

**2023/FYUG/ODD/SEM/
STAIDC-101T/077**

**FYUG Odd Semester Exam., 2023
(Held in 2024)**

STATISTICS

(1st Semester)

Course No. : STAIDC-101T

(Introduction to Statistics)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

**The figures in the margin indicate full marks
for the questions**

SECTION—A

Answer twenty questions, selecting any four from

each Unit :

1×20=20

UNIT—I

1. Define sample.
2. Define population.
3. What is time series data?

4. What are the different parts of a standard table?
5. What is ordinal data?

UNIT—II

6. Fill in the blank :
The relation between AM, GM and HM is _____.
7. Fill in the blank :
Geometric mean cannot be calculated if any value of the set is _____.

8. Fill in the blank :
Measures of central tendency are also known as _____.
9. Define geometric mean.
10. Write two merits of arithmetic mean.

UNIT—III

11. Fill in the blank :
Measure of dispersion which utilizes only two observations is _____.

12. Fill in the blank :
Standard deviation is the _____ of variance.

13. Fill in the blank :
Measure of dispersion suitable for comparing any two series is _____.

14. Fill in the blank :
The moments about mean are called _____ moments.

15. Fill in the blank :
If the coefficient of kurtosis is equal to 3, the frequency curve is _____.

UNIT—IV

16. Fill in the blank :
Karl Pearson's formula for correlation coefficient r_{xy} is _____.
17. At what point do the regression lines intersect?

18. Fill in the blank :
Two lines of regression are _____, if $r = 0$.

19. Fill in the blank :
Two independent variables are _____.

(4)

:

20. Fill in the blank :
If b_{yx} and b_{xy} are two regression coefficients,
then $b_{yx} \cdot b_{xy} = \underline{\hspace{2cm}}$.

UNIT—V

21. What is random experiment?
22. Define sample space.
23. What is the probability of an impossible event?
24. Define equally likely events.
25. Define mutually exclusive events.

SECTION—B

Answer five questions, selecting one from each
Unit : $2 \times 5 = 10$

UNIT—I

26. Distinguish between frequency and cumulative frequency.
27. What do you understand by tabulation?

(5)

UNIT—II

28. What do you mean by central tendency?
29. State the different measures of central tendency.

29. Show that for a frequency distribution
 x_i / f_i ($i = 1, 2, \dots, n$)

$$\sum_{i=1}^n f_i (x_i - \bar{x}) = 0$$

UNIT—III

30. Define standard deviation.
31. For a distribution, the coefficient of variation is 35.3% and the value of arithmetic mean is 4. Find the value of standard deviation.

UNIT—IV

32. Define correlation with examples.
33. Define regression coefficients of Y on X and X on Y.

UNIT—V

34. Give the classical definition of probability.
35. Find the probability that a leap year will contain 53 Sundays.

(Turn Over)

SECTION—C

Answer five questions, selecting one from each unit :
 $8 \times 5 = 40$

UNIT—I

36. (a) Explain histogram and frequency polygon.
 $2+2=4$

(b) What do you mean by ogive? What are the different types of ogive? Write their uses.
 $2+1+1=4$

37. (a) Define the following terms :
 $1+1+1+1=4$
 Class interval, Class limit, Class boundary and Width of a class

(b) The following data relate to loan advance to 40 farmers by the Cooperative Bank (the figures are in hundred rupees) :

12	8	10	9	5	14	12	10	14	20
18	19	10	7	6	9	10	12	13	15
18	12	8	12	17	20	15	12	14	17
11	15	18	17	19	12	15	5	5	9

Construct a frequency table taking 5 as the class interval.

UNIT—II

38. (a) Find the GM of 1, 2, 8, 16. 1
 (b) What do you mean by median of a frequency distribution? 2

- (c) Define harmonic mean. 2
 (d) How would you determine median graphically? 3

39. (a) Two sets with 30 and 40 observations have means 12.8 and 17.5 respectively. Find the mean of the combined series. 2

(b) What is the relationship among mean, median and mode of a symmetrical distribution? 1

- (c) If $u = \frac{x-a}{h}$, then $\bar{x} = ?$ 1
 (d) Calculate mode from the following frequency distribution : 4

Marks	0-20	20-40	40-60	60-80	80-100
No. of Students	5	15	30	12	8

UNIT—III

40. (a) Define range with its merits and demerits. $1+3=4$

(b) Which is the best measure of dispersion and why? 1

(c) Define quartile deviation (QD). (Turn Over)

41. (a) Define central moment and raw moment. 2

(b) What is meant by skewness? 2

(c) What do you mean by kurtosis? Write the relations of the central moments μ_2 and μ_3 in terms of raw moments. 2+2=4

UNIT—IV

42. (a) Show that $-1 \leq r \leq 1$, where r is the correlation coefficient. 4

(b) Prove that correlation coefficient is independent of change of origin and scale. 4

43. (a) Write a short note on scatter diagram. 4

(b) Write a note on the method of least squares. 4

UNIT—V

44. (a) State the limitations of classical definition of probability. 2

(b) State the addition theorem of probability. 5 men in company of 20 are graduates. If 3 men are picked out at random, what is the probability of getting at least three graduates? 2+3=5

(c) If A and B are mutually exclusive events, then $P(A \cap B) = ?$ 1

45. (a) Explain independent events with example. 2

(b) State the multiplication theorem of probability. The probability of solving a problem by Ram is $\frac{1}{10}$ and that of solving it by Shyam is $\frac{1}{12}$. What is the probability that the problem will be solved? 2+3=5

(c) Fill in the blank :
Every result of a random experiment is called a _____. 1
