

Total No. of Questions : 12]

SEAT No. :

P797

[Total No. of Pages : 3

[4659] - 209

B.E. (I.T.) (Semester - I)

COMPILER DESIGN

(2008 Pattern) (Elective - I (C))

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:

- 1) *Answer three questions from each section.*
- 2) *Answers to the two Sections should be written in separate answer-books*
- 3) *Neat diagrams must be drawn wherever necessary.*
- 4) *Figures to right indicate full marks.*
- 5) *Assume suitable data, if necessary*

SECTION - I

- Q1)** a) Write merits and demerits of compiler and interpreter. [6]
- b) Explain input buffering for lexical analyzer with example. Write FP and BP movement concept with algorithm? Also explain role of symbol table in lexical analysis. [10]

OR

- Q2)** a) Write different issues in lexical analysis. Also explain lexical errors and its recovery techniques for each error. [6]
- b) Write a lex program to display no. of character, words, lines, paragraphs, vowels and consonants and single line and multiline comments. [10]

- Q3)** a) Explain error detection and recovery for top-down and bottom-up parsing. [6]

- b) For a given grammar

$S \rightarrow iEtS \mid iEtSeS \mid a$

$E \rightarrow b$

Left factor the grammar and find First and Follow and build predictive parsing table. Is this LL (1) grammar yes or no, Justify. [12]

P.T.O.

OR

Q4) Construct LALR parsing table for the grammar [18]

$S' \rightarrow S$

$S \rightarrow CC$

$C \rightarrow cC \mid d$

Q5) a) Explain elimination of left recursion from a translation scheme with example. [8]

b) Explain syntax tree and create annotated tree with syntax tree concept and create DAG using one example. [8]

OR

Q6) a) Construct syntax tree for $a-4+c$ and directed acyclic graph for $a+a*(b-c)+(b-c)*d$ and differentiate between syntax tree and directed acyclic graph. [8]

b) Write short notes on: [8]

i) Short circuit code

ii) SDD for flow of control statement

iii) SDD for case statement

SECTION - II

Q7) a) Explain following with suitable example. [8]

i) Activation record

ii) Control stack

iii) Binding and storage

iv) Displays.

b) Explain types of Scope in detail. Illustrate with example. [8]

OR

Q8) a) Explain different parameter passing techniques with proper example. [8]

- b) How the records of nested procedures are maintained at run time, explain with the help of neat diagram. (Consider all cases). [8]

Q9) a) Explain Display with example, why it is used. [4]

- b) Write Quadruple, Triple and Indirect Triple representation of following expression $d = -(a-b) + (a-c) + (a-c)$ with explanation. [12]

OR

Q10) a) What is Liveness? Explain Liveness calculation with suitable example. [10]

- b) Write register allocation techniques and explain with suitable example. [6]

Q11) a) Explain implementation of single and multi-inheritance using fixed offset method and trampoline method in compiler with block diagram. [10]

- b) How the compiler handles the constructors in object oriented programming? Explain with example. [8]

OR

Q12) a) Explain implementation of class hierarchy without inheritance by compiler with block diagram. [8]

- b) Difference in class based and object based languages. Explain object oriented feature in compiler context. [10]

