

R22

Code No: 185DZ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, January - 2025

PRINCIPLES OF PROGRAMMING LANGUAGES

(Common to CSE, IT, CSIT)

Time: 3 Hours

Max. Marks: 60

Note: This question paper contains two parts A and B.

i) Part- A for 10 marks, ii) Part - B for 50 marks.

- Part-A is a compulsory question which consists of ten sub-questions from all units carrying equal marks.
- Part-B consists of ten questions (numbered from 2 to 11) carrying 10 marks each. From each unit, there are two questions and the student should answer one of them. Hence, the student should answer five questions from Part-B.

PART- A

(10 Marks)

- 1.a) What is the primary reason for studying concepts of programming languages? [1]
- b) What are language evaluation criteria used for in the context of programming languages? [1]
- c) What is the primary difference between a variable and a named constant in a programming language? [1]
- d) Which data type category includes types like arrays, records, and unions? [1]
- e) What is the primary purpose of parameter passing methods in subprograms? [1]
- f) In the context of subprograms, what is meant by the term "local referencing environment"? [1]
- g) What is the purpose of semaphores in concurrency control? [1]
- h) Which concurrency model is used in Java for managing threads? [1]
- i) What is the primary feature of functional programming languages? [1]
- j) Which language is considered one of the earliest and most influential functional programming languages? [1]

PART - B

(50 Marks)

- 2.a) Describe the factors that influence the design of programming languages.
- b) Explain the trade-offs involved in programming language design. [5+5]

OR

- 3.a) Compare and contrast different methods of programming language implementation.
- b) Explain how formal methods like attribute grammars help in describing the syntax and semantics of programming languages. [5+5]

- 4.a) Explain the concept of variable binding and how it relates to the lifetime and scope of variables.

- b) Describe the differences between static and dynamic scoping. Provide examples of each. [5+5]

OR

- QA QA QA QA QA QA QA G
- 5.a) What is the difference between an array and an associative array in programming languages?
- b) What are the key characteristics of control structures like selection, iteration, and unconditional branching? Provide examples. [5+5]

- QA QA QA QA QA QA QA G
- 6.a) Explain the design issues associated with subprograms and how they influence language implementation.
- b) Describe the different parameter passing methods, including call-by-value, call-by-reference, and call-by-name. [5+5]

OR

- QA QA QA QA QA QA QA G
- 7.a) What are the challenges and benefits of implementing subprograms with stack-dynamic local variables?
- b) How are overloaded subprograms different from generic subprograms, and in which scenarios are they typically used? [5+5]

- QA QA QA QA QA QA QA G
- 8.a) Explain how Java threads work and how they facilitate concurrent execution in Java programs.
- b) Describe how exception handling is implemented in Ada, C++, and Java. What are the key differences in their approaches? [5+5]

OR

- QA QA QA QA QA QA QA G
- 9.a) What is event handling, and how is it implemented in Java and C#?
- b) Discuss the significance of statement-level concurrency in improving program performance, and explain how it can be implemented. [5+5]

- QA QA QA QA QA QA QA G
- 10.a) Explain the fundamentals of functional programming languages, highlighting their differences from imperative programming languages.
- b) Discuss the key features of LISP and how it supports functional programming. [5+5]

OR

- QA QA QA QA QA QA QA G
- 11.a) How do primarily imperative languages support functional programming paradigms? Provide examples.
- b) Compare and contrast functional and imperative programming languages in terms of structure, execution model, and use cases. [5+5]

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QA QA QA QA QA QA QA G

QA QA QA QA QA QA QA G

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