Unit # 3: Algorithmic Thinking and Problem Solving

Q.1: Fill in the blanks.

i. A challenge or situation for which a solution is required is called **Problem**.

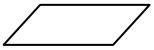
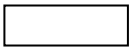
ii. **Algorithm** is the step by step solution of a problem.

iii. The loop that repeats forever is called **Infinite loop**.

iv. The process of breaking larger problem into smaller problems is called **Decomposition**.

v. The diagrammatic representation of an algorithm is called **Flowchart**.

Q.2: Match column-A with column-B and write the correct option i.e. (A, B, C….E) in column-C.

Column – A		Column – B		Column – C	
1.	Problem Analysis	A.	Input / Output Symbol	1.	D
2.	Loop	B.	Process Symbol	2.	E
3.		C.	Make a decision	3.	A
4.	Conditional Statement	D.	Obtaining knowledge about problem	4.	C
5.		E.	Repetition	5.	B

Short response questions:

Q.1: Why do we need to understand the problem area?

Ans: We need to understand the problem area because it is necessary for finding the solution of a problem. Problem analysis is the process of obtaining necessary information about problem area which helps to better understand the problem and find the solution.

Q.2: How to identify the problem?

Ans: There are multiple ways to identify the problem such as through brainstorming and discussions etc. To identify the problem clearly, a detailed interview or discussion is done with the stakeholders of the problem.

Q.3: If the problem identified is too big to be fixed all at once, what mechanism could help you to better solve the problem?

Ans: If a problem is too big to fix it all at once, than it is better to divide the problem into small and manageable components which is not only understand the problem better but can also be helpful to solve it easily.

Q.4: Can we have more than one decision symbols in flow charts?

Ans: Yes, we can use more than one decision symbol in flow charts.

Q.5: Differentiate between a flowchart and an algorithm?

Ans: An algorithm is a step by step solution to solve a problem while a flow chart is the diagrammatic or pictorial representation of an algorithm.

Q.6: Write down an algorithm for adding two numbers?

Ans:

i. Take input of two numbers. (A and B)
ii. Perform sum of A and B.
iii. The result of sum will be stored in C.
iv. Display the value of C.