2018

SYSTEM SOFTWARE

MCA 3.1

MARKS:75

Time : 3 Hours

The figures in the margin indicates full marks for the questions :

*(All Questions of **Part-A** and **Part-B** Are Compulsory.Answer any **Five** question from **Part-C**)*

Part-A

(All questions are compulsory)

1.Answer the following: 1X10=10

(i) A compiler that runs on one machine and produces the target code for another machine is known as--------

(a)cross compiler

(b)Linker

(c) Preprocessor

(d)Assambler

(ii) The language accepted by Finite Automata is

(a) Type 0 (b) Type 1 (c)Type 2 (d) Type 3

(iii) A translator that takes as input a high-level language program and translates into machine language in one step is known as---

(a) compiler
(b) Interpreter
(c) preprocessor
(d) Assambler

(iv) A tool for automatically generating a lexical analyzer for a language is defined as

(a) LEX (b)YACC (c) Handler (d) All of these

(v) Consider a grammar:$A \rightarrow aS_1/aS_2$

(a) $A' \rightarrow aA_2$ (b) $A \rightarrow a\ A'$

$A \rightarrow S_1/S_2$ $A' \rightarrow aS_1/aS_2$

(c) $A \rightarrow a\ A'$ (d)none of these

$A' \rightarrow S_1/S_2$

(vi) Which two functions are required to construct a parsing table in predictive parsing technique?

(a) CLOSURE ( ) and GOTO ( )
(b) (b) FIRST ( ) and FOLLOW ( )

(c) ACTION ( ) and GOTO ( ) (d) none of these

(vii)Which of the following is the most powerful parsing method ?
(a) LL(1) (b) Cannonical LR

(c) SLR (d)LALR

(viii) The CFL $L=\{a^nb^n/n\geq 1\}$ can be generated by the following CFG

(a) $S \rightarrow \varepsilon/ab/aSb$ (b) $S \rightarrow ab/aSb$
(c) $S \rightarrow \varepsilon/aSb$ (d) all of the above

(ix) A grammar generating more than one derivation for same sentence is known as--

(a) Regular (b)context-free(c)context-sensitive

(d)ambigious

(x)Top-down parsing is a technique to find—

(a)Leftmost derivation

(b) Rightmost derivation

(c) Leftmost derivation in reverse

(d) Rightmost derivation in reverse

Part-B

(All questions are compulsory)

1.(a) Draw the transition diagram for unsigned number. 3

(b) Convert the given Regular Expression into DFA 2

(a/b)* a (a/b)

2. What are different types of Assambler Directives? 3

3. What are the different types of parameter used in macro prototype statement?Explain with examples. 6

4. what is LEX?Write structure of Lex programe. 2+4=6

5. Explain Left-factoring and Left-recursion with suitable example. 5

Part-C

*(Answer any **Five** questions)*

1. Using parsing table Show that the given grammar is not LL(1) . 8

E→iAcE /iAcEeE/a

A→b

2.Exaplain Pass2 of two pass assembler with algorithm and example.What is forward reference? 5+3=8

3.Discuss about different Advanced Macro Facilities present in assembly language. 8

4.Construct the parsing table for the following grammar 8

E→TE′

E′→+TE′/ε

T→FT′

T′→*TE′/ε

F→(E)/id

5.Construct the LR(0) items for the following grammar: 8

E→E+T/T

T→T*F/F

F→(E)/id

6.

```
        MACRO
        CLEARMEM &X, &N, &REG=AREG
        LCL     &M
&M      SET     0
        MOVER   &REG, =`0`
.MORE   MOVEM   &REG, &X + &M
&M      SET     &M+1
        AIF     ( &M NE N)  .MORE
        MEND
```

Shows the contents of Data Structures for the call 8

CLEARMEM AREA, 10

7.Write short notes (Any Two): 2X4=8

(a) properties of LL(1) grammar

(b) Predictive Parser

(c) Ambigious Grammar

(d)Bottom-up parser

(e)Cross –compiler

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