**St. Xavier’s College (Autonomous), Kolkata**

**Department of Statistics**

**Problem Set 1**

**MDTS 4113/SEM I/CORE3 DATE:**

1. Consider the vectors a = (1, 2, 3, 4, 5, 6) and b = (10, -4, 6, 0, 5, 1).

Do the following:

1. Length of vectors a and b.
2. Access 4th element of the vector b.
3. Access 2nd and 5th element of vector b.
4. Which elements of b are greater than 2?
5. Enlist the values of b greater than 2.
6. Remove the first element of the vector b.
7. Find maximum and minimum element of b.
8. Sum of the elements of b.
9. number of elements in b which are less than 3
10. sum of the elements in b that are less than 3
11. mean of the elements of b
12. median of the elements of b
13. range of the elements of b
14. variance of the elements of b
15. correlation between vectors a and b
16. sort the elements of b
17. rank(b): vector of the ranks of the values in x
18. find the vector containing the minimum, lower quartile, median, upper quartile, and maximum of b
19. vector containing the sum of all of the elements up to that point of b
20. vector containing the product of all of the elements up to that point of b
21. vector of non-decreasing numbers which are the cumulative maxima of the values in b up to that point
22. vector of non-increasing numbers which are the cumulative minima of the values in b up to that point
23. a+b
24. a-b
25. a.b
26. x=(0.9982, 0.9820, 0.2020, 0.6599, 0.9345, 0.1883),

y=(0.5182, 0.3012, 0.4167, 0.5364, 0.0787, 0.4995),

z=(0.2659, 0.1327, 0.4406, 0.6512, 0.0318, 0.3693).

1. Find parallel minima and maxima using pmin and pmax functions.
2. Find sum of the three largest values in x.
3. Find the angle between x and y.
4. Euclidean distance between x and y.
5. Calculate the dot product between x and y.