United College of Engineering and Research
Second Sessional Examination
Compiler Design(RCS-602)
B.Tech 6th Sem(CS/IT)

Time 2hrs. M.M. 30

Note : Attempt All Section

Section A [Attempt all parts] [1X10=10]

1. What is mean by Activation record?
2. What is postfix notation?
3. Differentiate between Annoted Parse Tree and Syntax Tree?
4. How is scope information represented in symbol table?
5. Define operator grammar with example?
6. Define Synthesized and Inherited Attributes?
7. What is the maximum number of reduce moves that can be taken by a bottom-up parser for a grammar with no epsilon and unit production(i.e. of type A→€ and A→a) to parse a string with n length?
8. Compare Quadruples and Triples representation.
9. Define the term S-R and R-R conflict.
10. Explain the term activation tree?

Section B [Attempt any 6 parts] [2X6=12]

1. Generate three address code for the following code segment:
   while a<c and b<d do
   if a==1 then c=c+1
   else while a<=d do a=a+2.
2. Show that the following grammar
   S→Aa|bAc|Bc|bBa
   A→d
   B→d
   is LR(1) but not LALR(1).
3. What are lexical phase errors, syntactic phase errors and semantic phase errors? Explain with suitable example.
4. What is the role of symbol table? Discuss different data structure used for symbol table.
5. What is precedence function? Consider the following operator precedence matrix draw precedence graph and compute the precedence function

	a	(	)	;	$
a			>	>	>
(	<	<	=	<	
)			>	>	>
;	<	<	>	>	
$	<	<			

6. Describe various representations of three address codes. Translate the expression
   -(a+b)*(c+d)+(a+b+c)
7. Define the following term
   I. Panic Mode Error recovery
   II. Phrase level Error recovery
8. What is postfix notation? Translate (C+D)*(E+Y) into postfix using syntax directed translation scheme.

Section C [Attempt any 2 parts] [4X2=8]

1. Construct the CLR parsing table for the following grammar and parse the string "**aabb".** Show each and every step of algorithm.
   S→AA
   A→aA
   A→b
2. Define Backpatching and Semantic rule for Boolean expression. Derive three address code for the following expression
   P<Q and R<S and T<U
3. Define Syntax Directed Translation. Consider a production of grammar
   $E \rightarrow E^{(1)} + E^{(2)}$
   E→id

   Write down Semantic Action for this production, where $E^{(1)}$, $E^{(2)}$ are of mixed or different types.