INTERNATIONAL INSTITUTE OF INFORMATION TECHNOLOGY HYDERABAD	**INTRODUCTION TO SOFTWARE SYSTEMS: FINAL EXAM** **29 Apr 2023, Max Marks: 100** (10×10 *marks*)
	Name: **Roll Num:**
	Contents: Bash, HTML/CSS, Python, Software Engg., OOP & DBMS

1. You are given the value of an integer, N. Write a Python script that will compute the values of 3 positive integers, A, B, and C such that A+B+C=N and the value of A*B*C is maximum. Briefly explain your solution. For a given value of N, how many different values of (A,B,C) will your program check to find the solution?

2. Give three different ways (with relevant code) in which you can go through a text file and count the number of occurrences of a given word. Explain the key differences between the three approaches.

3. Write a Python function that exhibits two different behaviours based on the type of parameters that are passed. Briefly explain how each behaviour works with an example.

4. You need to implement a system that maintains the details about the members of a library and the details of the books they have borrowed. Describe HOW you will store this information in a Python program (what built-in data structures will you use)? Also write brief justifications for your choices. (Note: No need to write any code for your solution).

5. Briefly describe the following concepts in the context of object oriented programming: a) Encapsulation, b) Public and Private, and c) Constructor and Destructor.

6. Discuss any two significant disadvantages of opportunistic development process over the waterfall process

7. You are working in a team of 8 people for 6 months, to build an application that provides online chat capabilities for PDAs. Briefly explain the various phases in your SDLC in the context of this application.

8. Briefly explain the following terms in the context of Databases: a) Data, b) Database, c) DBMS, d) SQL, and e) Application

9. Give brief descriptions of any 4 functionalities that a DBMS is expected to do provide to its applications.

10. Write a bash script that checks for the existence of a directory (name is given as a command line argument). It should create the directory if it does not exist. It should then create a new file in the directory and report the number of files in the directory at the end of the above tasks. How do you ensure that a new file is created inside the directory, every time the script is called?