UG Even Semester (CBCS) Exam. September, 2020

COMPUTER SCIENCE

(6th Semester)

Course No: MCSCC-603

(System Software)

Full Marks: 70
Pass Marks : 28

Time: 3 hours

The figures in the right margin indicate full marks for the question
Answer any five questions.

1. (a) Describe briefly the general machine structure. 10

   (b) What is the memory's basic unit, size and addressing scheme of IBM 360. 4

2. (a) In an IBM 360 machine, how many register are there and what are their size. 2

   (b) What is the difference in function between the BALR and using instructions? What happens to each at assembly time and execution time? 6+1=7

   (c) What is the difference between CR and CLR instruction? 2

   (d) Write the instruction format using base register and without base register and also discuss the disadvantage of using shorter form of instruction. 2+1=3

3. (a) Explain the purpose of two pass assembler. 6

(b) For the following program 8

```
SIMPLE    START
          BALR    15, 0
          USING   *, 15
LOOP      L       R1, TWO
          A       R1, TWO
          ST      R1, FOUR
          CLI     FOUR + 3,4
          BNE     LOOP
          BR      14
R1        EQV     1
TWO       DC      F '2'
FOUR      DS      F
          END
```

(i) Show the symbol table at the end of pass 1.

(ii) Show the literal table at the end of pass 1.

(iii) Show the changes in the base register table during pass 2

(iv) Show the generated 'machine' code from pass 2.

4. (a) What are the different databases used in two pass assembler? Explain their purpose. 8

(b) Discuss the interrelationship among the different databases of two pass assembler.6

5. (a) What is macro-instruction? Explain the macro instruction arguments with suitable example. 1+6=7

(b) Explain the implementation of macro processor within assembler. 7

6. Explain the two pass macro processor with suitable flow diagram. 14

7. (a) What are the function of a loader? Discuss the general loader scheme with suitable blcok diagram. 2+4=6

(b) Explain the different sections of object deck in direct linking loader. 8

8. (a) Explain the dynamic loading scheme with suitable example. 8

(b) Write short note on : 2x3=6

(i) Global External Symbol Table

(ii) LOCAL External Symbol Table

9. (a) Explain in detail the technique to attain optimization in th ecompiler designing with an example. 7

(b) Write a Lex program to search a word in a file. 7

10. (a) Explain in detail the various phases of compiler. 8

(b) Write a YACC program to check whether given string in polindrome or not. 6

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