

Instructions:

1. Statistical table and graph sheets will be supplied on request.
2. Scientific calculators are allowed.
3. All working steps should be clearly shown.
4. For Section – A questions, only the first written answers will be considered for evaluation.
5. For questions having diagram, graph, alternative questions are given at the end of the question paper in a separate section for visually challenged students.

SECTION – A

I. Choose the most appropriate answer from the choices given: (5 X 1 = 5)

- 1) Who is the father of statistics?
a) R. A. Fisher b) A. L. Bowley c) Horace Secrist d) Boddington
- 2) Classification on the basis of attribute is
a) Chronological b) Geographical c) Qualitative d) Quantitative
- 3) The geometric mean of 1 and 4 is
a) 1 b) 2 c) 3 d) 4
- 4) If A and B are two mutually exclusive and exhaustive events, $P(A) = 0.6$, then $P(B)$ is
a) 0 b) 1 c) 0.5 d) 0.4
- 5) If $E(X) = 6$, the value of $E(2X)$ is
a) 2 b) 3 c) 6 d) 12



II. Fill in the blanks by choosing the appropriate answers given in the brackets: (0.3, 3, 0, Quartiles, Cumulative, Deciles) (5 X 1 = 5)

- 6) The added up frequencies are called _____ frequencies.
- 7) Measures which divide the data into four equal parts are known as _____.
- 8) For a mesokurtic distribution, the value of β_2 is _____.
- 9) If $P(A) = 0.7$, then the value of $P(A')$ is _____.
- 10) The value of $V(3)$ is _____.

III. Match the following: (5 X 1 = 5)

- | | |
|---|---|
| <p>11) A</p> <p>a. Absolute error</p> <p>b. Pie-chart</p> <p>c. Mode</p> <p>d. Inter-quartile range</p> <p>e. The probability of sure event</p> | <p style="text-align: center;">B</p> <p>i. Two dimensional diagram</p> <p>ii. $Q_3 - Q_1$</p> <p>iii. 1</p> <p>iv. 0</p> <p>v. Actual value – estimated value</p> <p>vi. $3\text{Median} - 2\text{mean}$</p> |
|---|---|

IV. Answer the following questions:**(5 X 1 = 5)**

- 12) Which graph is used to locate median?
- 13) For a data, if $D_5 = 40$, write the value of P_{50} .
- 14) If variance = 25, find the standard deviation.
- 15) What is meant by interpolation?
- 16) Define continuous random variable.

SECTION – B**V. Answer any FIVE of the following questions:****(5 X 2 = 10)**

- 17) Write two branches of statistics.
- 18) Mention two methods of sampling.
- 19) Given: $n_1=10$, $n_2 = 20$, $\bar{x}_1 = 34$ and $\bar{x}_2 = 37$. Find the combined arithmetic mean.
- 20) Find the range from X: 6, 15, 10, 30, 20.
- 21) If $\Sigma d^2 = 21$ and $n = 8$, find Spearman's co-efficient of rank correlation.
- 22) What is the difference between correlation and association of attributes?
- 23) If $P(A \cap B) = \frac{1}{2}$ and $P(B) = \frac{2}{3}$, find $P(A|B)$.
- 24) If $E(X) = 18$ and $E(Y) = 10$, calculate $E(X+Y)$.

SECTION – C**VI. Answer any FOUR of the following questions:****(4 X 5 = 20)**

- 25) Write three functions and two limitations of statistics.
- 26) Define primary data and mention the methods of collection of primary data.
- 27) Prepare a frequency distribution table for the following data by taking class intervals: 0 – 20, 20 – 40, 40 – 60,

16	92	60	54	57	39	95	24	99	62
21	67	28	04	42	86	15	58	81	40
60	12	85	77	34	73	52	79	48	43

- 28) Draft a blank table to show the information of students:

- (i) Class: I PUC, II PUC
- (ii) Sex: Boys, Girls
- (iii) Faculty: Arts, Commerce, Science.

- 29) Represent the following data by multiple bar diagram.

Food grain	Production (in tons)		
	2021	2022	2023
Rice	90	100	150
Ragi	150	140	120
Wheat	250	280	200

- 30) Find the Yule's co-efficient of association for the following data.

	Boys	Girls	Total
Pass	120	40	160
Fail	30	10	40
Total	150	50	200



- 31) Interpolate the value of index number for the year 2017 by using binomial expansion method.

Year	2015	2016	2017	2018	2019
Index Number	100	107	-	157	212

VII. Answer any TWO of the following questions:

(2 X 5 = 10)

- 32) Draw histogram for the following data and locate mode from the graph.

C.I.	0 – 5	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30
Frequency	21	32	44	26	20	10

- 33) Compute the harmonic mean for the following distribution.

X	10	30	50	70	90
Frequency	12	15	40	35	18

- 34) Estimate the value of 'x' when y = 40 using the following data.

	x	y
Mean	25	30
Standard deviation	5	4
Co-efficient of correlation, $\gamma = 0.8$		

- 35) A, B and C hit a target with probability 0.4, 0.5 and 0.6 respectively. If they fire at the target independently, find the probability that: (i) all of them hit, (ii) at least one of them hit the target.

SECTION – D

VIII. Answer any TWO of the following questions:

(2 X 10 = 20)

- 36) Following are the runs scored by two cricketers in 5 matches.

Cricketer – A	40	60	80	25	45
Cricketer – B	20	42	68	36	34

Find (i) Who is better run scorer? (ii) Who is more consistent in run scoring?

- 37) For the following data, calculate the relation between two variables X and Y by using Karl-Pearson's method.

X↓ Y→	0-10	10-20	20-30	30-40
0	8	7	3	-
1	-	6	4	-
2	-	3	5	6
3	-	-	1	7

- 38) a) A bag contains 3 green and 4 blue marbles. Two marbles are randomly drawn. Find the probability that they are of (i) same colour (ii) different colours.

- b) Find mean and variance of the following distribution.

x	20	40	60	80
p(x)	0.1	0.4	0.3	0.2

SECTION – E

(For visually challenged students only)

- 29) Write the general rules for constructing diagram.

- 32) Write the procedure of constructing histogram.
