

SECTION-A

I. Choose the correct answer from the choices given.

5 × 1 = 5

1. The statistical study of human population is called-
(a) Biometry (b) Demography (c) Econometrics (d) Stylometry
2. In a class, if lower as well as upper limits are included in the same class, such a class is called-
(a) Inclusive class (b) Exclusive class
(c) Open-end class (d) None of the above
3. If $Q_2 = 40$, the value of D_5 is-
(a) 10 (b) 20 (c) 30 (d) 40
4. If $P(A) = 0.4$, the value of $P(A^c)$ is-
(a) 0 (b) 0.5 (c) 0.6 (d) 1
5. If $V(X) = 5$, the value of $V(2X)$ is-
(a) 5 (b) 2 (c) 10 (d) 20

II. Fill in the blanks by choosing appropriate answers from those given in brackets.

5 × 1 = 5

(a, equal, stubs, 0, 1, captions)

6. In a table, row headings are called _____.
7. The algebraic sum of deviations of a given set of observations taken from their mean is _____.
8. In a symmetric distribution, mean, median and mode are _____.
9. The probability of a sure event is _____.
10. If 'X' is a random variable and 'a' is a constant then $E(a)$ is equal to _____.

III. Match the following.

5 × 1 = 5

- | | |
|--|--------------------|
| 11. Indirect oral interview | a) Median |
| 12. Ogives | b) Mesokurtic |
| 13. Mode | c) Primary data |
| 14. $\beta_2 = 3$ | d) Compound event |
| 15. An event which has more than one outcome | e) $3M - 2\bar{X}$ |

IV. Answer the following questions.

5 × 1 = 5

16. What is one dimensional diagram?
17. Find the geometric mean of 2 and 8.
18. Which average is suitable to find the average speed in the 4x100 relay?
19. Expand $(y - 1)^4$.
20. Define probability distribution of a random variable.

SECTION - B**V. Answer any FIVE of the following questions.****5 x 2 = 10**

21. Define attribute with an example.
22. Mention the two stages of statistical enquiry.
23. Calculate the coefficient of range: 10, 4, 12, 8, 16, 3, 7, 20.
24. Sum of the lower and upper quartiles is 55 and their difference is 15. If median is 30, find the coefficient of skewness.
25. Show that $\gamma = \pm \sqrt{b_{xy} \times b_{yx}}$
26. Mention two methods of studying association of attributes.
27. If $P(A \cap B) = \frac{1}{2}$, $P(B) = \frac{2}{3}$, find $P(A|B)$.
28. Define discrete and continuous random variable.

SECTION-C**VI. Answer any FOUR of the following questions.****4 x 5 = 20**

29. Write any five characteristics of statistics.
30. Define questionnaire. What are the guidelines for the construction of questionnaire?
31. The following data gives ages (years) of 50 individuals in a locality. Form a frequency distribution using class intervals: 0-20, 20-40.....

23	46	08	13	49	36	28	19	68	53
11	20	28	10	30	43	69	30	21	40
33	29	71	40	16	41	19	20	01	59
36	31	27	15	80	44	29	05	55	38
22	14	49	08	59	33	90	12	24	35

32. Prepare a blank table showing the distribution of students of a college according to-
 - i) Faculty: Commerce, Science
 - ii) Gender: Boys, Girls
 - iii) Age group (in years): Below 18, 18-20, 20 and above.
33. The number of students who scored centum in Mathematics and Statistics are given below-

Year		2019	2020	2021	2022
No. of students	Mathematics	12	15	18	19
	Statistics	25	30	32	36

Draw a multiple bar diagram to represent the data.

34. Find the missing frequency from the following frequency distribution if $\bar{x} = 23$.

C.I	0-10	10-20	20-30	30-40	40-50
Frequency	3	?	9	3	2

35. Given $N = 2500$, $(AB) = 400$, $(\alpha) = 2100$, $(\beta) = 900$. Calculate Yule's coefficient of association. Also comment on the result.
36. Interpolate the missing figure in the following table with the help of suitable formula.

Year	2010	2012	2014	2016	2018	2020
No.of factories	200	225	250	255	-	265

VII Answer any TWO of the following questions.**2 x 5 = 10**

37. For the following data, draw an ogive, and hence determine quartiles.

Profit (in lakhs)	Less than 10	Less than 15	Less than 20	Less than 25	Less than 30	Less than 35
No. of companies	4	10	20	40	58	60

38. In a correlation analysis between production and price of a commodity, the following data are obtained.

	Production Index	Price Index
Arithmetic Mean	110	98
Standard Deviation	12	5

Coefficient of correlation between production and prices is - 0.4.

- Write down the regression equation of price on production.
- Estimate the price index when the production index is 116.

39. State and prove addition theorem of probability for two non-mutually exclusive events.

40. A random variable X has the following probability distribution.

x	-2	-1	0	1	2	3
p(x)	0.1	0.1	0.2	2k	0.3	0.1

Find the value of k and calculate mean and variance of X.

SECTION – D**VIII. Answer any TWO of the following questions.****2×10=20**

41. Scores of two golfers were recorded as follows-

Golfer A	74	75	78	72	77	79	81	76
Golfer B	86	84	80	88	89	70	71	83

Which Golfer is considered to be more consistent player?

42. Calculate coefficient of correlation between marks obtained by the batch of 100 students in Accountancy and Statistics as given in the following table-

Marks in Statistics	Marks in Accountancy				
	20-29	30-39	40-49	50-59	60-69
20	5	9	3	--	--
30	--	10	25	2	--
40	--	1	12	2	--
50	--	--	4	16	5
60	--	--	--	4	2

- A bag contains 6 black and 4 white balls. Two balls are drawn from this batch. What is the probability that they are: i) Black ii) One black and one white?
- A person, by paying Rs.50 enters into a game of shooting a target. With one shot, if he hits the target, he gets Rs.250. Otherwise, he gets nothing. If his probability of hitting the target is $\frac{1}{7}$, then find his expected loss.