

TCS-504

1160

Odd Semester Examination 2018-19

B.TECH. (CSE) (SEMESTER-V)

PRINCIPLE OF PROGRAMMING LANGUAGE

Time: 03:00 Hours

Max Marks :100

1. Attempt **any four** questions of the following : [4×5=20]
- (a) What is a programming language? Explain the importance of programming language.
- (b) What are the major factors that affect development and language methodologies?
- (c) Using the following grammar:
- $\text{Expr} \rightarrow \text{Expr} + \text{Term} \mid \text{Term}$
- $\text{Term} \rightarrow \text{Term} * \text{Factor} \mid \text{Factor}$
- $\text{Factor} \rightarrow 0 \mid \dots \mid 9 \mid (\text{Expr})$
- Draw a parse tree for each of the following:
- (i) $7 + 8 * 9$
- (ii) $7 * 8 + 9$
- (d) Explain Declaration and Initialization.
- (e) Explain sequence control.
2. Attempt **any four** questions of the following : [4×5=20]
- (a) Explain Lambda calculus.
- (b) Explain batch processing environment.

- (c) Write a program for computing factorial $n(n!)$. Elaborate the suitability of sequence control used by you.
- (d) Explain in detail encapsulation, information hiding and abstraction.
- (e) Explain exception handling by taking a suitable example

3. Attempt **any two** questions of the following : [2×10=20]

- (a) Write short notes on: i) Call by value method of parameter passing. ii) Call by reference method of parameter passing
- (b) Define syntax and Semantics. Describe static and dynamic semantics. Also describe the basic concepts of denotational semantics.
- (c) What is heap? Explain how heap can be used to implement storage management. In this context explain the most suitable data structure to implement heap such that garbage collection and removal of dangling references is carried out effectively

4. Attempt **any two** questions of the following : [2×10=20]

- (a) What are syntactic elements? Explain
- (b) Explain the following:
 - (i) Static storage management.
 - (ii) Heap- based storage management
 - (iii) Stack – based storage management
- (c) What is syntax in programming language? What is Object Oriented Programming? Compare the object description of C++ and Java.

5. Attempt **any two** questions of the following. [2×10=20]

- (a) Write short notes on
 - (i) Virtual function
 - (ii) Concurrent programming

- (iii) Semaphores
- (iv) Local referencing environment
- (b) Write a procedure to insert an item into a linked list by passing a pointer to the head of the list. Under what parameter passing mechanism does this procedure work.
- (c) What do you mean by Context Free Grammar? Consider the following context free grammar:

$S \rightarrow AB/BC$

$A \rightarrow BA/a$

$B \rightarrow CC/b$

$C \rightarrow AB/a$

Draw the derivation tree and write leftmost derivation for the following string: baaba?

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