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M.E. / M.TECH. DEGREE EXAMINATIONS, MAY/JUNE 2017
SECOND SEMESTER

COMPUTER SCIENCE AND ENGINEERING
CP16203- PRINCIPLES OF PROGRAMMING LANGUAGES
(Regulation 2016)

Q. Code: 146757

Time: Three hours

Maximum : 100 marks

Answer **ALL** questions

PART A - (10 X 2 = 20 marks)

1. Define context-free grammar with example.
2. Convert the infix expression into other notations $(a+b)*(d+e) / (f+g)$.
3. Define records, Unions, Pointers.
4. Write implicit and explicit data types.
5. Write about nested sub programs with example.
6. Describe parameter passing
7. Write three features of object-oriented programming languages
8. Define threads with example.
9. Write short notes on lambda calculus.
10. What is type inferencing used in ML?

PART B - (5 X16 = 80 marks)

11. (a) (i) Discuss features of programming language and its importance. **(8)**
(ii) Explain about lexical analysis. **(4)**
(iii) Draw the syntax tree for $(a+b-c*d +e/f)$. **(4)**

(OR)

- (b) (i) Discuss about context-free grammar and regular expression? **(8)**
Give the parse tree of the following statement: $A=(B+C)*(D/E)$
(ii) Describe differences between Top-Down and Bottom-Up Parsers. **(8)**

12. (a) (i) Explain various primitive data types with suitable examples. (6)
(ii) Discuss about type-checking. (6)
(iii) Explain about iteration based on data structures. (4)

(OR)

- (b) (i) What is scope? How to implement the scope rules for a variable? (6)
(ii) Write short notes on Pointers. (4)
(iii) Explain associative arrays, their structure and operations. (6)

13. (a) (i) Explain how subprograms names are passed as parameters. (8)
(ii) Define sub program. What are the distinct categories of Subprograms? (8)

(OR)

- (b) (i) What is an overloaded subprogram? Explain with an example. (8)
(ii) Explain two methods for implementing blocks. (8)

14. (a) (i) Explain in detail about monitors. (8)
(ii) Implement Producer and Consumer problem using Semaphores. (8)

(OR)

- (b) (i) Explain the basic concepts of exception handling. What are the design issues for exception handling systems? (8)
(ii) Explain in detail about Guarded commands. (8)

15. (a) (i) Explain how backtracking works in PROLOG & deficiencies of PROLOG. (8)
(ii) Explain in detail about the principles of ML. (8)

(OR)

- (b) (i) Explain about primitive functions in Scheme. (8)
(ii) Explain in detail about fundamentals of functional programming languages (8)