Statistics (Objective)   SGD–12–23   Paper (II)

Time Allowed:- 20 minutes   **PAPER CODE 4181**   Maximum Marks:- 17

Note:- You have four choices for each objective type question as A, B, C and D. The choice which you think is correct; fill that circle in front of that question number. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero mark in that question. Write **PAPER CODE, which is printed on this question paper,** on the both sides of the Answer Sheet and fill bubbles accordingly, otherwise the student will be responsible for the situation. Use of Ink Remover or white correcting fluid is not allowed.   **Q. 1**

1. The range of Normal distribution is:
(A) 0 to n   (B) 0 to $+\infty$ (C) -1 to +1   (D) $-\infty$ to $+\infty$

2. The Normal distribution has ____ parameters:
(A) One   (B) Two   (C) Three   (D) Four

3. The total area under the Normal curve is:
(A) 0.5   (B) 0.75   (C) 1.0   (D) 1.50

4. Any measure calculated from sample is called:
(A) Parameter   (B) Statistic   (C) Error   (D) Population

5. The difference between statistic and parameter is called:
(A) Probability   (B) Sampling error   (C) random   (D) Non-random

6. The mean of Sampling distribution of means is equal to:
(A) $\bar{X}$ (B) μ (C) P   (D) σ

7. Estimate and estimator are:
(A) *Same*   (B) Maximum   (C) Minimum   (D) Different

8. $(1 - \alpha)$ is called:
(A) Critical value   (B) Level of significance   (C) Level of confidence   (D) Interval estimate

9. If H_0 is true and we reject it is called:
(A) type-I error   (B) type-II error   (C) Standard error   (D) Sampling error

10. The two regression lines always passes through:
(A) (X,Y)   (B) (a,b) (C) $(\bar{X},\bar{Y})$ (D) $(\bar{X},Y)$

11. If $\hat{Y}=2+0.6X$, then the value of slope is equal to:
(A) 0.6   (B) 2   (C) 0   (D) 1

12. The correlation coefficient is always lies between:
(A) $-\infty$ to $+\infty$ (B) 0 to n   (C) 0 to $+\infty$ (D) -1 to +1

13. Association measures strength of relationship between:
(A) Variables   (B) Constant   (C) Attributes   (D) Regression

14. For 3× 3 contingency table, the degrees of freedom is equal to:
(A) 4   (B) 3   (C) 9   (D) 6

15. The multiplicative model of time series is:
(A) Y=T+S+C+I   (B) Y=TSCI   (C) Y=$a + b$x   (D) $Y = a + bx + cx^2$

16. Movement in secular trend is:
(A) Regular   (B) Irregular   (C) Fixed   (D) Random

17. Programs in general are referred to as:
(A) Software   (B) Hardware   (C) Floppy disk   (D) Hard disk

1223 (Inter Part-II) (Session 2019 – 21 to 2021 – 23)

Statistics   (Subjective) SGD -12-23 Paper (II)
Time Allowed: 2.40 hours   SECTION ---------------- I Maximum Marks: 68

2. **Write short answers of any eight parts.** $8 \times 2 = 16$

(i) What is the range of normal distribution?   (ii) What is the relation between mean, median and mode of normal distribution?   (iii) Define normal frequency distribution.   (iv) In a normal distribution, mean is 100 and standard deviation is 10, Find quartile deviation of normal distribution.   (v) In a normal distribution $\mu_2 = 4$, Find third and fourth moments about mean.   (vi) Define interval estimation.   (vii) what is meant by unbiased estimator?   (viii) Distinguish between simple and composite hypothesis.   (ix) What is meant by level of significance? (x) Define type-II error.   (xi) Describe the types of computer.
(xii) What is computer hardware?

3. **Write short answers of any eight parts.** $8 \times 2 = 16$

(i) Define sample and sampling.   (ii) What are the properties of sampling with replacement?   (iii) Why random sampling is used?   (iv) What is bias?   (v) If n=25 and $\delta_{\bar{x}} = 5$, Find δ^2.   (vi) Given $\delta_1^2 = 150$, $\delta_2^2 = 180$, $n_1 = 30$, $n_2 = 30$ Find $\delta_{\bar{X}_1 - \bar{X}_2}$ (vii) How will you describe simple linear regression model?
(viii) Explain the co-efficient of regression.   (ix) Define regressand and regressor.   (x) What does the value of "γ" indicates? (xi) Under what situations rank correlation is used?   (xii) Given $\gamma_{xy} = -0.87$, $b_{yx} = -1.4$. Find b_{xy}.

4. **Write short answers of any six parts.** $6 \times 2 = 12$

(i) Distinguish between variable and an attribute.   (ii) Define independence of an attribute.   (iii) Define positive and Negative association.   (iv) Define term "Time Series".   (v) Enlist methods of secular trend. (vi) What is Seasonal Variation?   (vii) Define term "Signal".   (viii) What are four phases of business. Cycle? (ix) What is Moving average?

SECTION ------------ II

Note: Attempt any three questions. Each question carries equal marks. (8 x 3 = 24)

5. (a) If $X \sim N(36, 49)$ find $P(X < 32)$, $P(X > 41)$ and $P(30 < X < 40)$.

(b) If $X \sim N(49, 64)$ find the two points containing the middle 95% area under the normal curve.

6. (a) A population consists of values 3,5,7 and 9. Take all possible simple random samples of size 2 without replacement. Form the sampling distribution of sample mean and show that $\mu_{\bar{X}} = \mu$

(b) If the size of simple random sample from an infinite population is 55, the variance of sample mean is 27. What must be the standard Error of sample mean if n=165.

7. (a) A random sample of size n=100 from a normal population yielded the sample mean $\bar{X}$=190 and S=800. Find 95% confidence interval for μ.

(b) Samples of two types of electric light bulbs were tested for length of life and the following data were recorded.
Type I n_1=5 , $\bar{X}_1 = 1224$, $\sum (X_1 - \bar{X}_1)^2$ =6484. Type II n_2=7, $\bar{X}_2$=1036, $\sum (X_2 - \bar{X}_2)^2$ =11200. Is the difference in the mean significant? Assume that the population of two types have the same variance. Use $\alpha = 0.05$.

8. (a) Given the following data.

x	0	1	2	3	4
y	1.0	1.8	3.3	4.5	6.3

Determine the regression line taking x as independent variable.

(b) For a set of 22 pairs of observations, we have
$\sum x = 983$, $\sum y = 409$, $\sum x^2 = 61339$, $\sum y^2 = 8475$, $\sum xy = 15811$
Find the correlation coefficient for the data.

9. (a) Find co-effiecient of association from the following data.

Attribute	Attacked	Not attacked
Inoculated	528	25
Not inoculated	790	175

(b) For the following time series, determine the trend by using the method of 3-year moving average

Year	2001	2002	2003	2004	2005	2006	2007
Value	2	4	6	8	7	6	8