Course Code	**:**	**BCSL-044**
Course Title	**:**	**Statistical Techniques Lab**
Assignment Number	**:**	**BCA(IV)/L-044/Assignment/2024-25**
Maximum Marks	**:**	**50**
Weightage	**:**	**25%**
Last Dates for Submission	**:**	**31st October, 2024 (For July Session)** **30th April, 2025 (For January Session)**

Note: There are six questions in this assignment, which carries 40 marks. Rest 10 marks are for viva-voce. Answer all the questions. Please go through the guidelines regarding assignments given in the Programme Guide for the format of presentation.

All the following questions must be performed using a statistical package. You may use any statistical package for this purpose.

Question 1: The weight of 50 adults in the age group 20-30 years, measured in Kilograms, is given below. Perform the tasks given in (i) to (iv) using a spreadsheet package: **(6 Marks)**

40	70	61	58	58	50	72	63	51	62
65	60	68	68	78	54	52	60	50	70
60	35	53	58	79	60	62	61	55	65
51	39	45	58	50	65	62	50	72	62
52	65	67	87	45	75	71	52	65	59

(i) Find the minimum and maximum weight using spreadsheet formula.
(ii) Divide the weight in 5 classes with class interval 10 and create the frequency distribution for these classes using Array formula .
(iii) Find the percentage of students, whose weight is in between 50 and 60 kgs.
(iv) Represent the frequency distribution with the help of a relevant graph.

Question 2: Perform the following tasks using a spreadsheet (you must either enter necessary formula that are required to calculate the value or you may use spreadsheet function for the same):

(6 Marks)

(i) Calculate the standard error, given a population of 250, sample size 50 and population standard deviation of 25.
(ii) Assume that a company manufactures rings. The rings should have a mean diameter of 2cm. A sample of 20 such rings were taken out of 1000 such rings. The sample diameter of these rings was 2.01 cm with a standard deviation of 0.01 cm. Can the company say with 95% confidence that the rings should be accepted. Make suitable assumption and justify your answer.

Question 3: A paper making company experiments with quantity of paper being produced by four of its machine. Assuming that company has four such machines and productivity of these machine is recorded on four different days in the following table. **(10 Marks)**

Day	Quantity of paper per Machine			
	A	B	C	D
1	91	89	92	90
2	90	88	89	87
3	93	88	90	91
4	88	89	90	88

Perform an ANOVA using any software to test (at 5% level) whether all the four machines are equally productive. Make suitable assumptions, if any.

Question 4: The daily production of items of a company is given in the following table. Use spreadsheet software to find the moving averages for the length of 5. **(6 Marks)**

Day	Production (in Metric tons)
1	29
2	5
3	44
4	30
5	40
6	45
7	7
8	60
9	30
10	49

Question 5: A company manufactures refills of pens. Five observations of refills are taken on each day. These observations were taken 6 times during a working day. Calculate the control limits for mean and range, and plot the control charts using any statistical software. Make suitable assumptions, if any. **(6 Marks)**

The data is given in the following table:

Sample No.	Point size of pen in mm
1	2.04, 2.01, 1.87, 1.85, 1.90
2	2.14, 2.11, 1.97, 1.95, 2.10
3	1.99, 2.21, 1.77, 1.98, 1.98
4	2.00, 2.05, 1.97, 1.95, 2.01
5	1.87, 2.14, 2.19, 2.20, 2.15
6	2.06, 1.91, 2.17, 2.05, 1.90

(Please take the suitable values of d_2 , d_3, d_4 , A_2 and other variables.)

Question 6: A company sells summer clothing. Fit a trend using any statistical software to sales data for this company. Make suitable assumptions. **(6 Marks)**

Month	Mar	Arp	May	June	Jul	Aug	Sept
Sales(in pieces)	400	700	2000	3000	2000	1000	200