

B.E. (Computer Science and Engineering)
Fifth Semester
CS-504: Principles of Programming Languages

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.

x-x-x

I. Attempt the following:-

- a) What are declarative and non-declarative programming languages?
- b) What is the role of backtracking in prolog?
- c) What is activation record? Explain its components.
- d) Differentiate local v/s global referencing environment.
- e) Explain code generation and optimization in compiler design. (5x2)

UNIT - I

- II. a) Explain various methods to pass parameters to a subprogram in different programming languages.
b) Compare BNF and EBNF notations with one example of each. (2x5)
- III. Explain in detail the various types of programming language paradigms. (10)
- IV. a) What is unification and resolution in prolog?
b) What are the parse trees? Explain ambiguity in parse trees. (2x5)

UNIT - II

- V. How heap storage is different from static storage? Why it is needed? Explain in detail the heap storage phases for variable-sized heap allocation? (10)
- VI. a) Explain the synchronization primitives for concurrent execution of tasks.
b) What are the polymorphic data types? How they are implemented? Take suitable example from programming languages. (2x5)
- VII. Write note on the following:-
 - a) type conversion
 - b) higher order functions
 - c) garbage collection
 - d) vectors and arrays (4x2½)

x-x-x