

II B. Tech II Semester Regular Examinations, April - 2018

PRINCIPLES OF PROGRAMMING LANGUAGES

(Com to CSE, IT)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**
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PART -A

1. a) Explain about parsing. (2M)
- b) Write any two design issues for arithmetic expressions. (2M)
- c) Explain about generic methods (3M)
- d) Differentiate between procedural languages and object oriented language (3M)
- e) Write short notes on lambda calculus. (2M)
- f) Explain about multi paradigm languages. (2M)

PART -B

2. a) Explain how is the order of evaluation of attributes determined for the tree of a given grammar (7M)
- b) Discuss in detail about the attribute grammars (7M)
3. a) Explain in detail arrays, indices, subscript bindings, and array categories. (7M)
- b) Define unconditional branching. What are the problems with unconditional branching? (7M)
4. a) Define a function. What are the design issues for functions? Explain (7M)
- b) Explain how subprogram is overloaded? Give examples. (7M)
5. a) Discuss the design issues of Exception Handling. (7M)
- b) Explain in detail abstract data types in java with examples. (7M)
6. a) Explain the principles of ML? (7M)
- b) Explain about fundamentals of FPL? (7M)
7. a) Explain about Logic programming (7M)
- b) Discuss in brief about the Basic elements of Prolog. (7M)



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PART -A

1. a) Describe the approach of using axiomatic semantics to convert the correctness of a given program? (2M)
- b) List the advantages of using control structures in any of the compiled programming languages. (2M)
- c) Define Shallow and Deep binding for referencing environment of subprograms that have been passed as parameters. (3M)
- d) What is the primary problem with semaphores to provide synchronization? (3M)
- e) What is type inferencing used in ML? (2M)
- f) What are the syntactic form and usage of fact and ruled statements in Prolog? (2M)

PART -B

2. a) What is attribute grammar? Give the syntax directed definition for a desktop calculator. (7M)
- b) Compare and contrast between the special purpose and general purpose programming languages. (7M)
3. a) Explain various primitive data types with suitable examples. (7M)
- b) Discuss about type-checking and control structures? (7M)
4. a) Explain how subprograms names are passed as parameters. (7M)
- b) Define sub program. What are the distinct categories of Subprograms? (7M)
5. a) Compare and contrast the cooperation synchronization and competition synchronization in message passing. (7M)
- b) Explain the basic concepts of exception handling. (7M)
6. a) Explain about scheme functional programming language. (7M)
- b) Discuss how Haskell differs from ML (7M)
7. a) Discuss about basic elements of Prolog. (7M)
- b) Explain different types of propositions present in logic programming. (7M)



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PART -A

1. a) What are the factors influencing the writability of a language? (2M)
- b) What are the design issues for string types? (2M)
- c) What are generic methods? (3M)
- d) List out the errors that can occur in expression evaluation. (3M)
- e) What scoping rules are used in ML? (2M)
- f) What is the relationship between resolution and unification in Prolog? (2M)

PART -B

2. a) Explain about lexical analysis. (7M)
- b) Write short notes on context free grammer. (7M)
3. a) Explain the conditional statements and its implementation with examples. (7M)
- b) Explain the scope and lifetime of variables. Illustrate when they would coincide and when they don't. (7M)
4. a) Define a subprogram. Write the semantics of call and return of a subprogram (7M)
- b) Discuss about nested subprograms with examples. (7M)
5. a) How message passing is implemented in Ada? Explain with examples. (7M)
- b) What is an event? How the events are handled in various OOP languages. (7M)
6. a) Give comparison of Functional and Imperative Languages. (7M)
- b) Explain the control structure of a PROLOG program. (7M)
7. a) Explain how RDBMS and expert systems are helped using logic programming. (7M)
- b) Discuss Terms and Goal statements in Prolog with examples (7M)



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PART -A

1. a) What are the difficulties in using an attribute grammar to describe all of the syntax and static semantics of a contemporary programming language? (2M)
- b) Why is type checking the parameters of a subprogram important? (2M)
- c) State the importance of Local Referencing Environments with suitable examples. (3M)
- d) Describe briefly about Monitors. (3M)
- e) Write about Meta Language declaration statement (2M)
- f) Mention the various applications of multi paradigm languages. (2M)

PART -B

2. a) Give an example of left recursive rule in CFG. What is the significance of left Recursive rule? (7M)
- b) How do you describe the meanings of programs using dynamic semantics? (7M)
3. a) What is a variable? What are the attributes of a variable? Elaborate on address of a variable. (7M)
- b) Explain in detail about overloaded operators. (7M)
4. a) Discuss how generic methods are implemented with suitable examples. (7M)
- b) Explain the importance of dynamic scoping with an example. (7M)
5. a) Define a Thread. How are threads different from processes? Explain java threads with examples. (7M)
- b) Define monitor. Explain how cooperation synchronization and competition synchronization are implemented using monitors. (7M)
6. a) How ML is different from other functional programming languages? (7M)
- b) Why were imperative features added to most dialects of LISP? (7M)
7. a) How PROLOG is different from other logic programming languages? Give an example for each feature. (7M)
- b) Explain Prolog interfacing process. (7M)

