

III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2016
PRINCIPLES OF PROGRAMMING LANGUAGES

(Computer Science and Engineering)

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**

PART -A

- | | | |
|---|---|------|
| 1 | a) Define Left Recursive Grammar Rule. | [4M] |
| | b) Define Binding and Binding Time. | [3M] |
| | c) Which languages allow variable number of parameters? | [3M] |
| | d) What is an overriding method? | [4M] |
| | e) What data types were parts of original LISP? | [4M] |
| | f) What are two parts of a compound term? | [4M] |

PART -B

- | | | |
|---|---|-------|
| 2 | Using this grammar $\langle \text{assign} \rangle \rightarrow \langle \text{id} \rangle = \langle \text{expr} \rangle$
$\langle \text{id} \rangle \rightarrow \text{A B C}$
$\langle \text{expr} \rangle \rightarrow \langle \text{id} \rangle + \langle \text{expr} \rangle \langle \text{id} \rangle * \langle \text{expr} \rangle (\langle \text{expr} \rangle) \langle \text{id} \rangle$
Show parse tree and Left most derivation for following:
(a) $A = (A+B)*C$ (b) $A = B*(C*(A+B))$ | [16M] |
| 3 | a) Define name and structure type compatibility. What are relative merits of these two? | [8M] |
| | b) Define Coercion, Typeerror, Typechecking and Strong Typing. | [8M] |
| 4 | a) Explain design issues of functions. | [6M] |
| | b) Explain about Co-Routines with an example. | [10M] |
| 5 | a) What is Co-Operation Synchronization? | [6M] |
| | b) Implement Producer and Consumer problem using Semaphores. | [10M] |
| 6 | a) Explain about data objects in LISP. | [12M] |
| | b) Write factorial function using COMMON LISP. | [4M] |
| 7 | a) Explain Inferencing process of PROLOG. | [10M] |
| | b) Write differences between procedural and non-procedural languages. | [6M] |

-000-

III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2016
PRINCIPLES OF PROGRAMMING LANGUAGES

(Computer Science and Engineering)

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**

PART -A

- | | | |
|---|---|------|
| 1 | a) Define Lexeme and Token. | [3M] |
| | b) Define row major order and column major order in arrays. | [3M] |
| | c) Write differences between function and procedure. | [4M] |
| | d) Briefly describe advantage of monitor over semaphores. | [4M] |
| | e) Write difference between EQ and EQV. | [4M] |
| | f) What are forms of Horn Clauses? | [4M] |

PART -B

- | | | |
|---|--|-------|
| 2 | a) Prove that the following grammar is ambiguous | [8M] |
| | $\langle S \rangle \rightarrow \langle A \rangle$ | |
| | $\langle A \rangle \rightarrow \langle A \rangle + \langle A \rangle \langle id \rangle$ | |
| | $\langle id \rangle \rightarrow alblc$ | |
| | b) What is primary use of attribute grammar? | [8M] |
| 3 | a) Explain Categories of Arrays. | [8M] |
| | b) Explain Array Operations. | [8M] |
| 4 | Explain different parameter passing methods with an example. | [16M] |
| 5 | a) Explain Thread class in JAVA and its methods. | [10M] |
| | b) Explain how concurrency is provided in ML. | [6M] |
| 6 | a) Explain about Predicate functions in Scheme. | [8M] |
| | b) How functions are defined in Scheme? | [8M] |
| 7 | a) Explain about fact and rule statements in PROLOG | [8M] |
| | b) Explain how backtracking works in PROLOG | [8M] |

-000-



III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2016
PRINCIPLES OF PROGRAMMING LANGUAGES

(Computer Science and Engineering)

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**

PART -A

- | | | | |
|---|----|---|------|
| 1 | a) | Draw Parse tree for expression $a=b/(a+c)$. | [3M] |
| | b) | Define narrowing and widening conversions. | [3M] |
| | c) | What is parameter profile? | [4M] |
| | d) | Write differences between logical and physical concurrency. | [4M] |
| | e) | What does a lambda expression specify? | [4M] |
| | f) | What are three forms of PROLOG Term? | [4M] |

PART -B

- | | | | |
|---|----|--|-------|
| 2 | a) | Describe purpose of ACTION and GOTO table in an LR Parser with example. | [10M] |
| | b) | Describe differences between Top-Down and Bottom-Up Parsers. | [6M] |
| 3 | a) | What is mixed mode assignment? Explain mixed mode assignments in Ada, Java and ML. | [10M] |
| | b) | Explain structure of an associative array. | [6M] |
| 4 | a) | What is an overloaded subprogram? Explain with an example. | [8M] |
| | b) | Explain two methods for implementing blocks. | [8M] |
| 5 | | What is exception handling? How exceptions are handled in C++ and JAVA. | [16M] |
| 6 | a) | Explain about list functions in Scheme. | [8M] |
| | b) | Explain about primitive functions in Scheme. | [8M] |
| 7 | a) | Write deficiencies of PROLOG. | [10M] |
| | b) | Explain generate and test programming strategy in PROLOG. | [6M] |

-000-

III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2016
PRINCIPLES OF PROGRAMMING LANGUAGES

(Computer Science and Engineering)

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**

PART -A

- | | | | |
|---|----|--|------|
| 1 | a) | What is primary task of a Lexical Analyzer? | [3M] |
| | b) | What are design issues of Two-Way Selection Statement? | [3M] |
| | c) | Define scope and Lifetime. | [4M] |
| | d) | Explain wait () and release () methods of semaphores. | [4M] |
| | e) | What are antecedents and consequents? | [4M] |
| | f) | What are two forms of DEFINE? | [4M] |

PART -B

- | | | |
|---|--|-------|
| 2 | Perform Pair wise disjointness test for following rules: | [16M] |
| | A → aB bcBB | |
| | B → aB bAlaBb | |
| | C → aaA blcaB | |
| 3 | a) Explain advantages and disadvantages of Java for loop compared to Ada for loop. | [8M] |
| | b) Explain about Guarded Command | [8M] |
| 4 | Describe deep access and shallow access methods for implementing dynamic scoping. | [16M] |
| 5 | a) Explain features of Object-Oriented Programming Languages. | [6M] |
| | b) Explain how Ada supports concurrency. | [10M] |
| 6 | Explain how functions are defined in Scheme and ML. | [16M] |
| 7 | Explain list structures and Goal statements in PROLOG. | [16M] |

-000-