(c) What must be done by the compiler to produce machine equivalent of any program. 8+3+3=14

10. (a) Explain the structure of compiler with a diagram.

(b) Write short notes on the following :

(i) Code Optimization

(ii) Code Generation

8+6=14

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UG Even Semester Examination, September, 2023

COMPUTER SCIENCE

(6th Semester)

Course No.: MCSCC-603

(System Software)

Full Marks: 70

Pass Marks: 28

Time: 3 hours

The figures in the margin indicate full marks for the questions.

Answer any five questions, taking one from each unit.

UNIT-I

1. (a) Explain General Machine Structure of IBM 360/370 with a neat diagram. 7

(b) (i) Define System Software. What is the difference between the following :

```
FOUR   DC   F'32'
FOUR   DS   F'32'
```

(ii) Does the following divide 10 by 2? Justify your answer. 4+3=7

```
L    3, = F'10'
D    2, = F'2'
ST   3, 1000
```

Turn Over

2. (a) Draw the micro flowchart of ADD instruction for IBM 360/370. 5

(b) Explain Long-Way-No-Looping with example. Also write the advantages and disadvantages of using Long-Way-No-Looping approach while writing an Assembly Language Program. 5

(c) Differentiate between SIC and SIC/XE machine. 4

UNIT-II

3. (a) List any two advantages of assembly language. What is Symbol table? Give its format.

(b) What are the steps to be followed by designer to design an assembler?

(c) Draw in detail the PASS-1 flow chart of an assembler. 4+3+7=14

4. (a) Write the data structures used in Pass-1 and Pass-2 assemblers.

(b) Write the algrorithm and draw the flowchart for PASS-2 assembler. 6+8=14

UNIT-III

5. (a) Define Macro. Write the basic task that should be performed by macro-instruction processor.

(b) What do you understand by nested macro exapansion? Explain with suitable example.

(c) Differentiate between the AIF and AGO conditional macro processor pseudo-ops with example. 5+4+5=14

6. (a) Write the specification of databases used in Pass-1 and Pass-2 of Macro processor.

(b) What do you understand by Macro Definition table and Macro name table?

(c) Draw the detailed flowchart of READ function used for macro expansion. 4+3+7=14

UNIT-IV

7. (a) What do you understand by absolute loader? Explain the design of an absolute loader with a neat diagram.

(b) How dynamic linking is different from static linking? Justify your answer.

(c) Write a short note on Relocating loaders. 6+4+4=14

8. (a) Explain briefly the different types of cards used in Direct Linking Loader.

(b) Explain in detail the PASS 1 flowchart of Loader. 6+8=14

UNIT-TV

9. (a) Define Compiler. Explain different phases of compiler with neat diagram.

(b) What is the use of identifier table for the phases of compiler?