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Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S7 (S, FE) / S5 (PT) (S, FE) Examination December 2023 (2015 Scheme)

Course Code: CS403

Course Name: PROGRAMMING PARADIGMS

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer all questions, each carries 4 marks.*

- |    |  | Marks |
|----|--|-------|
| 1  | Differentiate between static variables and stack dynamic variables.                          | (4)   |
| 2  | Describe the purpose of precedence and associativity rules of the language.                  | (4)   |
| 3  | What is meant by coercion in programming? Illustrate with an example?                        | (4)   |
| 4  | Differentiate between static link and dynamic link in the activation record of a subroutine. | (4)   |
| 5  | What is meant by inline subroutines?   | (4)   |
| 6  | What is the purpose of CAR, CDR, CONS operations in scheme?                                  | (4)   |
| 7  | What are the different access specifiers in C++?   | (4)   |
| 8  | What is the purpose of constructors and destructors in a programming language?               | (4)   |
| 9  | Explain the distinctions among concurrent, parallel and distributed computing.               | (4)   |
| 10 | What is meant by symbolic debugging?   | (4)   |

**PART B**

*Answer any two full questions, each carries 9 marks.*

- 11 a) Consider the following code (4)

```
int i ;
program main ()
{
  i = 10;
  call f();
}
procedure f()
{
  int i = 20;
  call g ();
}
procedure g ()
{ print i;
}
```

Find the value printed under static scoping and dynamic scoping. Justify your answer.

- b) What is Referencing Environment? Explain the difference between Deep and Shallow binding of Referencing Environment? (5)
- 12 a) What is meant by a tail recursive function? Write the code to find factorial of a number based on recursive and tail recursive procedure. (5)
- b) What is the problem of dangling references? How is it addressed in different languages? (4)
- 13 a) With an example explain name type equivalence and structure type equivalence. (6)
- b) Write about the three general-purpose equality-testing functions in Scheme Language. (3)

**PART C**

*Answer any two full questions, each carries 9 marks.*

- 14 a) Differentiate between coroutines and subroutines. (3)
- b) Explain any three parameter passing methods with example. (6)
- 15 a) Describe forward chaining and backward chaining in Prolog. What is used in prolog by default? (5)
- b) What is meant by generic programming? Explain how it is implemented in C++. (4)
- 16 a) What is the difference between normal order evaluation and applicative order evaluation? Illustrate with an example. (5)
- b) What is the purpose of lazy evaluation? How it is implemented? (4)

**PART D**

*Answer any two full questions, each carries 12 marks.*

- 17 a) Explain how dynamic method binding is implemented in C++. (7)
- b) What is meant by aliasing? What are the different ways in which aliases are created in programs? (5)
- 18 a) Write about the seven common characteristics of scripting languages. (7)
- b) Explain about busy wait synchronization mechanisms. (5)
- 19 a) Summarize the architecture of Java Virtual Machine. (6)
- b) Describe six different mechanisms commonly used to create new threads of control in a concurrent program. (6)

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