Roll No. .....

24488

B. Tech. 7th Semester (CSE)

Examination – December, 2016

COMPILER DESIGN

Paper : CSE – 405 - F

Time : Three Hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : The candidate have to attempt first ***compulsory*** question and ***one*** question from each of the four sections.

1. Describe the following : 20

(i) Input buffering

(ii) Parsing

(iii) LALR

(iv) Linked lists

SECTION – I

2. (i) What is compiler. Explain the different phases of compiler. 10

(ii) Explain in detail about compiler construction tools. 10

3. Write short note on following : 20

(i) Finite auto mata

(ii) Lexical analysis

(iii) Regular expression

(iv) Input buffering

SECTION – II

4. Give a complete description about syntax analysis. 20

5. Describe the following : 20

(a) Predictive parsing

(b) Operator precedence parsing

SECTION – III

6. Explain the following : 20

(i) LR parser

(ii) Canonical LR parser

7. Describe the following : 20

(i) Construction of syntax trees

(ii) Three address code

(iii) Quadruples and triples

SECTION – IV

8. Give a complete description about code optimization and code generation. 20

9. What is error ? Explain in detail about lexical phase error, syntactic phase error and semantic error. 20

Roll No. .....

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B. Tech. 7th Semester (CSE) Examination – June, 2016

COMPILER DESIGN

Paper : CSE-405-F

Time : Three Hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : The candidate have to attempt ***first compulsory*** question and ***one*** question from each Section. All questions carry equal marks.

1. Explain the following : 20

(i) Translator

(ii) Passing

(iii) SLR

(iv) Error

SECTION – A

2. What is Compiler ? Explain the structure of Compiler in detail. 20

3. Describe the following : 20

(i) Conversion from Regular expression to Finite Automata.

(ii) Implementation of Lexical Analyzer.

SECTION – B

4. Explain the following in detail : 20

(i) Context free Grammer

(ii) Role of Parser

5. Define Parsing. Explain in detail about Parsing Technique. 20

SECTION – C

6. What is Syntax directed Translation Scheme ? Also explain the implementation of Syntax directed translation. 20

7. Describe the following : 20

(i) Canonical LR Parser

(ii) LALR

SECTION – D

8. What is symbol Table ? Explain in detail about its contents and data structure. 20

9. (i) What do you mean by Code Generation ? Explain. 10

(ii) Explain the register allocation for temporary and user defined variables. 10

B. Tech. 7th Semester (CSE) F-Scheme
Examination, December–2017
COMPILER DESIGN
Paper–CSE–405–F

Time allowed : 3 hours] *[Maximum marks : 100*

Note : *Attempt **five** questions selecting **one** question from each section and **Question No. 1 is compulsory.***

1. Describe the following : 20

(i) Input buffering

(ii) Parsing

(iii) Syntax directed definitions

(iv) Role of Parser.

Section–A

2. (i) What is Compiler ? Explain the different phases of Compiler in detail. 12

(ii) Explain various compiler construction tools. 8

3. (i) Construct the transition diagram for the following regular expressions 10

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

(b) (a/b)/(ab)*b/a*(bb)*

(ii) How do we implement lexical analyzer ? Explain with example. 10

Section–B

4. (i) Explain Chomsky hierarchy of grammars. 10

(ii) What is context free grammar ? Give the left most and right most derivation for the following grammar. Also draw its derivation tree for it and check its ambiguity for id + id + id :

$E \rightarrow E+E \mid E-E \mid E^* E \mid E/E \mid id$ 10

5. (i) Test whether the grammar is LL(1) or not and construct a predictive parsing table for it. 10

$S \rightarrow AaAb \mid BaBa, A \rightarrow e, B \rightarrow e$

(ii) Consider the following grammar :

$S \rightarrow ABC, A \rightarrow Aa \mid d, B \rightarrow Bb \mid e, C \rightarrow Ce \mid f$

Eliminate left recursion from the above grammar. 10

Section–C

6. Check whether the following grammar is LR (0) or not. 20

$E \rightarrow E+T \mid T$

$T \rightarrow T^*F \mid F$

$F \rightarrow (E) \mid id$

7. (i) State and explain the syntax directed translation scheme for the desk calculator and give the parse tree and translation for the string

$(7 + 4) * 249/3 + 26.$ 10

(ii) What is intermediate code representation ? Explain quadruple, triples and indirect triples with the help of an example. 10

