Code No: R05320502 **R05** **Set No. 2**

III B.Tech II Semester Examinations,December 2010
COMPILER DESIGN
Computer Science And Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Describe, in detail, about the concept of DAG for register allocation with an appropriate example. [16]

2. (a) What are the common conflicts that can be encountered in shift - reduce parser.
   (b) Construct SLR parsing table for the following grammar.
   $R \rightarrow R\,'|'\,R\;|RR\;|R^*\;|(R)\;|a\;|b$ [8+8]

3. Construct LL(1) parse table for the following grammar.
   $b\exp r \rightarrow b\exp r\ or\ bterm \mid bterm$
   $bterm \rightarrow bterm\ and\ bfactor \mid bfactor$
   $b\,factor \rightarrow not\ bfactor\ |(b\exp r)\ |true\ |false$
   where or, and, not, (,), true, false are terminals in the grammar. [16]

4. (a) Consider the following fragment of 'C' code:
   float i, j;
   i = i * 70 + j + 2;
   Write the output at all phases of the compiler for the above 'C' code.
   (b) Write short notes on: input buffering. [10+6]

5. (a) Draw syntax tree for the arithmetic expressions
   $a * (b + c) - d/2$
   Also write the given expression in postfix notation.
   (b) Write the quadruple, triple, indirect triple for the following expression
   $(x + y)^*(y + z) + (x + y + z)$ [8+8]

6. (a) Explain how copy propagation can be done using data flow equation.
   (b) What are du and ud chains. [8+8]

7. What are the various operations performed on the symbol table? Explain each of them in detail. [16]

8. (a) Write an algorithm for partitioning a sequence of three-address statements into basic blocks.
   (b) Apply the algorithm for the following three-address code :
      i. t1:= 4*i
      ii. t2:= a[t1]

iii. t3:= 4*I
iv. t4:= b[t3]
v. t5:= t2*t4
vi. t6:= prod +t5
vii. prod:= t6
viii. t7:= i+1
ix. i:= t7
x. if i<=20 goto (1). [8+8]

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Code No: R05320502 **R05** **Set No. 4**

III B.Tech II Semester Examinations,December 2010
COMPILER DESIGN
Computer Science And Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Describe, in detail, about the concept of DAG for register allocation with an appropriate example. [16]

2. What are the various operations performed on the symbol table? Explain each of them in detail. [16]

3. (a) Consider the following fragment of 'C' code:
   float i, j;
   i = i * 70 + j + 2;
   Write the output at all phases of the compiler for the above 'C' code.
   (b) Write short notes on: input buffering. [10+6]

4. (a) Write an algorithm for partitioning a sequence of three-address statements into basic blocks.
   (b) Apply the algorithm for the following three-address code :
      i. t1:= 4*i
      ii. t2:= a[t1]
      iii. t3:= 4*I
      iv. t4:= b[t3]
      v. t5:= t2*t4
      vi. t6:= prod +t5
      vii. prod:= t6
      viii. t7:= i+1
      ix. i:= t7
      x. if i<=20 goto (1). [8+8]

5. (a) What are the common conflicts that can be encountered in shift - reduce parser.
   (b) Construct SLR parsing table for the following grammar.
   $R \rightarrow R\,'|'\,R\ |RR\ |R^*\ |(R)\ |a\ |b$ [8+8]

6. Construct LL(1) parse table for the following grammar.
   $b\exp r \rightarrow b\exp r\ or\ bterm \mid bterm$
   $bterm \rightarrow bterm\ and\ bfactor \mid bfactor$
   $b\,factor \rightarrow not\,bfactor\ |(b\exp r)\ |true\ |false$
   where or, and, not, (,), true, false are terminals in the grammar. [16]

7. (a) Explain how copy propagation can be done using data flow equation.
   (b) What are du and ud chains. [8+8]

8. (a) Draw syntax tree for the arithmetic expressions
   $a * (b + c) - d/2$
   Also write the given expression in postfix notation.
   (b) Write the quadruple, triple, indirect triple for the following expression
   $(x + y)^*(y + z) + (x + y + z)$ [8+8]

