

TAYARRI

FREE PAST PAPERS

Statistics (Paper II)	Inter Part-II, 2025 Sargodha Board	Session 2021-25
Time: 20 Minutes	Objective	Marks: 17 Code: 4181

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.

1. In standard normal distribution, Mean is equal to :
 (A) -1 (B) 0
 (C) 1 (D) 2
2. In normal distribution Mean, Median and Mode are always :
 (A) Equal (B) Different
 (C) Opposite (D) Unequal
3. In normal distribution if $\mu = 15$ then $P(X < 15)$ is:
 (A) 0 (B) 0.1
 (C) 0.5 (D) 1
4. In sampling with replacement, the sampling units can be selected :
 (A) Only once (B) More than once
 (C) Less than once (D) Only two times
5. $\Sigma \bar{x} \cdot P(\bar{x})$ is always equals to the parameter :
 (A) α (B) β
 (C) μ (D) σ
6. A population about which some information is required is called :
 (A) Sampled population (B) Target population
 (C) Finite population (D) Infinite population
7. The formula used to estimate a population parameter is called :
 (A) Estimate (B) Estimation
 (C) Estimator (D) Interval
8. If level of significance is 5% then level of confidence will be
 (A) 0.90 (B) 0.995
 (C) 0.99 (D) 0.95
9. If we accept the null hypothesis when H_1 is true, it is called :
 (A) No error (B) Type-I error
 (C) Type-II error (D) Correct decision
10. Dependent variable is also called :
 (A) Predictor (B) Regressor
 (C) Regressand (D) Fixed
11. The sum of the differences between observed and estimated values in regression is :
 (A) 0 (B) 1
 (C) -1 (D) ∞
12. When two variables are uncorrelated then the correlation coefficient r will be
 (A) 1 (B) 0
 (C) -1 (D) ∞
13. Graph of time series is called:
 (A) Histogram (B) Historigram
 (C) Ogive (D) Plot
14. The sequence which follows irregular or random pattern of variations is called.
 (A) Signal (B) Model
 (C) Trend (D) Noise
15. Windows 10 is an example of :
 (A) Operating system (B) Hardware
 (C) Processor (D) Input device
16. For a $(r \times c)$ contingency table, degree of freedom is :
 (A) rc (B) $(r - 1)(c - 1)$
 (C) $c - r$ (D) $(r - 1)c$
17. The attributes A and B are called independent when :
 (A) $Q = 1$ (B) Q is positive
 (C) Q is negative (D) $Q = 0$

Statistics (Paper II)	Inter Part-II, 2025 Sargodha Board	Session 2021-25
Time: 2:40 Hours	Subjective	Marks: 68 Code: 4181

SECTION - I

- 2. Write short answers of any eight parts.** 8 × 2 = 16
- Define normal distribution.
 - Write down any four properties of normal distribution.
 - Define the points of inflection in a normal distribution.
 - In a normal distribution $\mu_4 = 768$ find μ_2 .
 - Mean of normal distribution is 20. What will be the value of its mode?
 - Define interval estimation.
 - Find point estimate of σ^2 using the sample values 2, 4, 6.
 - Define a simple hypothesis.
 - What is meant by critical value?
 - Given $\bar{X} = 100$, $\sigma_{\bar{X}} = 16$ and $\mu_0 = 90$. Find Z.
 - What is meant by byte?
 - Define hardware.
- 3. Write short answers of any eight parts.** 8 × 2 = 16
- What is bias?
 - Define sampling design.
 - What is meant by stratum?
 - Given $n = 20$, $\mu = 5$, $\sigma = 4.5$ Find $\mu_{\bar{X}}$ and $\sigma_{\bar{X}}$.
 - Given $n = 36$, $\sigma_{\bar{X}} = 2$ if $n = 12$ find $\sigma_{\bar{X}}$.
 - If $n = 150$, $P = 60\%$ find μ_p and σ_p .
 - Define regression analysis.
 - Given $n = 10$, $\Sigma X = 20$, $\Sigma Y = 260$, $\Sigma XY = 3490$, $\Sigma X^2 = 3144$ find b_{YX} .
 - Given $8\bar{X} - 10\bar{Y} = -66$ and $40\bar{X} - 18\bar{Y} = 214$ find $\bar{X}$ and $\bar{Y}$.
 - Define Positive correlation.
 - Given $S^2_x = 9.1$, $S^2_y = 9.1$, $S_{xy} = 1.69$ find correlation coefficient.
 - What is relation between regression coefficients and correlation coefficient?
- 4. Write short answers of any six parts.** 6 × 2 = 12
- Define Time Series?
 - Define Histogram.
 - What is additive model of time series?
 - Give any two examples of seasonal variation.
 - If $\hat{Y} = 27 - 2.5X$ for $X = 0, 1, 2, 3$ find $\Sigma \hat{Y}$
 - Given $\Sigma X = \Sigma X^3 = 0$, $\Sigma X^2 = 701$, $\Sigma XY = -300$ find b.
 - Define attribute.
 - Differentiate positive and negative classes.
 - Given (A) = 240, (B) = 270, and $n = 600$ find (AB) if A and B are positively associated.

