Total No. of printed pages = 6

END SEMESTER EXAMINATION – 2022

Semester : 4th

Subject Code : Co-402

SYSTEM PROGRAMMING

Full Marks – 70

Time – Three hours

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

Instructions :

1. *All* questions of PART – A are compulsory.

2. Answer any *five* questions from PART – B.

PART – A

Marks – 25

1. Fill in the blanks :   1×5=5

(a) A _____ assembly language statement indicates actions to be performed during execution.

[Turn over

(b) In a two pass assembler pseudo code, equ is to be evaluted during pass _____.

(c) Semantic analyzer produces _____.

(d) The use of macro name with set of actual parameters is replaced by some codes generated by its body. This is called _____.

(e) _____ is generated between analysis and synthesis phase.

2. Write True or False :   1×5=5

T (a) A phase refers to the traversal of a compiler through the entire program.

F (b) In direct linking loader, multiple procedure segments are not possible.

T (c) In two pass assembler, task of pass II is to synthesize the target program.

T (d) Semantic Analyzer will check for type mismatches, incompatible operands, a function called with improper arguments, an undeclared variable etc.

T (e) Macro definition is ended by using END statement.

16/Co-402/SP/4th Sem   (2)

3. Choose the correct answer :   1×5=5

(a) Multi-pass assembler, compared to a single-pass assembler is

(i) Faster   (ii) Larger

(iii) Slower   (iv) Both (i) and (ii)

(b) Which phase generates the target program with the help of symbol table ?

(i) Analysis Phase

(ii) Synthesis Phase

(iii) Code generation

(iv) None of the above

(c) Multi-programming improves

(i) Efficiency   (ii) System utilization

(iii) Output   (iv) All of these

(d) Storage allocation is allocation of

(i) Variable

(ii) Memory

(iii) Both (i) and (ii)

(iv) None of the above

16/Co-402/SP/4th Sem   (3)   [Turn over

(e) Assembler directives are which type of statement ?

    (i) Executable   (ii) Non-Executable

    (iii) Opcode   (iv) None of these.

4. Answer the following questions :   1×5=5

    (a) Which utility convert Assembly Language Program to Object program ?

    (b) Which type of linking is performed before execution or during compilation of source program ?

    (c) Which complier is capable of creating code for a platform other than the one on which the compiler is running ?

    (d) What does a parser do ?

    (e) Does code optimization improve running time of target program ?

5. Define the following in terms of in Assembly Language :   1×5=5

    (a) Macro

    (b) Procedure

    (c) Registers

    (d) Addressing modes

    (e) Instruction set.

PART – B

Marks – 45

6. (a) Explain Absolute loader with its advantages and disadvantages.   6

    (b) Write the differences between Assembler and Compiler.   3

7. (a) Explain one and two assembler specifying different data structure used.   6

    (b) Define Nested and Recursive macro call. 3

8. (a) Write the differences between Linker and Loader.   3

    (b) Define compiler. Name the different phases of complier. Explain any two phases with example.   1+2+3=6

9. (a) Write syntax for defining and calling a macro.   3

    (b) State top down and bottom up parsing with suitable diagram.   6

10. (a) State the different functions of analysis and synthesis phase with block diagram.   5

    (b) Explain Macro expansion with example. 4

11. (a) Differentiate between NFA and DFA. 4

    (b) Parse an expression a+b/c with the grammar rules stated below : 5

    $$S \rightarrow E$$

    $$E \rightarrow E + T \mid E * T \mid E / T \mid T$$

    $$T \rightarrow id.$$

12. Write short notes on any *three* : 3×3=9

    (a) Types of Assembly Language Statements

    (b) Assembler Directives

    (c) System Software

    (d) Addressing Modes

    (c) Static and Dynamic linking.