

CHD-31 (Exam money)
6/12/2023

Exam.Code:0001
Sub. Code: 0041

2123

B.A./B.Sc. (General) First Semester
Statistics

Paper – 101: Probability Theory and Descriptive Statistics - I

Time allowed: 3 Hours

Max. Marks: 65

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two question from each Unit.

x-x-x

1. Attempt the following:-

- i. Define trial and event. (2)
- ii. Differentiate between qualitative and quantitative data. (2)
- iii. What precaution should be taken in planning of a statistical survey? (2)
- iv. What do you mean by cumulative and relative frequency? (2)
- v. Discuss frequency curve in brief. (2)
- vi. Define complementary event and give its example. (2)
- vii. Define probability distribution function. (1)

UNIT - I

2. (a) What do you understand by conditional probability? Examine the validity of the following statement: If $P(A|B)=P(A)$, then A and B are independent. (8)
(b) The probability of a person is allergic to penicillin is 0.2. Suppose drug is given to three patients. Find the probability that all the three of them are allergic to it. Also draw the tree diagram for joint probabilities. (5)
3. (a) State and prove Bayes Theorem. (9)
(b) Define mutually exclusive, equally likely and exhaustive events. Give mathematical and statistical definition of probability. (4)
4. (a) Define moment generating function and its properties. (3)
(b) In a four tosses of a coin, let X be the number of heads. Tabulate 16 possible outcomes with their corresponding values of X. Drive the probability distribution of X and also calculate expected value of X. (10)
5. (a) Define two-dimensional random variable. Also illustrate their joint, marginal and conditional distribution functions. (8)
(b) Differentiate between discrete and continuous random variable. Also discuss density functions related with these random variables. (5)

UNIT -II

6. Explain the following
a. Pie Chart
b. Box and Whisker plot
c. Sheppard's correction (13)
7. (a) Define Primary data. Explain are the methods of collection of Primary data. (9)
(b) Discuss deciles and percentiles. (4)

P.T.O.

(2)

8. Define median. The following table shows the age distribution of live births in Albany country, New York

| | | | | | | | |
|-------------------|-------|-------|-------|-------|-------|-------|-------|
| Mother's age | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 |
| No of live births | 7 | 258 | 585 | 841 | 981 | 526 | 99 |

Compute median and mode.

(13)

9. (a) Explain different formulae to measure skewness. How would you interpret the value of the skewness.

(9)

- (b) Define measures of dispersion. What is the difference between absolute and relative measure of dispersion.

(4)

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