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TECHNOLOGY, RESEARCH, SOCIAL INNOVATION & PARTNERSHIPS

SY B.Tech-CSE

Question Bank

Unit - I

1. Calculate the A.M. of the following frequency distribution.

Wages in rupees earned per day	0 - 10	10 - 20	20 - 30	30 - 40
No. of Labours	5	9	15	12

Ans:- A.M. = 23.293

2. Calculate the mean and standard deviation for the following table, given the age distribution of 542 members.

Age in years	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80	80 - 90
No. of Members	3	61	132	153	140	51	2

Ans:- (i). A.M. = 54.724 (ii). S.D. = 11.88 years

3. A student while calculating the mean and the standard deviation on 25 observations, obtained the following values:

Mean = 56cms , Standard Deviation = 2cms.

It was later discovered at the time of checking that he had wrongly copied down an observation as 64. What is the mean and standard deviation if correct value is omitted?

Ans:- (i). A.M. = 55.67 cms (ii). S.D. = 1.18 cms

4. The first four moments of a distribution about $x = 4$ are 1, 4, 10, 45. Show that the mean is 5 and the variance is 3 and μ_3 and μ_4 are 0 and 26

respectively.

5. Find the Arithmetic mean for the following distribution:

Observations (x)	0	1	2	3	4	5	6	7	8	9	10
Frequency (f)	4	5	12	12	13	16	15	13	12	5	6

Ans:- A.M. = 5.12

6. Marks obtained in a paper of Statistics are given in the following table.
Find the Arithmetic mean of the distribution.

Marks obtained	No. of Students
0 - 10	8
10 - 20	20
20 - 30	14
30 - 40	16
40 - 50	20
50 - 60	25
60 - 70	13
70 - 80	10
80 - 90	5
90 - 100	2

Ans:- A.M. = 43.12

7. Obtain the Median of the following distribution:

Observations (x)	1	3	5	7	9	11	13	15	17
Frequency (f)	3	6	8	12	16	16	15	10	5

Ans:- Median = 11

8. Wages earned in Rupees per day by the labourers are given by the table.
Find the Median of the distribution.

Wages in ₹	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
No. of labourers	5	8	13	10	8

Ans:- Median = 36.923

9. Find the Mode for the following distribution.

C.I.	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
f	4	7	8	12	25	18	10

Ans:- Mode = 46.5

10. Calculate the Standard Deviation for the following frequency distribution.

Wages in Rupees earned per day	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
No. of labourers	5	9	15	12	10	3

Ans:- S.D. = 13.54

11. Find the Arithmetic Mean, Median and Standard Deviation for the following frequency distribution.

Observations (x)	Frequency (f)
5	3
9	6
12	8
15	8
20	9
24	10
30	8
35	7
42	6
49	2

Ans:- (i). Mean = 22.985 (ii). Median = 20
(iii). S.D. = 11.353

12. Following table gives the Marks obtained in a paper of Statistics out of 50 by the students of two divisions. Find out which of the two divisions show greater variability.

C.I.	Div.A	Div.B
0 - 5	2	3
5 - 10	6	5
10 - 15	8	7
15 - 20	8	9
20 - 25	15	12
25 - 30	18	16
30 - 35	12	11
35 - 40	11	5
40 - 45	9	6
45 - 50	4	2

Ans:- B has greater variability.

13. Fluctuations in the Aggregate of marks obtained by the two groups of students are given below. Find out which of the two shows greater variability.

Group A	Group B
518	825
519	830
530	830
530	819
544	814
542	814
518	844
550	842
527	842
527	826
531	832
550	835
550	835
529	840
528	840

Ans:- Coefficient of variation of A = 2.084

Coefficient of variation of B = 1.158

14. Calculate the first four Moments about the mean of the given distribution.
Also find β_1 and β_2 .

Observations (x)	2.0	2.5	3.0	3.5	4.0	4.5	5.0
Frequency (f)	4	36	60	90	70	40	10

Ans:- $\mu_1=0$, $\mu_2=0.44824$, $\mu_3=0.0039826$, $\mu_4=0.48999$

$\beta_1=1.76549$, $\beta_2=2.43874$

15. Compute the first four central moments for the following frequencies.

No. of jobs completed	0-10	10-20	20-30	30-40	40-50
No. of workers	6	26	47	15	6

Ans:- $\mu_1=0$, $\mu_2=87.79$, $\mu_3=181.038$, $\mu_4=23457.7477$

16. For the following distribution, find

- (a) First 4 moments about the mean
- (b) β_1 and β_2
- (c) Arithmetic Mean
- (d) Standard Deviation

Observations (x)	2	2.5	3	3.5	4	4.5	5
Frequency (f)	5	38	65	92	70	40	10

Ans:-

- (a) $\mu_1=0$, $\mu_2=0.453$, $\mu_3=0.0600$, $\mu_4=0.502$
- (b) $\beta_1=0.0387$ and $\beta_2=2.4463$
- (c) A.M. = 0.075
- (d) S.D. = 0.673

17. Calculate the first four moments about the mean of the following distribution. Find the coefficient of Skewness and Kurtosis.

Observations (x)	1	2	3	4	5	6	7	8	9	10
Frequency (f)	6	15	23	42	62	60	40	24	13	5

Ans:- $\mu_1=0$, $\mu_2=3.703$, $\mu_3=0.04256$, $\mu_4=37.5$
 $\beta_1=0.00005572$, $\beta_2=2.8411$

18. The first four moments about the working mean 30.2 of a distribution are 0.255, 6.222, 30.211 and 400.25. Calculate the first four moments about the mean. Also evaluate β_1 , β_2 and comment upon the Skewness and Kurtosis of the distribution.

Ans:- $\mu_1=0$, $\mu_2=6.15698$, $\mu_3=25.48433$, $\mu_4=378.9418$
 $\beta_1=2.78255$, $\beta_2=9.99625$

19. The first four moments of a distribution about the value 5 are 2, 20, 40 and 50. From the given information obtain

- (a) First four central moments
- (b) Mean
- (c) Standard Deviation
- (d) Coefficient of Skewness and Kurtosis

Ans:-

- (a) $\mu_1=0$, $\mu_2=16$, $\mu_3=-64$, $\mu_4=162$
- (b) Mean = 7
- (c) Standard Deviation = 4
- (d) $\beta_1=1$, $\beta_2=0.63$

20. The first four central moments of distribution are 0, 2.5, 0.7 and 18.75. Comment on the Skewness and Kurtosis of the distribution.

Ans:- $\beta_1=0.0314$, $\beta_2=3$

THE END