B.E (FT) END SEMESTER EXAMINATIONS – Nov/Dec 2023

Computer Science and Engineering

Fifth Semester

CS6302 / PROGRAMMING PARADIGMS

(Regulation 2018 - RUSA)

Time: 3 Hours **Answer ALL Questions** **Max. Marks 100**

PART A [10 X 2 = 20 Marks]

Questions	Course Outcome	Bloom's Taxonomy
1. Which user communities are major stake in programming language landscape?	CO1	L1
2. What is lexical scoping? Give examples	CO1	L1
3. Define assertion. Give its syntax.	CO1	L1,L3
4. Define state transformation. How it is represented mathematically?	CO1	L1,L3
5. What are the five principal ways to pass an argument to a function?	CO1	L1,L2
6. Draw the structure of Run-Time memory.	CO1	L1
7. What are some features that are lacking in the C programming language?	CO2	L4
8. Which mechanism can be used to identify the type or class of an object at runtime?	CO1	L4
9. What is the significance of recursion in functional programming paradigm?	CO1	L1,L4
10. What are the two powerful principles of prolog? Give some applications of logic programming.	CO5	L1
PART – B (8 x 8 = 64 marks) (Answer any 8 questions)		
11. Discuss about the major language design constraints and design goals for language designers.	CO1	L1
12. Differentiate between structural equivalence and name equivalence with examples and discuss how it can used for types in languages like c, Ada and java	CO1	L1,L2
13. Consider the following program: 1 var x : int = 0; 2 var y : int = 1; 3 procedure M(x : int) 4 begin	CO1,CO2	L1,L3,L4

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5  var y : int = 42;
6  x := 1;
7  call N(x);
8 end
9 procedure N(x : int)
10 begin
11  var z : int = 2;
12  if true
13  begin
14   var z : int = 42;
15  end
16   print x;
17   print y;
18   print z;
19 end
20 procedure Main()
21 begin
22  call M(x);
23 end
```

What does the above program will print if the language uses static and dynamic scoping? Draw symbol table and explain.

14. Describe the assignment semantics with suitable examples.	CO1	L1,L2
15. Derive the meaning of the following clite expression in a given state using Denotational semantic rules. Z=x+2*y , state= {<x,2>,<y,-3>,<z,75>}	CO1	L2,L3
16. Which garbage collection algorithm makes two passes on the heap to remove garbages? Discuss in detail with a neat diagram.	CO1	L2,L4

17. Consider the following program:
Program sample
var x:int;
Procedure P(y:int)
begin
y=y+1;
y=y*x;
end
begin
x:=2;
P(x);
print(x);
end
	CO1,CO2	L2,L3,L4

What is the value of x for each of the following parameter passing mechanism? Justify your answers. (a) Argument x is passed by value. (b) Argument x is passed by reference. (c) Argument x is passed by value-result		
18. Describe the common features of Imperative programming paradigm.	CO2	L1,L2
19. What is the significance of multiple inheritance ? what kind of complication can occur while implementing it in languages like C++ and java ? illustrate how it is handled in such languages.	CO1	L4,L3
20. Evaluate the following scheme expressions with a given even list definition: (define evens '(0 2 4 6 8)) (car evens) (cdr evens) (car (cdr evens)) (cadr evens) (cdr (cdr evens)) (cddr evens) (car ' (6 8)) (car (cons 6 8))	CO1	L2,L3
21. What is the importance of synchronization in concurrent programming paradigm? & Discuss the synchronization strategies that support concurrency in programming languages.	CO4	L1,L5
22. Explain the event driven architecture and the kind of events to be handled for the ATM machine	CO4	L2,L3
PART – C (2 x 8 = 16marks)		
23. Differentiate between resumption and termination in exception handling. Write a detailed comparison of the exception –handling capabilities of C++ and Java.	CO1	L1,L4
24. Specify the validity rule for an Expression in Clite type system.	CO1	L1