

Course Code: CS1004	Course Name: Object Oriented Programming
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Student Roll No:	Section No:

Instructions:

- Return the question paper and make sure to keep it inside your answer sheet.
- Read questions completely before answering. There are **3 questions, 2 sides on 1 page**.
- In case of any ambiguity, you may make assumption. But your assumption should not contradict any statement in the question paper.
- You are **not allowed to write** anything on the question paper (except your ID and section).

Time: 60 minutes.

Max Marks: 30 Marks

Q 1. Write two-line short answers to the following questions: **[10 min, 6 Marks]**

- Can we call a class member function without creating object? If NO, then explain with reason. If YES, then demonstrate.
- What is the error in the following program. Explain with reason related to OOP.

```
class Test{public: int b; Test(int A){ }};
Test ob1();
```
- Can a correct "Time" class definition include both of the following constructors? YES/NO? Defend your answer.

```
Time( int h = 0, int m = 0, int s = 0 );
Time();
```
- Why are destructors important?
- Why static function cannot access non-static data? Defend your answer.
- Imagine you are building a program to simulate a restaurant. How would you design the classes to represent the different roles involved (such as waiters, chefs, and customers), and how would they interact with one another?

Q 2. You are required to construct a C++/JAVA program that prints out the current day of the year and the event scheduled for that day. **[25 min, 12 Marks]**

- You need to design a class that takes two member variables month and day and a member function that checks if the day and month entered are indeed valid within a calendar year and a member function that prints the date and the corresponding event on that day. The member function you have defined that validates the day and month must be kept private within the context of the class, a constructor should be called that provides default values. Memory allocation to the objects must be dynamically created when the constructor is called.
- Two accessor and mutator methods must be present for the input values coming from the user for the day and month. Moreover, If the user inputs the date as 9th March or 10th March display it as "FAST procom days", keep in mind that the day and month values coming in from the user must also be validated at compile time if the values entered are indeed a valid date in a calendar year (for example 32, 13 is not a valid date in a calendar year).

- Q 3.** Consider a scenario where you are developing a software application for an airline management system. **[25 min, 12 Marks]**
- In this system, each flight information includes source and destination location, number of first-class seats, number of economy seats, duration, ticket price first class, ticket price economy, number of layovers and, with unique and unchangeable flight number. Each flight has functions that set initial values and to access data members.
 - Write a class member function void printBest(Flight f) that should not be able to change any class members value. The function should be able to compare the two flights and print the information of the flight which has the highest income. The income of the flight can be calculated using the flight seats and ticket prices.
 - You should have a global function void compareThree (Flight f1, Flight f2, Flight f3) that compares three Flight objects based on their attributes and finds the cheapest flight, the shortest flight, and the flight with highest number of layovers. The function should also print flights IDs having same destination.

BEST OF LUCK!