SECTION - II

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

- 5. (a)** Given a normal distribution with $\mu = 40$ and $\sigma = 6$, find the area (i) below 32 (ii) above 52
- (b)** In a normal distribution the lower and upper quartiles are 8 and 17. Find the parameters of the normal distribution.
- 6. (a)** Draw all possible samples of size 2 with replacement from a population consisting of 2, 4, 6. Construct sampling distribution of Sample means. Show that (i) $\mu_{\bar{X}} = \mu$ (ii) $\sigma^2_{\bar{X}} = \frac{\sigma^2}{n}$
- (b)** In an infinite population $\mu = 50$, $\sigma^2 = 250$ find mean and variance of the sampling distribution of $\bar{X}$ if $n = 100$
- 7. (a)** A sample poll of 100 voters chosen at random from all the voters in a given city indicated that 55% of them were in favour of a particular candidate. Find 95% confidence limits for proportion of all voters in favour of this candidate.
- (b)** For the data given below, test $H_0: \mu_1 - \mu_2 = 20$ against $H_1: \mu_1 - \mu_2 > 20$
 $n_1 = 50$, $n_2 = 63$, $\bar{X}_1 = 76$, $\bar{X}_2 = 53$
 $\sigma_1 = 2$, $\sigma_2 = 3.7$ use $\alpha = 0.05$
- 8. (a)** Determine the estimated regression equation $\hat{y} = a + bx$
 $n = 10$, $\Sigma x = 20$, $\Sigma y = 260$, $\Sigma xy = 3490$ and $\Sigma x^2 = 3144$.
- (b)** Find correlation coefficient (r) from the data given below
- | | | | | | | |
|---|----|----|----|----|----|----|
| X | 15 | 20 | 25 | 30 | 35 | 40 |
| Y | 48 | 58 | 65 | 70 | 78 | 85 |
- 9. (a)** An investigation into colour blindness and sex of a person gave the following results.
- | Sex | Colourblind | Not colourblind |
|--------|-------------|-----------------|
| Male | 36 | 964 |
| Female | 19 | 981 |
- Is there evidence, at the 5% level, of association between sex and colourblindness.
- (b)** Calculate two years centred moving average for following data.

Years	Values
2014	800
2015	740
2016	732
2017	800
2018	710
2019	750
2020	800

Notes on this transcription

- Typeset by Tayarri from the printed 2025 Sargodha Board paper (original board sheet). Question wording, numbering and option order follow the source exactly. No answer key is included.
- The printed header carries no group label — it is Paper (II) for the 2021–23 to 2023–25 sessions — so this PDF is filed without a group.
- **Q.14 (objective):** the source reads “sequance”. Kept as printed.
- **Q.9(a) (objective):** the colour-blindness table in the source has the row totals column trimmed at the sheet edge; the four cell counts printed are reproduced as they appear.