Section–D

8. (i) Explain the various types of errors generated during the various phases of the compiler. How do we recover from these errors ? 10

(ii) What is the use of Symbol Table ? Explain any two data structures associated with Symbol Table. 10

9. Write short notes on the following :

(a) Loop optimization

(b) Code generation. 20

B.Tech. 7th Semester (F) Scheme (CSE)

Examination, December–2018

COMPILER DESIGN

Paper – CSE- 405-F

Time allowed : 3 hours] *[Maximum marks : 100*

***Note:** Attempt five questions in total selecting one question from each unit. **Question number 1 is compulsory.** All questions carry equal marks.*

Compulsory Question

1. (i) What is Language Translator?

(ii) Differentiate Pass one and Pass two Compiler.

(iii) Define lexeme, token pattern.

(iv) What do you mean by ambiguous grammar? Explain by taking suitable example.

(v) Differentiate parse tree and syntax tree.

(vi) Define operator grammar.

(vii) Define Syntax errors. How these errors are removed by Compiler'?

(viii) Define handle and handle pruning.

(ix) What do you mean by DAG?

Unit–I

2. (a) What do you mean by Compiler? Why we need compiler. What are the computer construction tools?

(b) Briefly explain the structure of a compiler.

3. (a) Design a DFA over an alphabet $\Sigma = \{a,b\}$ that accepts all the strings ending with **ab.**

(b) What is LEX? Discuss its role in compiler design.

Unit–II

4. (a) Explain the Chomsky hierarchy.

(b) Construct a CFG for the language.

5. Explain different Parsing Technique in detail.

Unit–III

6. Explain code optimization and its utility with example.

7. What do you mean by three address code quadruples and triples? Explain with example.

Unit–IV

8. (a) What are typical entries in symbol table, what are various data structures used to implement the table?

(b) How symbol table space can be reused? Give some example.

9. Write short notes on:

(a) Peephole optimization

(b) Machine Dependent Code

SECTION – D

8. What is Symbol Table ? Explain in detail about its contents and data structure. 20

9. Write short note on the following : 20

(a) Basic blocks & flow graph

(b) Peephole optimization

(c) DAG

(d) Loop Unrolling & Loop Jamming

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B. Tech 7th Sem. (CSE) Examination – May, 2018

COMPILER DESIGN

Paper : CSE - 405 - F

Time : Three Hours] ***[Maximum Marks : 100***

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all, selecting ***one*** question from each section. Question No. **1** is ***compulsory***.

1. Write a short note on the following : 20

(a) Differentiate top-down & bottom-up parser.

(b) Remove left recursion S→Aa/b, A→Ac/Sd/e.

(c) What is translator ? Differentiate between compiler & interpreter.

(d) What is parsing ? Explain derivation & parse tree.

(e) What is regular expression ? How it is useful in compile design ?

SECTION – A

2. (i) What is Compiler ? Explain the structure of Compiler in detail. 14

(ii) Why do we need translator ? Explain. 6

3. (i) How do we implement lexical analyzer ? Explain with example. 10

(ii) Construct the NFA for the following regular expression : 10

$R = (a \mid b)^*abb$

SECTION – B

4. (i) Explain role of parser in detail. 10

(ii) Explain and remove the ambiguity from following CFG. 10

$E \rightarrow E+E \mid E-E \mid E/E \mid E*E \mid (E) \mid -E \mid id$

5. (a) Explain shift-reduce parsing with the help of an example. 10

(b) Test whether the grammar is LL (1) or not and construct a predictive parsing table for it. 10

$S \rightarrow iCtSS' \mid a$

$S' \rightarrow eS \mid \varepsilon$

$C \rightarrow b$

SECTION – C

6. (i) Check whether the following grammar is LR (1) or not ? 10

$S \rightarrow CC$

$C \rightarrow cC \mid b$

(ii) Construct the LR(0) parsing table for the following grammar. 10

$S \rightarrow L=R$

$S \rightarrow R$

$L \rightarrow * R$

$L \rightarrow id$

$R \rightarrow L$

Check whether this above grammar is LR (0) grammar is not.

7. (i) Convert the following statements into the Quadruple, Triple and Indirect triple representation : $A = -B * (C + D)$ 10

(ii) How syntax directed translation scheme is implemented ? Explain with example. 10