

15203

Roll No. _____

Total No of Pages: **2**

15203

M. Tech. I - Sem. (Main) Exam., Dec. - 2018

Software Engineering

1MSE3 Optimizing Compilers

Time: 3 Hours

Maximum Marks: 100

Min. Passing Marks: 33

Instructions to Candidates:

*Attempt any **five** questions, Marks of questions are indicated against each question. Draw neat and comprehensive sketches wherever necessary to clearly illustrate your answer. Assume missing data suitable if any and specify the same. Use of following supporting material is permitted during examination. (Mentioned in form No. 205)*

1. NIL 2. NIL

Q.1 (a) Explain the organization of an optimizing compiler. [10]

(b) Describe various factors affecting compiler optimization. [10]

Q.2 (a) What is the structure of data? Discuss data flow optimization with suitable example. [10]

(b) What is Static Single Assignment? Describe SSA – based optimization. [10]

Q.3 (a) How can Alias Analysis be defined? Categorize and explain various categories of Alias optimization. [10]

(b) Describe the difference between alias analysis and pointer analysis with suitable example. [10]

- Q.4 (a) Explain the register allocation using graph coloring with example. [10]
- (b) What is the importance of instruction scheduling and rescheduling. [10]
- Q.5 (a) Explain the inter procedural optimization with example. [10]
- (b) Describe dependence based transformation loop unrolling in procedural level optimization. [10]
- Q.6 (a) Explain the loop optimization technique with suitable example. [10]
- (b) What is the importance of inline expansion optimization technique? [10]
- Q.7 (a) Describe difference between global optimization and local optimization. [10]
- (b) Explain the global value numbering with algorithm and suitable example. [10]
- Q.8 (a) Explain the local symbol table management. [10]
- (b) Explain constant folding optimization technique. [10]

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