

Reg. No.

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B.E./ B.TECH. DEGREE EXAMINATIONS, MAY 2024

Second Semester

IT22202 – OOPS USING C++ AND PYTHON

(Regulation 2022)

TIME:3 HOURS

MAX. MARKS: 100

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Examine the features and basics of OOPS.	4
CO 2	Apply the various features of object oriented programming to construct applications in C++.	4
CO 3	Develop the software using advanced features of Object oriented programming to solve real time problems.	5
CO 4	Develop the programs to implement the basics of python	5
CO 5	Choose the data structures and design patterns to construct applications using python	5

PART- A(20x2=40Marks)

(Answer all Questions)

	CO	RBT LEVEL
1. When and why you might use a friend function in a C++ program.	1	4
2. How does C++ support the concept of encapsulation? Provide an example.	1	2
3. Distinguish between reference and pointer.	1	4
4. Elaborate on the concept of "constructor overloading" in C++ with an illustrative example.	1	3
5. Differentiate Function overloading and Function overriding.	2	4
6. How does dynamic memory allocation is different from static memory allocation?	2	4
7. Can all predefined C++ operators be overloaded.	2	2
8. Explain the various types of inheritance in C++ along with a relevant example.	2	2
9. Design a function template to find the maximum of two values, and call the function of int, float and char values.	3	3
10. Analyze various types of containers.	3	4
11. What is generic programming? What are its advantages and state some of its applications.	3	2
12. Write a C++ program that demonstrates handling an array out of bounds exception.	3	3
13. What does the self-argument signify in the class methods?	4	2
14. Outline the python logic to swap the contents of two identifiers without using third variable.	4	3
15. Justify why __init__() Function is required in python class.	4	4
16. Write a snippet to display "Hello World" in python interpreter.	4	2

17.	How to create a list in python? Illustrate the use of negative indexing of list with example.	5	2
18.	Explain insert(), extend() and append() in python lists.	5	2
19.	Define Module. How it is declared in python?	5	2
20.	Write a python code to Check whether a value 200 exists in a dictionary	5	3

PART- B (5x 10=50Marks)

		Marks	CO	RBT LEVEL
21. (a)	Write a C++ program to find Maximum of two numbers of different classes using Friend Function.	(10)	1	3
(OR)				
(b)	Develop a Travel Plan application using all types of Constructors and Destructors	(10)	1	3
22. (a)	Create a class named Vehicle with two data member named mileage and price. Create its two subclasses <ul style="list-style-type: none"> • Car with data members to store ownership cost, warranty (by years), seating capacity and fuel type (diesel or petrol). • Bike with data members to store the number of cylinders, number of gears, cooling type (air, liquid or oil), wheel type (alloys or spokes) and fuel tank size (in inches). • Make another two subclasses Audi and Ford of Car, each having a data member to store the model type. Next, make two subclasses Bajaj and TVS, each having a data member to store the make-type. Now, store and print the information of an Audi and a Ford car (i.e., model type, ownership cost, warranty, seating capacity, fuel type, mileage and price.) Do the same for a Bajaj and a TVS bike. 	(10)	2	3
(OR)				
(b)	Implement an (+) addition operator to add two complex numbers using operator overloading as member function.	(10)	2	3
23. (a)	Discuss the importance of exception handling in C++ and explain how it helps in managing runtime errors.	(10)	3	2

(OR)

(b) Describe the purpose of the Standard Template Library (STL) in C++ and discuss its key components. **(10)** **3** **2**

24.(a) Create a python class named Shape with a function that prints "This is a shape". Create another class named Polygon inheriting the Shape class with the same function that prints "Polygon is a shape". Create two other classes named Rectangle and Triangle having the same function which prints "Rectangle is a polygon" and "Triangle is a polygon" respectively. Again, make another class named Square having the same function which prints "Square is a rectangle". Now, try calling the function by the object of each of these classes. **(10)** **4** **3**

(OR)

(b) Write a python program that defines a function 'Check Balance' in a module which will be used in another modules. Namely, 'Withdraw','Deposit' to check the current balance. **(10)** **4** **3**

25.(a) Write a python program that creates a list of numbers from 1 to 100 that are divisible by 2,4, and 5. **(10)** **5** **3**

- Count the even and odd numbers separately.
- Slice the list elements ranges from 1-20, 21-50 and 51-100.
- Find whether a particular element is present in the list.
- Convert list to dictionary.

(OR)

(b) Write a program that has a dictionary of your friend's name (as keys) and their birthdays. Print the items in the dictionary in a sorted order. Prompt the user to enter a name and check if it is present in the dictionary. If the name does not exist, then ask the user to enter DOB. Add the details in the dictionary. **(10)** **5** **3**

PART- C (1x 10=10Marks)

(Q.No.26 is compulsory)

	Marks	CO	RBT LEVEL
26. Develop Banking application using python.	(10)	4	5
