United College of Engineering & Research, Allahabad

Third Sessional (2016-17)

Compiler Design (NCS-603)

B.Tech VIth Sem(CS+IT)

Time : 120 Min. M.M. 30

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[Section –A] [Attempt all part] [1X10=10]

1. What is Assembler?
2. Differentiate between Annoted parse tree and Syntax tree.
3. Explain how Lex tool may be used to create lexical analyzer?
4. What is activation tree?
5. How is scope information represented in symbol table?
6. What is ambiguity in grammar?
7. Differentiate between Quadruple and Triples.
8. Discuss the challenges in compiler design?
9. What is cross compiler?
10. What is basic block?

[Section –B] [Attempt any 3 part] [4X3=12]

1. Discuss the various data structure used for symbol table with suitable example.
2. Generate three address code for the following code?

```
While A<C and B<D do
        If A=1 then C=C+1
        else while A<=D do A=A+2
```

3. What are the lexical phase error, syntactic phase error and semantic phase errors? Explain with suitable example.
4. Why run-time storage management is required? How simple stack implementation is implemented?
5. Construct a DFA which accepts set of all strings over {a,b} which starts and ends with same symbol.

[Section –C] [Attempt any 1 part] [8X1=8]

1. What is DAG? How DAG is created from three address code? Write algorithm for it and explain it with a relevant example.
2. A) Write the short notes on the following :
   I. Dead code elimination
   II. Loop invariant and strength reduction
   III. Code motion
   IV. Copy propagation

B) Explain the working of operator precedence parsing technique with Example.

3. Give the algorithm to construct LALR parsing table for the following grammar

S->AA
A->aA
A->b

Parse the string "**aabb"** by the above grammar and show the working step.