Total No. of Questions : 12]

SEAT No. :

P2846

[Total No. of Pages : 2

B.E. Computer Engineering (Semester - I)
PRINCIPLES OF COMPILER DESIGN
(2003 Pattern)

Time : 3 Hours] *[Max. Marks : 100*

Instructions to the candidates:

1) ***Answers to the two sections should be written in separate answer books.***
2) ***From section-I, answer (Q1 or (Q2) and (Q3 or Q4) and (Q5 or Q6).***
3) ***From Section-II, answer (Q7 or Q8) and (Q9 or Q10) and (Q11 or Q12).***
4) ***Figures to the right side indicate full marks.***
5) ***Assume Suitable data if necessary.***

SECTION - I

Q1) a) List and explain various phases of Compiler. For the following expression show output of each phase **[10]**

Result = a+b*c, here a and b are of float type and c is integer type.

b) Write a LEX specification to calculate number of new line characters, tabs and white spaces in the program. **[8]**

OR

Q2) a) Explain various compiler construction tools. **[8]**

b) Compare compiler and interpreter. **[4]**

c) Explain following **[6]**

i) Token

ii) Pattern

iii) Cross compiler

Q3) a) Compare Top-down and Bottom-up parsing. **[6]**

b) Show that the following grammar is LL (1) but not SLR (1) **[10]**

$S \rightarrow AaAb|Bb\ Ba$

$A \rightarrow \varepsilon$

$B \rightarrow \varepsilon$

P.T.O.

OR

Q4) a) Explain the need of semantic Analyzer in the compilation. **[8]**

b) Explain Recursive-descent parser with example. **[8]**

Q5) a) Explain concept of Backpatching with example. **[8]**

b) What is syntax Directed Definition? How bottom up evaluation of S-attributed definition takes place. **[8]**

OR

Q6) a) What is three address code? Explain three address code generation for conditional statement. **[8]**

b) With example explain synthesized and inherited attributes. **[8]**

SECTION - II

Q7) a) What are different parameter passing methods? Explain with example. **[8]**

b) What is activation record? Explain need of it. with example explain various fields of activation record. **[8]**

OR

Q8) a) Explain runtime support and storage allocation. **[8]**

b) What is "Display"? Using example explain it. **[8]**

Q9) a) With example explain peephole optimization. **[10]**

b) What is DAG? Explain in detail. How DAG is used in code generation? **[8]**

OR

*Q10)*a) Explain the issues in code generation. **[8]**

b) What is basic block? Explain in brief. **[2]**

c) Explain register allocation strategy for code generation. **[8]**

*Q11)*a) Explain in detail various sources of code optimization. **[8]**

b) What is Local and global optimization? Explain in detail. **[8]**

OR

*Q12)*a) Explain various transformations on basic blocks. **[8]**

b) What is the need of code optimization phase in compiler. **[8]**