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Code No: R05320502 **R05** **Set No. 1**

III B.Tech II Semester Examinations,December 2010
COMPILER DESIGN
Computer Science And Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What are the common conflicts that can be encountered in shift - reduce parser.
   (b) Construct SLR parsing table for the following grammar.
   $R \rightarrow R\,'|'\,R\ |RR\ |R^*\ |(R)\ |a\ |b$ [8+8]
2. What are the various operations performed on the symbol table? Explain each of them in detail. [16]
3. (a) Consider the following fragment of 'C' code:
   float i, j;
   i = i * 70 + j + 2;
   Write the output at all phases of the compiler for the above 'C' code.
   (b) Write short notes on: input buffering. [10+6]
4. (a) Draw syntax tree for the arithmetic expressions
   $a * (b + c) - d/2$
   Also write the given expression in postfix notation.
   (b) Write the quadruple, triple, indirect triple for the following expression
   $(x + y)^*(y + z) + (x + y + z)$ [8+8]
5. (a) Write an algorithm for partitioning a sequence of three-address statements into basic blocks.
   (b) Apply the algorithm for the following three-address code :
      i. t1:= 4*i
      ii. t2:= a[t1]
      iii. t3:= 4*I
      iv. t4:= b[t3]
      v. t5:= t2*t4
      vi. t6:= prod +t5
      vii. prod:= t6
      viii. t7:= i+1
      ix. i:= t7
      x. if i<=20 goto (1). [8+8]
6. Describe, in detail, about the concept of DAG for register allocation with an appropriate example.
   [16]

7. (a) Explain how copy propagation can be done using data flow equation.
   (b) What are du and ud chains. [8+8]

8. Construct LL(1) parse table for the following grammar.
   $b\exp r \;\rightarrow\; b\exp r\ or\ bterm \mid bterm$
   $bterm \;\rightarrow\; bterm\ and\ bfactor \mid bfactor$
   $b\ factor \;\rightarrow\; not\ bfactor \mid (b\exp r) \mid true \mid false$
   where or, and, not, (,), true, false are terminals in the grammar. [16]

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Code No: R05320502 **R05** **Set No. 3**

III B.Tech II Semester Examinations,December 2010
COMPILER DESIGN
Computer Science And Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Consider the following fragment of 'C' code:
   float i, j;
   i = i * 70 + j + 2;
   Write the output at all phases of the compiler for the above 'C' code.
   (b) Write short notes on: input buffering. [10+6]

2. Describe, in detail, about the concept of DAG for register allocation with an appropriate example. [16]

3. (a) Explain how copy propagation can be done using data flow equation.
   (b) What are du and ud chains. [8+8]

4. (a) Write an algorithm for partitioning a sequence of three-address statements into basic blocks.
   (b) Apply the algorithm for the following three-address code :
      i. t1:= 4*i
      ii. t2:= a[t1]
      iii. t3:= 4*I
      iv. t4:= b[t3]
      v. t5:= t2*t4
      vi. t6:= prod +t5
      vii. prod:= t6
      viii. t7:= i+1
      ix. i:= t7
      x. if i<=20 goto (1). [8+8]

5. (a) Draw syntax tree for the arithmetic expressions
   $a * (b + c) - d/2$
   Also write the given expression in postfix notation.
   (b) Write the quadruple, triple, indirect triple for the following expression
   $(x + y)^{*}(y + z) + (x + y + z)$ [8+8]

6. What are the various operations performed on the symbol table? Explain each of them in detail. [16]

7. Construct LL(1) parse table for the following grammar.
$b\exp r \rightarrow b\exp r\ or\ bterm \mid bterm$
$bterm \rightarrow bterm\ and\ bfactor \mid bfactor$
$b\ factor \rightarrow not\ bfactor \mid (b\exp r) \mid true \mid false$
where or, and, not, (,), true, false are terminals in the grammar. [16]

8. (a) What are the common conflicts that can be encountered in shift - reduce parser.

   (b) Construct SLR parsing table for the following grammar.
   $R \rightarrow R\,'|'\,R \mid RR \mid R^* \mid (R) \mid a \mid b$ [8+8]

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