

### Assignment III: Unit II

Note: Submission date 7<sup>th</sup> Feb 2023.

Q.1 Find raw moments for the following data:

i) 5, 8, 12, 4, 6.

ii)

$X$	-1	0	1	2	3	4
$F$	2	4	3	7	3	1

iii)

Class Interval	0-10	10-20	20-30	30-40	40-50
Frequency	1	2	9	2	6

Q.2 Find the central moments for the following distribution:

i) 8, 12, 9, 15, 6

ii)

$X$	1	2	3	4	5
$F$	2	5	6	5	2

iii)

Class interval	0-20	20-40	40-60	60-80
Frequency	4	7	6	3

Q.3 The first four central moments of a distribution are 0, 3, 5, 10. If the mean of the distribution is 2, find the moments about 3.

Q.4 The first four raw moments about the origin are 2, 12, 74 and 384. Find the mean  $\bar{x}$  and the first four central moments.

Q.5 For the following ungrouped data find the Karl Pearson's Coefficient of Skewness.

12, 18, 25, 15, 16, 10, 8, 15, 27, 14

Q.6 For the following grouped data find the Karl Pearson's Coefficient of Skewness. Also interpret the type of distribution.

C.I	0-4	4-8	8-12	12-16	16-20
F	1	3	10	4	2

Q.7 Find the Bowley's coefficient of Skewness for the following distribution:

i) 17, 35, 28, 46, 85, 93, 56, 67, 22, 12

ii)

C.I	5-10	10-15	15-20	20-25	25-30
f	3	4	7	4	2

Q.8 Find Coefficient of kurtosis for the following data:

C.I	5-10	10-15	15-20	20-25	25-30
f	3	4	7	4	2

Q.9 for the following distribution find  $\beta_1$  and  $\beta_2$  and comment on the Skewness and Kurtosis of the distribution.

X	2	3	4	5
F	4	3	2	1

Q.10 Compute the first four central moments from the following data. Also find the two beta coefficients.

X	5	10	15	20	25	30	35
f	8	15	20	32	23	17	5

Hint: i) The Skewness coefficient  $\beta_1 = \frac{\mu_3^2}{\mu_2^3}$

ii) The most prominent measure of kurtosis is the coefficient  $\beta_2$ , given by

$$\beta_2 = \frac{\mu_4}{\mu_2^2}$$

Hence the given distribution is :

i) Leptokurtic, if  $\beta_2 > 3$ .

ii) Mesokurtic, if  $\beta_2 = 3$ .

iii) Platykurtic, if  $\beta_2 < 3$ .