NED UNIVERSITY OF ENGINEERING & TECHNOLOGY
THIRD YEAR(BACHELOR OF SCIENCE IN COMPUTER SCIENCE)
SPRING SEMESTER EXAMINATIONS 2022
BATCH 2019

Time: 3 Hours

Dated:18-08-2022
Max.Marks:60

Theory of Programming Languages - CT-367

Note: Attempt all questions. All questions carry equal marks.

Q.1 (a) State the names of the programming paradigms and briefly explain their main features. Compare the Imperative language over the Declarative language with an example. (C-2)   5

(b) Analyse and explain the process of lexical analysis. Elaborate how regular expressions are utilized to make lexemes in the compilation process with appropriate examples. (C-2)   5

Q.2 (a) Briefly explain the compilation process of a source code of a programming language. Also, draw a labelled diagram. (C-2)   5

(b) Ambiguous expression will be converted into an unambiguous expression! Explain with an example. (C-2)   5

Q.3 (a) For subprograms or functions, what are the design issues? Also, list down categories of subprograms. (C-3)   5

(b) Elaborate and discuss the categories of variables by lifetime with advantages and disadvantages. (C-3)   5

Q.4 (a) Referential transparency exposes the functional side effects! Discuss both the concepts with examples. (C-3)   5

(b) Order of operand evaluation is important in expression evaluation! Discuss the rules associated with it. Also explain type conversion. (C-3)   5

Q.5 (a) Discuss, the concept of type checking. Differentiate between static type checking and dynamic type checking and give their relative advantages. (C-3)   5

(b) Initiate a source code with the help of Flex and Bison tools that accepts all of these expressions given below: (Note: provide files with extension .lex and .y) (C-3)   5
  ➢ (identifier + identifier)
  ➢ (identifier + constant)
  ➢ (identifier / identifier)
  ➢ (identifier / constant)

Q.6 (a) How many techniques are there for parsing? Suggest the best parsing technique for back-tracking with an appropriate example. (C-3)   5

(b) Briefly explain the concept of short-circuit evaluation with help of an example. Also, list down the language which utilizes this concept for expression evaluation. (C-3)   5

---- BEST OF LUCK ------

NED UNIVERSITY OF ENGINEERING & TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY
TSCS. Midterm Examinations Spring 2022

Time: 90 minutes   <u>Theory of Programming Language (CT-367) - A</u>   Max Marks: 20

<u>Note: Attempt all questions.</u>

Q-1) explain factors, which influence the design of any programming language. Also state general attributes of a good programming language? (4)

Q-2) What are the models of computation? Explain with suitable examples. (4)

Q-3) Draw and explain the compilation process life cycle? (4)

Q-4) Differentiate between ambiguous and unambiguous grammar? (4)

Q-5) Write lex program of any one of the following: (4)

   a) Validate mobile number of any of four telecom operators?
   b) Check a valid URL?

Time: 90 minutes   **Theory of Programming Language (CT-367) - B**   Max Marks: 20

Note: Attempt all questions.

Q-1) What are different programing domains? Briefly explain the language evaluation criteria? (4) (C-2)

Q-2) Briefly explains the process of lexical analysis? (4) (C-2)

Q-3) What is lambda calculus? Illustrate its computation usage with examples? (4) (C-2)

Q-4) Differentiate between Julia and other types programming languages (Python etc.)? (4) (C-3)

Q-5) Write lex program of any one of the following: (4) (C-3)

a) Validate date format (Day\Month\Year)?

b) Check either an expression is mathematical or relational operator based?

Time: 90 minutes

Theory of Programming Language (CT-367) - A

Max Marks: 20

Note: Attempt all questions.

Q-1) Explain factors, which influence the design of any programming language. Also state general attributes of a good programming language? (4) (C-2)

Q-2) What are the models of computation? Explain with suitable examples. (4) (C-2)

Q-3) Draw and explain the compilation process life cycle? (4) (C-2)

Q-4) Differentiate between ambiguous and unambiguous grammar? (4) (C-3)

Q-5) Write lex program of any one of the following: (4) C-3

    a) Validate mobile number of any of four telecom operators?

    b) Check whether given string is Palindrome or Not?

CT-086

Time: 90 minutes   <u>**Theory of Programming Language (CT-357) - B**</u>   Max Marks: 20

<u>**Note: Attempt all questions.**</u>

Q-1) What are different programming domains? Briefly explain the language evaluation criteria? (4)

Q-2) Briefly explains the process of lexical analysis? (4)

Q-3) What is lambda calculus? Illustrate its computation usage with examples? (4)

Q-4) Differentiate between flex and bison? (4)

Q-5) Write lex program of any one of the following: (4)

    a, Validate date format (Day\Month\Year)?

    b; Check either an expression is mathematical or relational operator based?