Seat No. : _____

AP-121

April-2022

M.Sc. (CA & IT)., Sem.-VI

System Software

Time : 2 Hours] **[Max. Marks : 50**

SECTION – I

(Attempt any three question out of five questions.)

1. (A) Answer the Following :

   (1) Write short note on Debug Monitors. **3**

   (2) Define Grammar and explain any two types of grammar with example. **4**

   (B) Answer the Following :

   (1) Explain concept of problem oriented and procedure oriented language processing with figure. **3**

   (2) Explain language processor development tools LEX. **4**

2. (A) Answer the Following :

   (1) Explain pure and impure interpreter. **3**

   (2) Show the content of Data structure for the call **4**

   INCR_M A, B for the following macro

   INCR_M &MEM_VAL, &INCR_VAL, &REG=AREG

   MOVER &REG&MEM_VAL

   ADD & REG, &INCR_VAL

   MOVEM &REG, &MEM_VAL

   ENDM

(B) Answer the Following :

(1) Explain any two advanced macro facilities with example. **3**

(2) Show extended stacks in expansion of nested macro calls for given Macro (assume MDT entry 20, inner macro entries 75) **4**

```
MACRO
COMPUTE &FIRST, &SECOND
MOVEM BREG, TMP
INCR_D &FIRST, &SECOND, REG=BREG
MOVER BREG, TMP
MEND

MACRO
INCR_D &MEM_VAL=, &INCR_VAL=, &REG=AREG
MOVER &REG, &MEM_VAL
ADD &REG,&INCR_VAL
MOVEM &REG, &MEM_VAL
MEND
```

Calling statement COMPUTE X, Y

3. (A) Answer the Following :

(1) Explain any two advance assembler directives with example. **3**

(2) Explain with figure Block and Character Device Driver. **4**

(B) Answer the Following :

(1) Explain significance of variant I and II of intermediate code for imperative statements. **3**

(2) Explain with example how to resolve problem of single pass assembler. **4**

4. (A) Answer the Following :

(1) Explain in detail top down parser with backtracking of **3**

<id> + <id> * <id>

Grammar :

E=T+E |T

T= V*T |V

V = <id>

(2) Draw DFA & STT for integer, real and identifier , also write regular expression for integer , real and identifier **4**

(B) Answer the Following :

(1) Explain with example any two code optimization techniques. **3**

(2) Draw expression tree for (a + b * c) + ((d * e + f) / g) and assign RR (register requirement) labels to the node and determine evaluation order for operator of an expression based on RR labels as per the evaluation order procedure. **4**

5. (A) Answer the Following :

(1) Define : **3**

(a) Public definition

(b) External Reference

(c) Relocation factor

(2) Explain task performed by Loader and briefly explain any two types of Loader. **4**

(B) Answer the Following :

(1) Generate quadruples for 'a+b*c+d*e^f '. **2**

(2) Draw schematic of a program's execution. **2**

(3) Explain with figure design of an overlay structured program. **3**

SECTION –II

(Compulsory)

Attempt any 8 : **8**

(1) When expression sum=five_no+two_no is tokenized then what is the token category of five_no ?

(a) Identifier (b) Assignment operator

(c) Integer (d) Addition operator

(2) What is the precedence relation between '(' and ')' ?

(a) > (b) <

(c) = (d) Error

(3) What result do you expect when top down parsing will perform using left recursive grammar?

(a) Infinite loop (b) Top down parsing with back tracking

(c) Parse the given input (d) Syntax analysis

(4) Grammar used for LL1 Parser is

(a) left factored grammar (b) modified left factored grammar

(c) left recursive grammar (d) left recursive eliminated grammar

(5) Operator Precedence Parser is

(a) top down parser (b) bottom up parser

(c) recursive parser (d) predictive parser

(6) _____ is the process of modifying the addresses used in the address sensitive instruction of a program.

(a) Linking

(b) Program Relocation

(c) Resolving External Reference

(d) None

(7) _____ is the process of binding an external reference to the correct link time address.

(a) Loading (b) Linking

(c) Relocation (d) None

(8) The ____ statement lists the public definitions of a program unit.

(a) EXTRN (b) ENTRY

(c) HEADER (d) RELOCATAB

(9) Relocation Factor = ____ - translated origin

(a) Linked Origin (b) Offset

(c) Memory address (d) Displacement of symbol

(10) _____ table describes instruction required for relocation.

(a) Relocation Table (RELOCTAB)

(b) NTAB

(c) Linking

(d) None

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