



Name

1- ہر سوال کے سامنے چار دائرے دیئے گئے ہیں، صرف صحیح جواب والا دائرہ بھر دیں۔

2- دائروں کو شیڈ (بھرنے) کے لئے ٹیپ یا کالر کا استعمال کریں۔

3- جواب میں ایک سے زائد دائرے بھرنے سے جواب غلط تصور ہوگا۔

Roll No

Time Allowed: 20 Minutes

SECTION - A

Marks : 15

The limits of probability are form.....

- ☐ -1 to +1 ☐ 1 to ∞ ☒ 0 to 1 ☐ $-\infty$ to $+\infty$

 $P(A) + P(\bar{A})$ is equal to:

- ☐ 0 ☐ ∞ ☒ 1 ☐ 0.5

The probability function $P(x)$ can't exceed:

- ☒ 1 ☐ 0 ☐ $+\infty$ ☐ $-\infty$

If x and y are independent random variables then $V(X - Y) =$

- ☐ $V(X) - V(Y)$ ☒ $V(X) + V(Y)$ ☐ $V(X) V(Y)$ ☐ $V(X + Y)$

Bernoulli trial has..... possible outcomes.

- ☐ One ☒ Two ☐ Three ☐ Four

If a fair coins is tossed once the value of P will be:

- ☒ $\frac{1}{2}$ ☐ $\frac{1}{3}$ ☐ $\frac{1}{4}$ ☐ $\frac{1}{1}$

If $X \sim N(\mu, \sigma^2)$, then standard normal variable Z is distributed as.....

- ☐ $(1, S^2)$ ☒ $(0, 1)$ ☐ (μ, S) ☐ $(0, S^2)$

If the distribution follows Normal then Mean = Median = Mode.

- ☒ True ☐ False ☐ Impossible ☐ None of these

If all units of a population are surveyed it is called.....

- ☒ Census ☐ Sampling ☐ Sampling surveys ☐ Estimate

A characteristics of sample is called:

- ☐ Parameter ☐ Sample ☒ Statistic ☐ Constant

An estimator is itself a.....

- ☐ Statistic ☐ Estimate ☐ Fucation ☒ Random variable

If $p = 0.5$, then 0.5 is called:

- ☐ Estimator ☒ Estimate ☐ Interval ☐ All these

Range of statistics - t is:

- ☐ -1 to +1 ☒ $-\infty$ to ∞ ☐ 0 to ∞ ☐ 0 to 1

For a 4×5 contingency table the degree of freedom for the χ^2 is.....

- ☐ 20 ☐ 16 ☐ 15 ☒ 12

An experimental unit in a research work

- ☐ A patient ☐ A field plots ☐ An animal ☒ All these

STATISTICS (NEW)

(PAPER - I)

Inter Part - II

(Fresh/Reappear)

Note: Time allowed for Section - B and Section - C is 2 Hours and 40 minutes.**Section - B****Marks: 38****Q-II** Answer any NINE parts. Each part carries FOUR marks.

- How many different permutations can be made from the letters of the word "STATISTICS"?
- Differentiate between mutually exclusive events and not mutually exclusive events.
- Explain different types of a random variable with example.
- In a family of three children find the probability distribution for the number of girls.
- Define Hypergeometric probability mass function.
- In a binomial distribution the means and variance were found to be 12.38 and 8.64. Find n and p
- If Z is a standard normal variable calculate: (i) $P[Z > 1.60]$ (ii) $P[-1.96 < Z < 1.96]$
- Write short notes on: (i) Sampling France (ii) Sampling design
- Differentiate between probability and non-probability sampling.
- Show that sample proportion $\hat{p}$ is an unbiased estimator of population proportion p .
- Explain principle steps involved in hypothesis testing.
- Write a short note on analysis of variance.

Section - C**Marks: 24****Note:** Attempt any THREE questions. All questions carry equal marks.**Q-III** Consider the following discrete probability distribution. $X : \quad 3 \quad \quad 8 \quad \quad 10$ $p(x) : 0.2 \quad 0.7 \quad 0.1$

Determine the mean variance and standard deviation.

Q-IV Suppose a population consist of values 2, 4, 6, 8. Draw all possible samples of size two (i) with replacement and (ii) without replacement.**Q-V** Given a random sample 4 3 7 8 4 10 5 5 4 9. Compute points estimate for: (i) population mean (ii) population variance (iii) S.E of the mean.**Q-VI** What is the general procedure for testing hypothesis about mean (μ) of a normal population (when σ^2 is known).

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STATISTICS (PAPER - II)
(New Course)
Inter Part - II
(Fresh / Reappear)

Note: Time allowed 2 Hours.

Marks: 25

Note: Attempt any FIVE questions. All questions carry equal marks.

Q-I Find the values of: (i) ${}^8P_7$ (ii) ${}^{25}P_3$ (iii) ${}^{24}C_4$ (iv) ${}^{19}C_4$ (v) ${}^{20}C_{11}$

Q-II Check whether the following is probability distribution or not? If not then why?

X	0	10	15	25	50
p(x)	0.1	0.3	0.4	0.3	0.1

Q-III If x is discrete uniform random variable. Taking value 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 each with probability equal $\frac{1}{10}$. Find its mean variance and standard deviation.

Q-IV Explain properties of normal distribution.

Q-V A population has five elements 4, 5, 6, 7, 8. Draw a possible sample of size 2 with replacement and computer mean for each sample construct the sampling distribution of $\bar{X}$ and calculate its mean and S.E also verify that

$$\mu_{\bar{X}} = \mu \text{ and } \sigma_{\bar{X}} = \frac{\sigma}{\sqrt{n}}.$$

Q-VI If $n = 50$, $\Sigma x = 2163$, $\Sigma x^2 = 144949.6$

Compute a 99% confidence interval for μ

Q VII Given the following sample observation:

X_1	17	27	18	25	27	29	27	23	17
X_2	16	16	20	16	21	17	15	20	

Examine the significance of difference between the two population mean at $\alpha = 0.05$.