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Total No. of Pages : 02

Total No. of Questions : 18

B.Tech.(CSE) (2012 to 2017 E-III) (Sem.-7,8)

B.Tech. (IT)

COMPILER DESIGN

Subject Code : BTCS-913

M.Code : 71905

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A**Answer briefly :**

1. Differentiate between stack allocation and static allocation.
2. Name two compiler construction tools.
3. Define 'Code Motion' and 'Constant Folding' with examples.
4. Define 'Basic Block' and write about its significance.
5. Write at least two differences between LR (0) parsers, SLR (1) parsers, CLR (1) and LALR Parsers.
6. Show that the grammar is ambiguous: $S \rightarrow Sa$ $S \rightarrow bS$ $S \rightarrow c$
7. List the functions of a pre-processor.
8. How do Self Hosting Compilers work?
9. Name 3 forms of output of code generator.
10. Write the triple representation of $x := y[i]$.

SECTION-B

11. Differentiate between top down and bottom up parsing. Show the steps of a shift reduce parser on input (a,(a,a)) using the following grammar :
$$S \rightarrow (L) \mid a$$
$$L \rightarrow L, S \mid S$$
12. Translate the arithmetic expression $a * - (b + c)$ into
 - a) Postfix notation
 - b) Three-address code
13. What is the role of the lexical analyzer? Explain the issues in lexical analysis.
14. What is Code Optimization? Describe the principle sources of optimization.
15. Explain the various storage allocation strategies applied to activation records.

SECTION-C

16. Explain in detail the process of compilation. Illustrate the output of each phase of compilation for the input " $a = (b+c) * (b+c) * 2$ ".
17. What is the need of symbol table. Explain various data structures used for its storage.
18. Given the CFG $G = \{S, \{S, U, V, W\}, \{a, b, c, d\}, P\}$ with P given as shown below :
$$S \rightarrow UVW$$
$$U \rightarrow (S) \mid aSb \mid d$$
$$V \rightarrow aV \mid \varepsilon$$
$$W \rightarrow cW \mid \varepsilon$$
 - a) Construct a table-based LL(1) predictive parser for G;
 - b) Give the parsing actions for the input string "(dc)ac".

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.