SARDAR PATEL UNIVERSITY

SEAT No._____   Master of Computer Applications (MCA)

Semester – IV External Examinations

PS04CMCA02 (Compiler Design)

22nd October, 2018 (Monday)

Time: 02:00 PM to 05:00 PM   Max. Marks: 70

Q-1 Choose most appropriate option for the following: [08]

1. _____ is a program that reads a program written in the source language and translates it into an equivalent target language.
    A. interpreter
    B. compiler
    C. A and B both
    D. None of these

2. _____ is the string obtained by deleting zero or more trailing symbols of string s.
    A. Prefix of s
    B. Suffix of s
    C. Substring of s
    D. None of these

3. A language denoted by a regular expression is known as a _____.
    A. regular expression
    B. regular definition
    C. regular equation
    D. None of these

4. A _____ that produces more than one parse tree for the same sentence is said to be ambiguous.
    A. sentence
    B. statement
    C. grammar
    D. None of these

5. _____ is a grammar transformation that is useful for producing a grammar suitable for predictive parsing.
    A. Left factoring
    B. Right factoring
    C. A and B both
    D. None of these

6. _____ is the sign that indicates string with length zero.
    A. $
    B. ε
    C. @
    D. None of these

7. _____ productions are difficult to be handled by a top-down parser.
    A. Non-recursive
    B. Right recursive
    C. A and B both
    D. None of these

8. _____ can be defined as sequence of characters in the source program.
    A. Token
    B. Pattern
    C. Lexeme
    D. None of these

(P.T.O.)

Q-2 Write answers in short: *(ANY SEVEN)* [14]
   a. Discuss role of a lexical analyser.
   b. Define: Token. Give an example.
   c. Explain regular definition in brief.
   d. Discuss role of a parser.
   e. What is sentinel? Give an example.
   f. Define: sentence and sentential form
   g. Define: Operator Grammar. Give an example.
   h. What is handle pruning?
   i. What is Three-address code? Explain it with an example.

Q-3 A) List various phases of a compiler. Explain *ANY FIVE* of them in brief. [06]
   B) Write a short note on compiler construction tools. [06]
                                   OR
   B) List and explain various cousins of a compiler. [06]

Q-4 A) Construct an NFA for the following regular expression using the [06] Thompson's construction method:

$$ab (ab \mid bc)^* bc$$

   B) Distinguish between NFA and DFA. [06]
                                   OR
   B) Write and explain an algorithm for advancing a forward pointer in a buffer pair. [06]

Q-5 A) Write and explain an algorithm of operator precedence parsing. [06]
   B) Write and explain an algorithm for elimination left recursion. [06]
                                   OR
   B) Discuss model of nonrecursive predictive parser in detail. [06]

Q-6 A) List various issues in the design of a code generator. Explain each of them in brief. [06]
   B) List various principal sources of code optimization. Explain *ANY TWO* of them in brief. [06]
                                   OR
   B) Explain following implementation schemes of three-address statements: (i) *Triples* and (ii) *Indirect Triples* [06]

— X —

(2)