

Code No: 09A60504

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

B.Tech III Year II Semester Examinations, May - 2013

Compiler Design

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

- 1.a) i) Explain Bootstrapping process with suitable diagram.  
ii) Explain differences between pass and phase.
- b) Explain the different phases of the compiler, showing the output of each phase using the example for the statement:  $z = (a * 20) + b - c$  [15]
- 2.a) What is left recursion and left factoring?  
Eliminate left recursion for the following grammar  
 $E \rightarrow E + E / \text{num}$
- b) Consider following grammar  
 $S \rightarrow (L) | a$   
 $L \rightarrow L; S | S$   
Find parse trees for the sentences  
i) (a, (a,a))  
ii) (a, (a,a), (a,a)) [15]
- 3.a) Explain about Top down parsing techniques.
- b) Show that the following grammar is LL(1):  
 $S \rightarrow AaAb | BbBa$   
 $A \rightarrow \epsilon$   
 $B \rightarrow \epsilon$  [15]
4. Construct LR (1) parsing table.  
 $S \rightarrow Aa$   
 $S \rightarrow bAc$   
 $S \rightarrow dc$   
 $S \rightarrow bda$   
 $A \rightarrow d$  (Write all necessary procedures) [15]
- 5.a) What are self-organizing lists? How can this be used to organize a symbol table? Explain with an example.
- b) Discuss storage allocation for non block structured languages. [15]
6. What is activation record and activation tree? How are these related with runtime storage organization? [15]
- 7.a) Differentiate between S-attributed grammar and L-attributed grammar.
- b) Explain the steps involved in converting an L-attributed grammar into translated scheme. [15]
- 8.a) Explain how Redundant sub-expression elimination can be done at global level in a given problem.
- b) What is flow graph? Explain how flow graph can be constructed for a given problem. [15]

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