8. Consider the following grammar G

E → TB
B → ATB | €
A → +-
T → FC
C→MFC | €
M→*
F→ (E) | a

(a)Compute FIRST SET (b) Compute FOLLOW SET (c) Construct the predictive parsing table. 3+7+5=15

9. Consider the following grammar G

S→CaCb
S→DbDa
C→€
D→€

(a) Compute the canonical collection sets of LR(0) items.

(b) Draw the transition diagram of the DFA for the above items.

(c) Construct the SLR(1) parsing table.

(d) Justify whether the above grammar is SLR(1) grammar or not (5+3+5+2)

10. (a) Explain the following terms with the example given statements A=B*-C+B*-C

(i) Quadruples (ii) Triples (iii) Indirect Triples

(b) What do you mean by Peephole optimization in compiler? ((4+4+4)+3)

11. Write sort notes any five of the following. (5x3=15)

(a) Lex
(b) Inherited attribute
(c) Type conversions
(d) Symbol table
(e) Handle
(f) Activation trees.

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CS/B.Tech/Even/IT/6th Sem/IT-605C/2014

2014

Compiler Design

Time Alloted : 3 Hours *Full Marks : 70*

The figure in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following: 10x1=10

i) A bottom up parser generates

(A) Rightmost derivation
(B) Rightmost derivation in reverse
(C) Left most derivation
(D)Left most derivation in reverse

ii) A compiler that runs on one machine and produces code for a different machine is called

(A) Cross compilation
(C) 2 pass compilation
(B) One pass compilation
(D) None of these

iii) Grammar of the programming is checked in ..... phase of compiler.

(A) Semantic analysis

(B) Code generation
(C) Syntax analysis
(D) Code optimization

iv) Arrange the following parser according to their power (low to high) CLR, LALR and SLR

(A) LALR, CLR and SLR
(B) LALR, SLR and CLR
(C) SLR, LALR and CLR
(D) None of these

v) When the grammar E → x/y will be LL(1)

(A) FIRST(x)∩FIRST(y)=Φ
(B) FIRST(x) ∩ FOLLOW(E)=Φ
(C) FIRST(y) ∩FOLLOW(E)= Φ
(D) All of these

vi) Which of the following is an example of operator grammar?

(A) S →ASA, A →a | b
(B) E → EAE | (E) | -E | id, A →+ | - | * | /
(C) E →E+E | E-E | E*E | E/E | -E | id
(D) None

vii) Which of the following is used for grouping of characters into tokens?

(A) Syntax analyzer
(B) Code optimization
(C) Code generator
(D) Lexical analyzer

viii) A dangling reference is a ----------

(A) Pointer pointing to storage which is freed
(C) Pointer pointing to uninitialized storage
(B) Pointer pointing to null
(D) None of these

ix) An annotated parse tree is

(A) A parse tree without attribute values shown at th parse tree nodes.
(B) A parse tree with attribute values shown at the pars

tree node.
(C) A parse tree with values for only some attribute values shown at the parse tree nodes.
(D) A parse tree with grammar symbols shown at the parse tree nodes.

x) The equivalent production rules corresponding to the production rules S → S a|b

(A) S →bA, A→ aA | €
(B) S → bS, A→ aA | €
(C) S→bS, S→ aS | €
(D) None of these

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following. 3x5=15

What is cross compiler? What are the differences between compiler and interpreter?

Explain different stages of compiler.

Draw a Syntax tree and DAG for the expression, A=B*-C+B*-C

What is left recursive grammar? Show that no left recursive grammar can be LL(1).

What do you mean by parsing? What are the differences between top-down parsing and bottom-up parsing?

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. 3x15=45

(a) For the following Regular expression construct a NFA and convert it to DFA.(0+1)*(00+11)(011)*

(b) What is the importance of YACC in compiler?

(c) What is parameter passing? ((4+4)+4+3)