Sig. of Supdt.....

KT-XII-1901
Statistics (Part – II)
Paper – I
Fresh/Reappear

Roll No.....

Fic. No.....

Fic. No.....

Time allowed: 3 Hrs **Statistics (Part – II)** **Marks: 75**
Paper – I
Fresh / Reappear

Note: There are three sections of the paper, A, B & C. Attempt Section – A on the same paper and return it to the Superintendent within the given time. Mobile phone etc. are not allowed in the examination hall.

Time: 20 Mins **Section "A"** **Marks: 15**

Q.1 Write the correct option i.e. A, B, C or D in the empty box provided opposite to each part. No marks will be awarded for cutting, erasing or over writing.

i. Use of the random variable Z instead of X ..... **A**
A. Simplifies the calculation of normal probabilities | B. Complicates the calculation of normal probabilities | C. Does not make any difference | D. None of these

ii. A normal curve with a small standard deviation will be ..... **B**
A. More spread out | B. Less spread out | C. Positively skewed | D. None of these

iii. A population Characteristic, such as a population mean is called a ..... **B**
A. Statistic | B. Parameter | C. Sample | D. None of these

iv. The expected value of the random variable $\bar{X}$ is ..... **D**
A. Standard error | B. The sample size | C. The size of the population | D. None of these

v. The objective of statistical Inference is to make inferences about ..... **A**
A. Population | B. Sample | C. Both populations and sample | D. None of these

vi. If the average value of the estimator equals the true value of the parameter the property is called ..... **C**
A. Efficiency | B. Consistency | C. Unbiasedness | D. Sufficiency

vii. As compared to normal distribution, t- distribution is ..... **B**
A. Flatter | B. More Peaked | C. Symmetric | D. Negatively Skewed

viii. A hypothesis that does not completely specify the values of population parameters is referred to as ..... **C**
A. Simple Hypothesis | B. Alternative Hypothesis | C. Composite Hypothesis | D. Null Hypothesis

ix. What kind of relationship exist if Y decrease as X increase. **A**
A. Inverse | B. Direct | C. No relationship | D. None of these

x. In the equation $\hat{Y} = a + bX$ the better "a" stands for the ..... **A**
A. Slope of the regression line | B. Intercept of the regression line | C. Co-efficient of correlation | D. None of these

xi. Relationship between two categorical variables is called ..... **C**
A. Correlation | B. Regression | C. Association | D. None of these

xii. The numerical measurement of correlation is called ..... **C**
A. Correlation | B. Rank Correlation | C. Co-efficient of Correlation | D. None of these

xiii. Given the numbers 2, 6, 1, 5 a moving average of order 3 is given as ..... **C**
A. (3, 5) | B. (3, 9) | C. (3, 4) | D. None of these

xiv. The smooth and regular movements are called ..... **A**
A. A Secular Trend | B. Irregular Movement | C. Cyclical Movement | D. None of these

xv. The person who write software for computer is ..... **B**
A. User | B. Programmer | C. Operator | D. Controller

Time: 2:40 Hours

KT-XII-1901

428

Statistics (Part – II)

Paper – I

Fresh/Reappear

Section "B"

Marks: 36

Q.2 Attempt any NINE parts. All parts carry equal marks.

i. What is normal probability distribution?

ii. Differentiate between parameter and statistic.

iii. Explain sampling and non sampling errors.

iv. Describe the properties of sampling distribution of sample mean.

v. Differentiate between an estimator and an estimate. Give examples.

vi. Define Null and Alternative Hypothesis.

vii. Explain one-tailed and two-tailed tests.

viii. Explain the concept of regression and correlation.

ix. What is meant by least-squares method?

x. Write any four properties of correlation co-efficient.

xi. Describe the different components of time series.

xii. Convert the following into their required base

(i) $(117)_{10} = (\ ?\ )_2$

(ii) $(110010111)_2 = (\ ?\ )_{10}$

Section "C"

Marks: 24

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

Q.3 Draw all possible sample of size 3 without replacement from 1, 3, 5, 8, 10, 14. Find the proportion of even numbers in the sample.

Verify the relation

$$\text{var}\left(\hat{p}\right) = \frac{pq}{n}\left(\frac{N-n}{N-1}\right)$$ where $q = 1 - p$. $\hat{p}$ and p are sample and population properties respectively.

Q.4 Calculate the Co-efficient of correlation from the following data

X	2	2	4	5	5
Y	6	3	2	6	4

Q.5 The following is the annual profit of rupees in thousands of rupees in a certain business.

Year	1995	1996	1997	1998	1999	2000	2001
Profit	60	72	75	65	80	85	95

Use the method of least squares to fit a straight line to the data. Also make an estimate of the profit in 2002.

Q.6 Find the following probabilities for the standard normal random variable Z.

(i) $P[Z \leq 2.13]$ (ii) $P[Z \leq -2.33]$ (iii) $P[-0.64 \leq Z \leq -0.12]$ (iv) $P[Z \geq -3.03]$