

MAT 301 Engineering Mathematics III: B. Tech. (Third Semester)-2018-19
Assignment 3 (Unit-2) Statistical Technique

11. If the first four moments of a distribution about the value 7 are equal to -4, 22, -117 and 740. Determine the corresponding moments: (i) About the mean (ii) About the Kurtosis of the distribution.

12. Find the first four moments about the mean & kurtosis for the following frequency distribution:

Marks	0-10	10-20	20-30	30-40	40-50
No. of students	5	10	40	30	15

13. The first four moments of a distribution about $x=2$ are 1, 2.5, 9.3 and 16. Calculate the first four moments about the mean and about origin. Comment upon the skewness and kurtosis of the distribution.

14. Complete the first four moments about the mean from the following data:-

Mid value of the variety	5	10	15	20	25	30	35
Frequency	8	14	20	32	25	17	5

15. Obtain the moment generating function of the random variable x having probability distribution,

$f(x) =$	2 - x	for	x = 0, 1, 2
	0	otherwise	

16. Let the random variable X assume the value 'a' with the probability law $p(x) = c \cdot x^{-2}$, $x = 1, 2, 3, \dots$. Find the moment generating function and hence mean and variance.

17. By the method of least squares, find the straight line that best fit the following data:-

X:	1	2	3	4	5
Y:	13	27	40	53	68

18. By the method of least squares, find the curve $y = ax + bx^2$ that fit the following data:-

x	1	2	3	4	5
y	1.8	5.1	8.9	14.1	20.8

19. Find the regression line of y on x from the following data:

x	1	3	4	6	8	9	11	14
y	1	2	4	4	5	7	8	9

20. Fit the curve $y' = a + b$ to the following data:

x (Height ²)	0.5	1.0	1.5	2.0	2.5	3
y (Area)	16.20	18.80	7.6	6.20	5.20	4.00

21. Find Karl Pearson's coefficient of correlation from the following heights of fathers and sons.

Height of fathers (inches)	67	68	67	67	68	70	71	71
Height of sons (inches)	67	68	68	68	70	70	69	70

22. In a partially destroyed laboratory record of an analysis of a correlation data, the following results are only visible: variance of $x = 9$, regression equations: $10y - 9x + 40 = 0$, $10x - 21y + 214 = 0$. What were (i) the mean values of x and y (ii) the standard deviation of y and the coefficient of correlation between x and y .