

Total No. of Questions : 7]

SEAT No. :

**P560**

[Total No. of Pages : 2

[5840]-101

**M.Sc. (Computer Science)**

**CSUT -111 : PARADIGM OF PROGRAMMING LANGUAGES**

**(2019 Pattern) (Semester-I)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. 1 is compulsory.*
- 2) *Solve any five questions from Q. 2 to Q. 7.*
- 3) *Questions from Q.2 to Q. 7. carry equal marks.*
- 4) *Figures to the right indicate full marks.*

**Q1)** Solve any five of the following:

**[10]**

- a) What is the difference between var and val in Scala?
- b) What is l-value and r-value?
- c) What is an array slice? name any two languages supporting it.
- d) Show IEEE floating point standard for single and double precision.
- e) What are the Keyword and positional parameters?
- f) Give any two tasks performed by a preprocessor.

**Q2)** Attempt the following.

**[12]**

- a) i) What are the three characteristics of tasks that distinguish it from a subprogram? **[3]**
- ii) Explain the differences between compilation and Interpretation. Which languages use a compiler and which interpreter? **[4]**
- b) What are the different parameter passing methods? Explain any 2 in detail. **[5]**

**Q3)** Attempt the following.

**[12]**

- a) i) What are the design issues of subprogram? **[3]**
- ii) Explain the concept of tail recursion with suitable example. **[4]**
- b) What is a dangling pointer? Explain two solutions to the dangling pointer problem? **[5]**

**P.T.O.**

- Q4) Attempt the following. [12]**
- a) i) Explain implementation of Single Inheritance with suitable example. [3]
  - ii) Write a Scala Program to accept a number from the user and find factorial of that number. [4]
  - b) What are the design issues of an array? Explain various categories of array based on binding to subscript ranges and binding to storage. [5]

- Q5) Attempt the following. [12]**
- a) i) Define the following terms: [3]
    - 1) Precedence
    - 2) Associativity
    - 3) Orthogonality
  - ii) What is descriptor? Draw descriptor for static length, limited dynamic length strings. [4]
  - b) Explain Heap-based allocation. [5]

- Q6) Attempt the following. [12]**
- a) i) Why are there so many Programming Languages? [3]
  - ii) What is Binding Time? Explain the different binding times at which binding decisions can be made. [4]
  - b) Explain five different methods to create List in Scala. [5]

- Q7) Write short notes on any Two of the following. [12]**
- a) Write a note on SIMD and MIMD computer architectures. [6]
  - b) Write a note on Semaphore. How semaphores are used to accomplish Co-operation and Competition Synchronization [6]
  - c) Write a note on Programming Languages Classification and its subtype. [6]

