Total No. of Questions : 4]

SEAT No. :

PA-2044

[Total No. of Pages : 2

[5901]-13
F.Y. B.Sc.
STATISTICS
ST-111 : Descriptive Statistics-I
(2019 Pattern) (Semester - I) (Paper-I) (11171)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Use of calculator and statistical table is allowed.***

Q1) A) Choose the correct alternative from each of the following:

a) NSSO stands for **[1]**

i) National sample survey office

ii) National service scheme office

iii) National scheme service office

iv) National sample service organization

b) In case of Symmetric distribution. **[1]**

i) Mean > Median > Mode

ii) Mean < Median < Mode

iii) Mean = Median = Mode

iv) Mode > Mean > Median

c) With two attributes the total number of ultimate class frequency is.**[1]**

i) Two

ii) Four

iii) Six

iv) Eight

B) State whether following statements are true of false:

a) The empirical relation between mean, median and mode is: mean-mode = 3 (mean-median) **[1]**

b) Karl pearson's coefficient of skewness lies between –1 and +1.**[1]**

P.T.O.

Q2) Answer any two of the following:

a) Explain the concept of $\alpha\%$ trimmed mean. State its necessity. **[5]**

b) Write short note on systematic random sampling. **[5]**

b) A certain distribution has mean 20, coefficient of variation 20% and coefficient of skewness 0.1. Find its mode. **[5]**

Q3) Attempt any two of the following:

a) What do you mean by central tendency. State different measures of central tendency. **[5]**

b) State merits and demerits of S.D. **[5]**

c) In a particular firm total employees are 700. Out of this 300 are male.100 male like Indian music and rest of them like western music. Only 30 female like western music. Is there any association between gender and type of music. **[5]**

Q4) Attempt any one of the following:

a) i) If attributes A and B are independent then show that: **[6]**

1) A and β are independent

2) α and B are independent

3) α and β are independent

ii) Arithmetic mean of 50 items is 104. While checking it was noticed that observation 98 was misread as 89. Find the correct value of mean. **[4]**

b) i) Define raw and central moments. Express first four central moments in terms of raw moments. **[6]**

ii) Compute mean deviation about mean and median for the data given below: **[4]**

83, 80, 85, 78, 79, 82, 80.

Total No. of Questions : 4]

SEAT No. :

PA-2045

[Total No. of Pages : 2

[5901]-14
First Year B.Sc.
STATISTICS
ST - 112 : Discrete Probability and Probability Distributions - I
(2019 Pattern) (Semester - I) (CBCS) (Paper - II) (11172)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) *All questions are compulsory.*
2) *Figures to the right indicate full marks.*
3) *Use of statistical tables and calculator is allowed.*
4) *Symbols have their usual meaning.*

Q1) A) Choose correct alternative for the following: **[1 each]**

a) For two mutually exclusive events A and B, $P(A \cap B)$ will be

i) 0 ii) 0.5

iii) 1 iv) 0.1

b) Let $X \rightarrow B$ (5, 0.8), then mean of X is

i) 0.4 ii) 4.0

iii) 0.2 iv) 2

c) For the following probability distribution of random variable X

X	1	2	3	4
P(x)	0.1	0.2	0.3	0.4

the value of mode of X is equal to

i) 1 ii) 2

iii) 3 iv) 4

B) State whether the following statements are true or false. **[1 each]**

a) $P(\phi) = 0$ is one of the axiom of probability theory.

b) The first cumulant is equal to first raw moment.

P.T.O.

Q2) Attempt any Two of the following . **(5 each)**

a) Define classical definition of probability and discuss its limitations.

b) If $M_x(t) = e^{t^2/2}$, find the first four central moments of x.

c) Define degenerate distribution. Derive its mean and variance.

Q3) Attempt any two of the following. **(5 each)**

a) Define discrete uniform distribution and obtain its moment generating function.

b) If A, B, C are any three events defined on a sample space Ω with P (B) > 0 then prove that $P(A \cup C / B) = P(A / B) + P(C / B) - P(A \cap C / B)$.

c) Let X be a discrete random variable with probability mass function

$$P(X = x) = \frac{X}{15};\ X = 1, 2, 3, 4, 5$$
$$= 0;\quad otherwise$$

Find E(X) and var (2X–3).

Q4) Attempt any one of the following:

a) i) For any event A of Ω, show that $0 \le p(A) \le 1$. **[4]**

ii) Following is the probability distribution of x. **[4]**

X	0	1	2	3	4
p(x)	k	3k	5k	2k	k

Find value of k and P[X ≥2]

iii) Define mutual independence of three events. **[2]**

b) i) Define binomial distribution and derive its mean. **[5]**

ii) A parcel of 12 books contains 4 books with loose binding. What is the probability that a random selection of 6 books (without replacement) will contain three books with loose binding? **[5]**