THE DESIRE OF SECTION AND	Reg. No.:			an arritation	main into	opec
dips bas straight (0+0)	Question I	Paper (ode:	4090	0	
	Computer 1 - PROGRAMM (Common t	Third Seme Science an	ster d Enginee DATA ST on Techno	ring RUCTU		
Time : Three Hour	rs			М	aximum	: 100 Marks
	Ar	swer ALL q	uestions			
	1	PART -			(10×2	=20 Marks)
1 What are the	concepts in C++ t	hat makes i	t Object Or	iented?		
	ntax and uses of 't					
3. Can we make	e a class construct	or virtual in	C++ to cre	ate polyn	orphic o	bjects?
4. How to alloca	ate and deallocate	dynamic me	emory?			
5. What are th handling?	e main advantag	ges of excep	tion handl	ing over	traditio	nal error
6. Write a samj	ple for arithmetic	binary funct	ions.			
7. Give exampl	es for linear and i	non linear da	ıta structu	res.		
8. State the He	eap Order Propert	y.		midd sin	unvet a	
	e representation o					
10. What are th	e applications of g	raph algorit	hms?			
		PART	– B		(5×1	3=65 Marks)
11. a) Write coo	de in C++ to show t	hat static me	mbers are s	hared am	ong all ob	ojects. And (13)
	(OR)					

40900 b) i) Consider pointer notation for the two-dimensional numeric arrays and with the following declaration fill up the table below for all values in 2D array. int nums [2] [3] = { {16, 18, 20}, {25, 26, 27} }; Pointer notation Array notation Value ii) Write the output of the following program. int main () char arr [5] [7] [6]; char (*p) [5] [7] [6] = &arr; printf ("%d\n", (&arr + 1) - &arr); printf ("%d\n", (char*) (&arr + 1) - (char*) &arr); printf ("%d\n", (unsigned) (arr + 1) - (unsigned) arr); printf ("%d\n", (unsigned) (p + 1) - (unsigned)p); return 0; 12. a) Write minimum of 30 overloaded operators and all the non-overloaded operators in C++ and write C++ code to overload post and pre increment operators. (5+8)b) Explain Dynamic Memory Allocation in C++ with examples for arrays and objects. (13)13. a) List standard exceptions in C++ and show how to define user defined exception with suitable example. (6+7)(OR) b) List the functions used with STL Lists. And use these functions to demonstrate STL list. (6+7)14. a) Explain amortized analysis and its types in detail. (13)(OR) b) Write pseudocode to perform rotation operation in splay tree. (13)

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15. a) Write Kruskal's and Prim's (starts at F) Minimum Spanning Tree Algorithm and apply both techniques on the graph given below in Fig. 1. Can Prim's and Kruskal's algorithm yield different minimum spanning trees? Explain why or (13)why not.

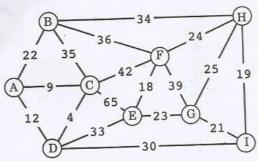


Fig. 1

(OR)

b) Write algorithm to find shortest path using Dijkstra's method and apply the same to estimate shortest path from the graph given in Fig. 2. (13)

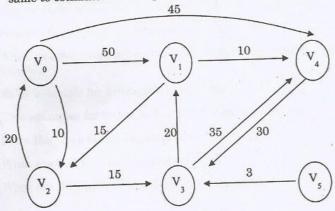


Fig. 2

PART - C

(1×15=15 Marks)

16. a) Write generic code in C++ to implement AVL tree insertion. And show the result of inserting 2, 1, 4, 5, 9, 3, 6, 7 into an initially empty AVL tree. (10+5)

(OR)

b) Write a C++ code using function with multiple parametrs to perform recursive (15)binary search on a linear array.