Name: **Enrolment No:**	

UPES

End Semester Examination, May 2024

Programme Name: BTech CSE **Semester : VIII**
Course Name : Advanced Functional Thinking **Time : 03 hrs**
Course Code : CSBD3002P **Max. Marks: 100**

Instructions: Attempt All questions

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Define variables and identifiers in scala.	**4**	**CO1**
Q 2	Explain the features of a singleton object.	**4**	**CO2**
Q 3	What is referential transparency? How does it helps in identifying a pure function.	**4**	**CO1**
Q 4	Give syntax for defining a class and inheriting its properties by creating a subclass. Create objects of the created classes and access the properties.	**4**	**CO2**
Q 5	Given a list of strings, write a program to find the longest string.	**4**	**CO1**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	Explain the concept of companion objects in scala and provide an example of using the *apply* method to create a list of objects.	**10**	**CO2**
Q 7	Write a program that demonstrates working with the collections Maps and Tuples. Illustrate at least four methods of each collection.	**10**	**CO3**
Q 8	Explain the concept of lazy evaluations. Compare the strict and lazy evaluation using an example code. Or Explain the concept of anonymous functions in scala. Use anonymous functions to create an arithmetic calculator.	**10**	**CO4**
Q 9	Implement a function that takes a list of words and returns a single string formed by concatenating all words with a space separator.	**10**	**CO1**
	SECTION-C **(2Qx20M=40 Marks)**		
Q10	Using an example, illustrate how traits allow multiple inheritance in Scala. How does it resolve the conflict of a common method in multiple inheritance. Or Create three classes Person, Employee and Accountant. The Person class contains	**20**	**CO3**

	personal information like name and age. Define setPerson() , getPerson() and setAge(), getAge() methods. Employee class contains setEmp() and printEmp() methods and Accountant class contains setInfo() and printInfo(). Inherit the Person class into the Employee class, and the Employee class into the Accountant class. Create two objects of the Accountant class and call methods to set and print all information regarding the Accountants.		
Q11	a. Explain the function Currying in Scala with the help of examples. b. Give outputs of the following code snippets i. val numbers = List(1, 2, 3, 4, 5, 6, 7, 9) val evenNumbers = numbers.filter(x => x % 2 == 0) val result = evenNumbers.size ii. val person = ("Alice", 25) val name = person._2 val age = person._1 println(s"Name: $name, Age: $age") iii. val numbers = List(1, 2, 3, 4) val dS = for (num <- numbers) yield num * num * 2 println(S) iv. def play(thing: String): String = {"Let's eat with $thing”} def eat(thing: String): String = {“Let’s play with $thing”} def funify(thing: String, f: String => String): String = { f(thing) + " and have fun”} println(funify("knife", play)) println(funify(“spoons”, eat))	**10+10**	**CO4**