – B

## Unit – I

2. a) Explain the Multipurpose register of 8086. (4+5+3+3)
  - b) Explain the flag register of 8086 with neat diagram. Also write the status of conditional flag after subtracting ABCDH from 5678H.
  - c) What are the salient features of 8086 processor ?
  - d) If the physical branch address is 5A230H when (CS) = 5200H, what will it be if (CS) is changed to 7800H ?
3. a) Explain the following assembler directives. (4+4+4+3)
  - i) EXTRN.
  - ii) ASSUME.
  - b) Explain Real Mode Memory addressing.
  - c) With a suitable diagram explain the bus architecture of microprocessor based computer system.
  - d) Write a note on TPA.

## Unit – II

4. a) Assume DS = 4000H, SS = 9000H, BX = A000H, DI = 8000H, BP = 6000H, LIST = 1000H. Calculate address accessed by each of the following instructions. (5+4+3+3)
  - i) MOV AX, [BX + DI]
  - ii) MOV AX, LIST[BX – 80H]
  - iii) MOV CX, [BP + 50H]
  - iv) MOV DX, [DI].





- b) Explain various forms of IN and OUT instructions with example.
  - c) Explain LEA and LDS instructions with examples to each.
  - d) Show which JMP instruction assembles (short, near, or far) if the JMP THERE instruction is stored at memory address 10000 H and the address of THERE is :
    - i) 10020H
    - ii) 11000H
    - iii) 0FFFEH
    - iv) 30000H.
5. a) Explain following data addressing mode with example. (4+4+5+2)
  - i) Register relative.
  - ii) Base plus Index.
- b) Explain the following string instructions with example.
  - i) CMPSW
  - ii) OUTS.
- c) Explain Stack Memory Addressing mode.
- d) Write a note on segment override prefix.

**Unit – III**

6. a) Explain BCD arithmetic instructions with suitable examples. (4+4+4+3)
- b) Explain MUL and DIV instructions with example.
- c) Suppose BX and DX contain 4 digit BCD numbers 3099H and 1234H respectively. Write the sequence of instructions to add BX and DX and store the result in CX.
- d) Explain following instructions with example.
  - i) XLAT
  - ii) CMP.
7. a) Write the sequence of instructions that set the rightmost four bit if AX, clears the leftmost three bits of AX and inverts bit 7, 8 and 9 of AX. (3+4+2+6)
- b) Explain various SHIFT instructions with example.



- c) Compare JA and JG with example.
- d) Differentiate following :
  - i) AND and TEST
  - ii) NOT and NEG
  - iii) MOV and XCHG.

#### Unit – IV

8. a) Explain following instructions. (4+4+5+2)
- i) BOUND
  - ii) HLT
  - iii) ENTER.
- b) Explain Near and Far call instructions with examples.
- c) Explain LOOP, LOOPE, and LOOPNE instructions with examples.
- d) Draw the block diagram of microcontroller.
9. a) Compare RET and IRET instructions. (2+4+4+5)
- b) What is an Interrupt ? Explain the following interrupts INT 03H, INTO.
- c) Explain parameter passing using stack with the program to add two 16 bit number using stack.
- d) With example explain call with register as operand and a call with indirect memory addressing.
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