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**Question Paper Code: R3203**

B B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Third Semester

Computer Science Engineering

R21UCS303– OBJECT ORIENTED PROGRAMMING USING C++

(Common to IT, CSBS , CSD, CSE (AI&ML), CI & SC Engineering branches)

(Regulations R2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Compare and contrast the procedural programming and object oriented programming. CO1- U
2. Write a C++ program to find the Factorial of a number. CO2 -App
3. Develop a C++ Program to print the Fibonacci series using recursion CO2 -App
4. Write a C++ program to count the number of objects of a certain class. CO2 -App
5. Write a C++ program for overloading a unary operator using friend function. CO2 -App
6. Write a C++ program for overloading the unary minus operator. CO2 -App
7. Differentiate runtime and compile time polymorphism. CO2 -App
8. What is a pure virtual function? Give example. CO2 -App
9. Write a function template for finding the minimum value contained in an array CO2 -App
10. Develop a C++ program for illustrating array index out of bound exception. CO2 -App

PART – B (5 x 16= 80 Marks)

11. (a) Write a C++ program using functions to perform matrix addition subtraction and multiplication. CO2 -App (16)

Or

- (b) (i) Write a C++ program that produce following outputs.(8) CO2 -App (16)  
 A B C D E  
 A B C D  
 A B C  
 A B  
 A
- (ii) Write a C++ Program to print the average of n natural numbers.(8)
12. (a) What is a constructor? Explain the various types of constructors with example. CO1- U (16)
- Or
- (b) What is object oriented programming? Explain all the object oriented programming concepts in C++ with examples. CO1- U (16)
13. (a) What is operator overloading? Explain unary operator overloading with example. CO1- U (16)
- Or
- (b) How will you overload binary operators using friend functions? Explain with example. CO1- U (16)
14. (a) What is Inheritance? List the advantages of inheritance. Explain in detail about multiple and Multilevel inheritance with suitable example programs. CO1- U (16)
- Or
- (b) Discuss in detail about virtual functions and pure virtual functions with suitable examples. CO1- U (16)
15. (a) What is class template? Write the syntax for creating a class template and elaborate the concept using an example. CO1- U (16)
- Or
- (b) What is Exception handling? Explain in detail about the types of exception handling with examples. CO1- U (16)