Code No: R1622056 **R16** SET - 1

**II B. Tech II Semester Model Examinations, March 2018**
**Principles of Programming Languages**

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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## PART –A

| | | | |
|---|---|---|---|
| 1 | a) | What are the factors influencing the writability of a language? | [4M] |
| | b) | List the advantages of using control structures in any of the compiled programming languages. | [3M] |
| | c) | Define Shallow and Deep binding for referencing environment of subprograms that have been passed as parameters. | [4M] |
| | d) | Describe briefly about Monitors. | [4M] |
| | e) | Write about Meta Language declaration statements. | [4M] |
| | f) | What is the relationship between resolution and unification in Prolog? | [3M] |

## PART -B

| | | | |
|---|---|---|---|
| 2 | a) | Compare and contrast between the special purpose and general purpose programming languages. | [4M] |
| | b) | What is attribute grammar? Give the syntax directed definition for a desktop calculator. | [8M] |
| | c) | What are the limitations of recursive descent parser? | [4M] |
| 3 | a) | Explain the conditional statements and its implementation with examples. | [8M] |
| | b) | Explain the scope and lifetime of variables. Illustrate when they would coincide and when they don't. | [8M] |
| 4 | a) | Define a subprogram.Write the semantics of call and return of a subprogram. | [8M] |
| | b) | Discuss about nested subprograms with examples. | [8M] |
| 5 | a) | How message passing is implemented in Ada? Explain with examples. | [8M] |
| | b) | What is an event? How the events are handled in various OOP languages. | [8M] |
| 6 | a) | Discuss the fundamental concepts of lambda calculus. | [8M] |
| | b) | Explain about LISP functional programming language. | [8M] |
| 7 | a) | Discuss about basic elements of Prolog. | [8M] |
| | b) | Explain different types of propositions present in logic programming. | [8M] |

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Code No: R1622056 **R16** SET - 2

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Principles of Programming Languages

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**PART –A**

| | | | |
|---|---|---|---|
| 1 | a) | Describe the approach of using axiomatic semantics to convert the correctness of a given program? | [4M] |
| | b) | List the advantages and disadvantages of mixed mode arithmetic expressions. | [4M] |
| | c) | Why is type checking the parameters of a subprogram important? | [3M] |
| | d) | What is the primary problem with semaphores to provide synchronization? | [4M] |
| | e) | Write a short note on ML functions. | [4M] |
| | f) | What are the syntactic form and usage of fact and ruled statements in Prolog? | [3M] |

**PART -B**

| | | | |
|---|---|---|---|
| 2 | a) | How do you describe the meanings of programs using dynamic semantics? | [4M] |
| | b) | Explain in detail about recursive descent parsing. | [8M] |
| | c) | Give an example of left recursive rule in CFG. What is the significance of left Recursive rule? | [4M] |
| 3 | a) | Explain about the following<br>i) associative arrays ii) union types | [8M] |
| | b) | State whether static binding is more reliable or dynamic binding. Justify. | [8M] |
| 4 | a) | Define a function. What are the design issues for functions? Explain. | [8M] |
| | b) | Explain how subprogram is overloaded? Give examples. | [8M] |
| 5 | a) | Compare and contrast the cooperation synchronization and competition synchronization in message passing. | [8M] |
| | b) | Explain the basic concepts of exception handling. | [8M] |
| 6 | a) | How ML is different from other functional programming languages? | [8M] |
| | b) | Why were imperative features added to most dialects of LISP? | [8M] |
| 7 | a) | Explain how RDBMS and expert systems are helped using logic programming. | [8M] |
| | b) | Discuss Terms and Goal statements in Prolog with examples. | [8M] |

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Code No: R1622056 **R16** SET - 3

**II B. Tech II Semester Model Examinations, March 2018**

Principles of Programming Languages

Time: 3 hours Max. Marks: 70

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2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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**PART –A**

| | | | |
|---|---|---|---|
| 1 | a) | Define grammar, derivation and a parse tree. | [4M] |
| | b) | What are the design issues for string types? | [3M] |
| | c) | What are generic methods? | [4M] |
| | d) | List out the errors that can occur in expression evaluation. | [4M] |
| | e) | What is type inferencing used in ML? | [4M] |
| | f) | Mention the various applications of multi paradigm languages. | [3M] |

**PART -B**

| | | | |
|---|---|---|---|
| 2 | a) | Explain language evaluation criteria and the characteristics that affect them. | [8M] |
| | b) | Discuss the general approaches for the implementation of a Lexical analyzer. | [8M] |
| 3 | a) | Explain in detail arrays, indices, subscript bindings, and array categories. | [8M] |
| | b) | Define unconditional branching. What are the problems with unconditional branching? | [4M] |
| | c) | Discuss various methods for reclaiming garbage. | [4M] |
| 4 | a) | Discuss the design issues of subprogram and its operations performed on them. | [8M] |
| | b) | Explain how subprogram names are passed as parameters. | [8M] |
| 5 | a) | Define a Thread. How are threads different from processes? Explain java threads with examples. | [8M] |
| | b) | Define monitor. Explain how cooperation synchronization and competition synchronization are implemented using monitors. | [8M] |
| 6 | a) | Explain about scheme functional programming language. | [8M] |
| | b) | Discuss how Haskell differs from ML. | [8M] |
| 7 | a) | Correlate the importance of logic programming languages over functional programming languages. | [8M] |
| | b) | Explain Fact and Rule Statements in Prolog with suitable examples. | [8M] |

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Code No: R1622056 **R16** SET - 4

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Principles of Programming Languages

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2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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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? | [4M] |
| | b) | Write a note on Boolean and relational expressions. | [3M] |
| | c) | State the importance of Local Referencing Environments with suitable examples. | [4M] |
| | d) | Differentiate between physical and logical concurrency. | [4M] |
| | e) | What scoping rules are used in ML? | [3M] |
| | f) | Describe the multi - paradigm languages. | [4M] |

## PART -B

| | | | |
|---|---|---|---|
| 2 | a) | Discuss in detail about the attribute grammars. | [4M] |
| | b) | Explain how is the order of evaluation of attributes determined for the tree of a given grammar. | [8M] |
| | c) | Why lexical and syntax analyzer are separated out? | [4M] |
| 3 | a) | Discuss the merits of guarded commands. | [3M] |
| | b) | What is a variable? What are the attributes of a variable? Elaborate on address of a variable. | [8M] |
| | c) | Explain in detail about overloaded operators. | [5M] |
| 4 | a) | Discuss how generic methods are implemented with suitable examples. | [8M] |
| | b) | Explain the importance of dynamic scoping with an example. | [8M] |
| 5 | a) | What are the three possible levels of concurrency in programs? Explain. | [8M] |
| | b) | Discuss the reasons for using exception handlers in a programming language. What if there exist programming languages with no exception handlers. | [8M] |
| 6 | a) | Give comparison of Functional and Imperative Languages. | [8M] |
| | b) | Explain the control structure of a PROLOG program. | [8M] |
| 7 | a) | How PROLOG is different from other logic programming languages? Give an example for each feature. | [8M] |
| | b) | Explain Prolog interfacing process. | [8M] |

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