RAJARATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES

Bachelor of Science in Applied Sciences
First Year - Semester I Examination – July/August 2023

COM 1201 – PRINCIPLES OF PROGRAM DESIGN

Time: Two (02) hours

- Answer **ALL** questions

---

1. a) What is an algorithm? "*Algorithms are one of the four cornerstones in computational thinking*". Discuss the importance of algorithms in Computer Science. **(10 marks)**

   b) What are the features of a good algorithm? Explain. **(06 marks)**

   c) State and define the two methods of representing an algorithm. **(06 marks)**

   d) What are the major steps to be followed when developing an algorithm? Explain with an example in everyday life. **(10 marks)**

(Total 32 marks)

2. a) Describe four (04) benefits of using flowcharts? **(08 marks)**

   b) What are the three (03) control structures used in structured programming? Provide an example algorithm containing all three (3) structures. You may use any representation method to state the algorithm. **(08 marks)**

c) Design a flowchart that determines whether a character input by the user is a vowel or a consonant. The program should run until the user inputs 0 (zero). **(10 marks)**

d) Assume that there are hundred (100) seats in an airplane of which twenty-five (25) seats are first class, and the others are economy class. Design a flowchart for the seat reservation process of an online reservation system. You have to consider all the limitations when reserving the tickets. **(12 marks)**

e) Assume that you are designing a login system. Write a pseudocode that outlines the steps for verifying a users' credentials and granting access. If a user enters an incorrect usernam or password for three times, that user will be blocked from accessing and will be instructed to reset password. Reset password process will request an email address registered in the system. **(12 marks)**

(Total 50 marks)

3. a) Discuss the differences between imperative and declarative programming paradigms. **(10 marks)**

b) Write a short note on Object Oriented Programming Paradigm. **(08 marks)**

(Total 18 marks)

--- END ---