M.E. Second Semester (Computer Science & Engineering) (F.T.) (CGS)

13149 : Advanced Compiling Techniques : 2 RMEF 2 / 2 RME 2 / 2 KMEF 2

P. Pages : 2 | AU - 3228

Time : Three Hours | Max. Marks : 80

* 0 9 8 7 *

Notes : 1. Assume suitable data wherever necessary.
2. Illustrate your answer necessary with the help of neat sketches.

1. a) What important issues are considered in the management of the symbol-Table that is local to the specific procedure? 7

   b) How sloping and visibility rate of any source language affects the global symbol table structure? 7

OR

2. a) What typical fields are present in the symbol-table? What is the significance of Global ST & Local ST? 7

   b) What approaches used to generate Loads and stores to put values? 7

3. a) What are advantages of tree representations over quadruples? Translate MIR to single tree representation: 7

   $a \leftarrow a + 1$

   $b \leftarrow a + a$

   b) Why AST (Abstract Syntax Tree) is the most suitable form of High-level I.L? Give AST for given code: 6

```
int f(a, b)
int a,b;
{
  int c;
  c = a + 2;
  printf (b, c);
}
```

OR

4. a) What is ICAN? Give examples for: 6
   a) Representing HIR in ICAN and
   b) Representing IIR in ICAN

   b) Explain with example: 7
   a) Open scope, b) Closed scope,
   c) Visibility, d) Innermost scope and
   e) Outermost scope

5.	a)	Explain how register usage is very important? Which four issues are of Cocern?	6
	b)	Explain various problems in producing efficient code for languages that uses symbolic data and supports polymorphic operations.	7

OR

6.	a)	What are various issues and non-issues involved in supporting shared objects?	6
	b)	Explain parameter passing in Register with register window.	7
7.	a)	Explain in brief syntax-directed Techniques with semantic-directed techniques.	7
	b)	Explain pattern-matching process by considering tree rewriting system.	6

OR

8.	a)	Explain any two approaches that produce a code generator from a machine description.	7
	b)	Explain eliminating chain loops.	6
9.	a)	Give the examples of acyclic and cyclic control structures and explain how structural analysis recognizes it?	7
	b)	What are the useful properties of Depth-first ordering and semi dominators?	7

OR

10.	a)	Explain with example, what is Reducibility and Irreducibility?	7
	b)	Write a code for Fibonacci number and draw MIR for it.	7
11.	a)	What are the dimensions in which data-flow Analysis problems are categorized?	6
	b)	Explain followings: a) Copy-propagation Analysis. b) Constant-Propagation Analysis.	7

OR

12.	a)	Give flow functions for structural analysis of constructs. a) if-then b) If-then-else c) While	6
	b)	Explain in brief: i) Du-chains, ii) Dd-chains iii) Webs	7

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