Enrollment No: _____ Exam Seat No:_____

C.U.SHAH UNIVERSITY

Winter Examination-2018

Subject Name : Translator Design
Subject Code : 4TE07TDE1 **Branch:** B.Tech. (CE)
Semester : 7 **Date :** 04/12/2018 **Time :** 10:30 To 01:30 **Marks :** 70

Instructions:

(1) Use of Programmable calculator & any other electronic instrument is prohibited.
(2) Instructions written on main answer book are strictly to be obeyed.
(3) Draw neat diagrams and figures (if necessary) at right places.
(4) Assume suitable data if needed.

Q-1 **Attempt the following questions:**

a) What is Cross Compiler? **(01)**

b) What is the difference between lexeme and token? **(01)**

c) What is Constant folding ? **(01)**

d) Define the term Handle pruning. **(01)**

e) What is the difference between macros and subroutine? **(01)**

f) Write a regular expression for all binary string with at least 3 characters and 3rd character should be zero. **(01)**

g) The languages that need heap allocation in the runtime environment are_____. **(01)**
(a) Those that use global variables
(b) Those that use dynamic scoping
(c) Those that support recursion
(d) Those that allow dynamic data structure

h) When is the type checking usually done? **(01)**
(a) During syntax directed translation (b) During lexical analysis
(c) During code optimization (d) During syntax analysis

i) In a compiler _____ checks every character of the source text. **(01)**
(a) The lexical analyzer (b) The syntax analyzer
(c) The code generator (d) The code optimizer

j) _____ is a top-down parser. **(01)**
(a) Operator precedence parser (b) LALR (k) parser
(c) LR (k) parser (d) Recursive descent parser

k) In a compiler, Which data structure responsible for the management of information about variables and their attributes ? **(01)**
(a) Semantic stack (b) Parser table
(c) Symbol table (d) Abstract syntax-tree

l) What is the name of the process that determining whether a string of tokens can be generated by a grammar? **(01)**
(a)Analyzing (b)Semantic (c) Parsing (d) Keyword generator

m) A bottom up parser generates _____ . **(01)**
(a) Right most derivation (b) Right most derivation in reverse
(c) Leftmost derivation (d) Leftmost derivation in reverse

n) Which of the following strings is not generated by the following grammar? **(01)**
$S \rightarrow SaSbS|\varepsilon$

(a) aabb (b) abab (c) aababb (d) None of the given

Attempt any four questions from Q-2 to Q-8

Q-2 **Attempt all questions**

(a) What is input buffering? Explain various technique of input buffering. **(07)**

(b) Explain phases of compiler. Write output of each phase of a complier for a given string a = a + b * c * 2; type of a, b, c are float **(07)**

Q-3 **Attempt all questions**

(a) Construct NFA for given regular expression (a+b)*abb. Convert from NFA to DFA using Thompson's rule. **(07)**

(b) What is left recursion? Explain the technique to eliminate left recursion. Eliminate left recursion from given grammar. **(07)**

1) S → SX | SSb | XS | a
   X → Sa | Xb
2) S → Aa | b
   A→ Ac | Sd | ε

Q-4 **Attempt all questions**

(a) Do as directed: **(07)**

1) What is ambiguous grammar? Explain it with "Dangling Else" Problem.
2) Explain various parameter passing methods.

(b) Discuss about Error recovery terminology in LR parsing with suitable example. **(07)**

Q-5 **Attempt all questions**

(a) Construct Predictive parsing table for given grammar. Parse the given string like id + id * id $ using predictive parsing method. **(08)**

E→E+T|T
T→T*F|F
F→(E)|id

(b) Explain various Storage allocation strategies. **(06)**

Q-6 **Attempt all questions**

(a) Conversion from given Regular Expression a*b*a(a|b)*b*a# to DFA without constructing NFA. **(07)**

(b) What is intermediate code? Which are the advantages of it? Explain different intermediate forms. **(07)**

Q-7 **Attempt all questions**

(a) Discuss about Peephole optimization. **(07)**

(b) Write a short note on symbol table management. **(07)**

Q-8 **Attempt all questions**

(a) Discuss the various terminologies are used to generate code from DAG. **(07)**

(b) Write a short note on given topics: **(07)**

1) Linker and Loader.
2) One pass and Two pass assembler.