

CHAROTAR UNIVERSITY OF SCIENCE & TECHNOLOGY

Seventh Semester of B. Tech. (IT) Examination

May 2014

IT404 Language Processor

Date: 24.05.2014, Saturday

Time: 01:30 p.m. To 04:30 p.m.

Maximum Marks: 70

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.

SECTION – I

- Q - 1 Draw and explain the different phases of compiler in detail. [07]
- Q - 2 (a) Define finite automata. Differentiate between Non-deterministic Finite Automata and Deterministic Finite Automata. [06]
- (b) Minimize the following DFA into minimum number of states. [08]

Present State	Next State	
	I/P = 0	I/P = 1
A	F	B
B	C	G
C	C	A
D	G	C
E	F	H
F	G	C
G	E	G
H	C	G

A is initial state and C is final state.

OR

- Q - 2 (a) Construct a DFA to accept all strings which ends with 00. Also mention regular expression for the given string. [06]
- (b) Define the following terms with example: [08]
- (1) Token (2) Syntax tree (3) Lexeme (4) Handle
- Q - 3 (a) List out different types of errors in compiler. Explain error recovery strategies in brief. [08]
- (b) Check the following grammar is LL (1) or not. [06]

$S \rightarrow iEtS \mid iEtSeS \mid a$
 $S' \rightarrow eS \mid \epsilon$
 $E \rightarrow b$

OR

- Q - 3 (a) What is the role of assembler in language processing? Explain two pass assembly in detail. [08]
- (b) Find out FIRST and FOLLOW set for following grammar. [06]
- $E \rightarrow T E'$
 $E' \rightarrow +T E' \mid \epsilon$
 $T \rightarrow F T'$
 $T' \rightarrow *F T' \mid \epsilon$
 $F \rightarrow (E) \mid id$

SECTION – II

Q - 4 (a) Check whether the below grammar is Ambiguous or not? Which language is generated from this grammar? [03]
 $S \rightarrow aSbS \mid bSa \mid \epsilon$

(b) Write a short note on input buffering technique. [04]

Q - 5 (a) Explain operator precedence parsing technique. List the advantages and disadvantages of operator precedence parsing technique. [05]

Q - 5 (b) Explain the functions of linker and loader. [03]

(c) Generate canonical LR(0) itemset for following grammar: [06]

$S \rightarrow L = R$

$S \rightarrow R$

$L \rightarrow * R$

$L \rightarrow id$

$R \rightarrow L$

OR

Q - 5 (b) Explain the role of preprocessor in brief. [03]

(c) Explain three address code techniques with suitable example in detail. Differentiate between triples and quadruples. [06]

Q - 6 (a) What is an activation record? [02]

(b) Write a short note on following. [Any Three] [12]

1. Dynamic Memory Allocation.

2. Issues in design of code generator.

3. Conflicts in shift-reduce parsing technique.

4. Symbol table management.
