**Data Structures (H16Y 35) – Class Exercise**

1. What do you understand by the term ‘**Arithmetic Overflow**’?

2. (i) What are ‘**Control Structures**’? (ii) State types of Control Structures used in C# programming

3. (i) What are ‘**Floating point numbers**’? (ii) Give examples of **Floating point numbers** commonly used in C# programming

4. What is the function of the ‘**GetType ()**’ syntax used in DS algorithm in C# programming?

5. Differentiate between ‘**Console.WriteLine**’ and ‘**Console.ReadLine**’, what will you apply each of the syntax for during programming?

6. (i) Define Arrays (ii) Name types of arrays commonly used in C# programming

7. Produce one example each of algorithm used for the common array types mentioned in Question 6(ii) in C# programming.

8. Given the data collection below, calculate the average, choose your result as a random byte size, then produce an algorithm in C# that will generate an **arithmetic overflow** after which it then resets the variable to the lowest possible magnitude value.

**15, 950, 418, 1, 29, 555, 0, 716, 100**

9. (i) What do you understand by ‘***Type Casting***’? (ii) State two types of Type casting commonly used in C# programming

10. Produce an example of algorithm in C# programming used to perform Type casting operation for each type mentioned in Question 9(ii).

11.(i) What are Abstract Data Type Structures? (ii) List 5 components of ADT structures (iii) State the differences between Stack & Queue ADTs.

12. (i) Differentiate between ‘**Simple** Data Structures’ and ‘**Structured** Data Structures’ (ii) Give 4 examples each for the Data structure types in Question 10(i).

13. (i) What is the difference between **Explicit** & **Implicit** Shortening Conversions? (ii) State the limitation(s) of Implicit shortening conversion in C# programing.

14. Produce an algorithm that shows where floating number types (stated in Question 2) are used in simple arithmetic operations (addition, subtraction, division…) in C# programming.

15. (i) Define SMA and DMA (ii) State the differences between SMA & DMA (iii) State four functions used in C# to allocate memory during programming.