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T.Y. B.Sc.(CS.) (Fourth Semester) EXAMINATION, 2016

CS-342 : COMPILER CONSTRUCTION

Paper II

(2013 PATTERN)

Time : Two Hours

Maximum Marks : 40

- N.B. :-**
- (i) All questions carry equal marks.
 - (ii) All questions are compulsory.
 - (iii) Figures to the right indicate full marks.
 - (iv) Neat diagrams must be drawn wherever necessary.

1. Attempt all of the following : [10×1=10]
- (a) Which one is faster in terms of execution, one pass compiler or two pass compiler ?
 - (b) Define Dynamic memory allocation.
 - (c) State the need of augmenting a grammar.
 - (d) State True or False : Shift-Shift conflict doesn't occur in LR parser.
 - (e) Define the term 'lexeme'.
 - (f) Computer follow for the following productions :

$$S \rightarrow Af \mid BD$$

$$A \rightarrow aAb \mid bAd$$

$$B \rightarrow dBe \mid \epsilon \text{ (epsilon)}$$

$$D \rightarrow \epsilon \text{ (epsilon)}$$

- (g) What is the output of Lexical Analyser ?

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- (h) What is the use of dependency graph ?
- (i) Define the term Attribute grammar.
- (j) What is the use of display ?
2. Attempt any two of the following : [2×5=10]
- (a) Write a Recursive Descent Parser (RDP) for the following grammar :
- $$S \rightarrow Aab \mid aBb$$
- $$A \rightarrow Aa \mid b$$
- $$B \rightarrow bB \mid$$
- (b) Construct Directed Acyclic Graph (DAG) for the following expressions :
- $3 * (5 + 2) + (5 + 2) * 4$
 - $a + (a + b)/(b - c) * (b - c)$
- (c) Write a LEX program to find factorial of a given number.
3. Attempt any two of the following : [2×5=10]
- (a) Check whether the given grammar is LL(1) or not :
- $$S \rightarrow BD \mid AB$$
- $$A \rightarrow aAa \mid b$$
- $$B \rightarrow bAa \mid \epsilon \text{ (epsilon)}$$
- $$D \rightarrow \epsilon \text{ (epsilon)}$$
- (b) For the input expression $(5 + (26 - 3)) * 2$, design SDD and draw an annotated tree using the following grammar :
- $$E \rightarrow E + T \mid E - T \mid T$$
- $$T \rightarrow T * F \mid F$$
- $$F \rightarrow (E) \mid id$$
- (c) Explain in detail with the help of a diagram the phases of a compiler.

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4. Attempt any one (either A or B) of the following :

(A) (a) Check whether the given grammar is LALR (1) or not : [6]

$$S \rightarrow E = E \mid a$$

$$S \rightarrow E + T \mid T$$

$$T \rightarrow T * a \mid a$$

(b) Write a short note on code optimization techniques. [4]

(B) (a) Check whether the given grammar is SLR (1) or not : [6]

$$S \rightarrow A \text{ and } A \mid A \text{ or } A$$

$$A \rightarrow id \mid (S)$$

(b) Write a short note on Input Buffering with the help
of a diagram. [4]



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