

Statistics Part-II Paper-I

SECTION "A"

Time: 20 Min

Marks: 15

NOTE:Use this sheet for this section. No marks will be awarded for cutting, erasing or overwriting.

Q1.Choose the correct answer from the given choices i.e. (a, b, c, d) and insert into the relevant box.

- (i). If regression co-efficients are positive, then correlation co-efficient must be____

(A) Positive (B).Negative (C). Zero (D) +1
- (ii) Area to the right of $z=0$ is _____

(a) +1 (b) 0.5 (c) -1 (d) -0.5
- (iii). Possible samples of size 2 with replacement form a population of size 5 are_____

(a) 2 (b) 5 (c) 25 (d) 10
- (iv). Critical region will be taken in the right tail if _____

(a). $H_1 \theta \neq \theta_0$ (b) $H_0 : \theta = \theta_0$ (c) $H_0 \theta \geq \theta_0$ (d). $H_1 : \theta > \theta_0$
- (v). Mean of a normal distribution is 16, then median will be _____

(a) 2 (b) 4 (c) 8 (d) 16
- (vi). Formula used to find unknown population Parameter is called _____

(a) Estimation (b) Estimate (c) Estimator (d) None of these
- (vii). Statistical inference has _____ branches.

(a) 4 (b) 2 (c) 3 (d) None of these
- (viii). In contingency table if observed and expected frequencies are equal, then chi-square will be _____

(a) Zero (b) Negative (c) +1 (d) -1
- (ix). The rank correlation co-efficient is used to measure the relation ship between two _____ variables.

(a) Qualitative (b) Quantitative (c) Discrete (d) None of these
- (x). The odd order moments about mean of a normal distribution will always be ____

(a) Positive (b) Zero (c) Negative (d) None of thes
- (xi). In regression analysis, the variable which is being predicted is called ____ variable.

(a) Continuous (b) Independent (c) Dependent (d) None of these
- (xii). Rejecting a true null hypothesis is called _____error.

(a) Standard (b) Sampling (c) Type-II (d) Type-I
- (xiii). As the sample size increases, the standard error of the mean _____.

(a)Increases (b) Decreases (c) Unchanged (d) None of these
- (xiv). Seasonal variations are _____changes.

(a) Long term (b)Short term (c) Unsystematic (d) None of these
- (xv). _____ methods are available for computing secular trend.

(a) Two (b) Three (c) Four (d) Five

Statistics Part-II
Paper-I

Time: Allowed: 2.40h Max. Marks: 60

SECTION “B” Marks: 36

Q2. Attempt any NINE questions. Each question carries 4 marks.

- (i) Distinguish between regression and correlation .
 - (ii) Using property $r = \sqrt{b_{xy} \times b_{yx}}$. If $r = 0.56$ and $b_{xy} = 0.65$ find b_{yx} .
 - (iii) Differentiate between probability and non-probability sampling.
 - (iv) Explain what is unbiased estimator?
 - (v) In sampling with replacement, if $P = 0.45$, $n = 36$. Find $\mu_{\hat{p}}$ and $\sigma^2_{\hat{p}}$.
 - (vi) What are acceptance and rejection regions?
 - (vii) Write down the properties of sampling distribution of $(\bar{x} - \bar{x}_2)$
 - (viii) Explain what is statistical inference?
 - (ix) Calculate chi-square from the following 2x2 contingency table.
- | | | |
|----------------|----------------|----------------|
| | A ₁ | A ₂ |
| B ₁ | 70 | 30 |
| B ₂ | 25 | 105 |
- (x) Explain the terms test statistic, simple hypothesis and type-I error.
 - (xi) In normal distribution if $\sigma = 25$. Find mean deviation.
 - (xii) If $n_1 = n_2 = 64$, $\bar{x}_1 = 2.9$, $\bar{x}_2 = 5.1$, $s_1^2 = 0.83$ $s_2^2 = 0.83$. Construct 95% confidence interval for $\mu_1 - \mu_2$.
 - (xiii) Explain what is simple Random sampling?

SECTION “C” Marks: 24

Note: Attempt any THREE questions. Each question carries 10 marks.

Q3. (a) Fit regression line of y on x from the following.

X	30	25	65	50
Y	15	28	30	22

(b) If X is normal random variable with mean 50 and S.D 11. Find $P(x \geq 50)$, $P(45 \leq x \leq 55)$

Q4. (a) Given $n_1 = 144$ $\bar{x}_1 = 6.5$ $s_1 = 4$
 $n_2 = 100$ $\bar{x}_2 = 6$ $s_2 = 2$

Test $H_0: \mu_1 - \mu_2$. at $\alpha = 0.05$

(b) Complete trend values by semi-Average method.

Year	2001	2002	2003	2004	2005	2006
Sale	120	124	122	130	128	132

Q5. Find spearmen’s Rank correlation co-efficient from the following.

Y	23	36	24	25	33	36	40	25	27
X	48	52	35	30	48	51	42	30	48

Q6. Let Z be a standard Normal random variable. Find the following.

- i. Area to the right of 2.63
- ii. Area to the left of -1.45
- iii. Area between 2.27 and 3.02
- iv. Area between -2.65 and 2.09