

**GOVERNMENT OF KARNATAKA**  
**DEPARTMENT OF SCHOOL EDUCATION (PRE UNIVERSITY)**  
**I PUC MODEL QUESTION PAPER (2024-25)**  
**STATISTICS (31)**

**Time: 3 Hours**

**(Total number of questions: 38)**

**Max. Marks: 80**

**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  $\beta_2$  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)**

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

**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.

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