

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, MULTAN.
OBJECTIVE KEY FOR INTERMEDIATE AND ANNUAL EXAMINATION, 2022.

Name of Subject:

شماریات - P-II (Stat)

Q. Nos	Paper Code	Correct Answer	Paper Code	Correct Answer	Paper Code	Correct Answer	Paper Code	Correct Answer
	4181		4183		4185		4187	
1	A	Zero	A	4	C	$E(T) - \theta$	D	64
2	B	75	A	$(r-1)(c-1)$	B	Type-II error	A	Increased
3	D	$4/5 \sigma$	C	Four	A	$E(T) = \theta$	C	$E(T) = \theta$
4	D	64	D	Noise	D	$\theta \neq \theta_0$	B	Type-II error
5	A	Increased	A	Input Devices	A	Y-Intercept	A	$E(T) = \theta$
6	C	$E(T) - \theta$	A	Zero	A	-0.42	D	$\theta \neq \theta_0$
7	B	Type-II error	B	75	D	$\sqrt{bd}$	A	Y-Intercept
8	A	$E(T) = \theta$	D	$4/5 \sigma$	A	4	A	-0.42
9	D	$\theta \neq \theta_0$	D	64	A	$(r-1)(c-1)$	D	$\sqrt{bd}$
10	A	Y-Intercept	A	Increased	C	Four	A	4
11	A	-0.42	C	$E(T) - \theta$	D	Noise	A	$(r-1)(c-1)$
12	D	$\sqrt{bd}$	B	Type-II error	A	Input Devices	C	Four
13	A	4	A	$E(T) = \theta$	A	Zero	D	Noise
14	A	$(r-1)(c-1)$	D	$\theta \neq \theta_0$	B	75	A	Input Devices
15	C	Four	A	Y-Intercept	D	$4/5 \sigma$	A	Zero
16	D	Noise	A	-0.42	D	64	B	75
17	A	Input Devices	D	$\sqrt{bd}$	A	Increased	D	$4/5 \sigma$
18	/		/		/		/	
19	/		/		/		/	
20	/		/		/		/	

برقیکیٹ بابت صحیح سوالیہ پرچہ امارنگ Key

ہم نے مضمون شماریات پرچہ II گروپ انٹرمیڈیٹ Part-II سالانہ امتحان 2022ء کا سوالیہ پرچہ انشائیہ و معروضی (Subjective & Objective) کو بنظر عمیق چیک کر لیا ہے یہ پرچہ Syllabus کے عین مطابق Set کیا گیا ہے۔ اس سوالیہ پرچہ میں کسی قسم کی کوئی غلطی نہ ہے۔ ہم نے سوالیہ پرچہ کا اردو اور انگریزی Version بھی چیک کر لیا ہے۔ یہ Version آپس میں مطابقت رکھتے ہیں۔ نیز اس پرچہ کی معروضی (MCQs) Key کی بابت تصدیق کی جاتی ہے کہ اس میں بھی کسی قسم کی کوئی غلطی نہ ہے۔ مزید یہ کہ ہم نے Key بنانے سے متعلق دفتر کی جانب سے تیار کردہ ہدایات وصول کر کے ان کا بغور مطالعہ کر لیا ہے اور ان کی روشنی میں Key بنائی ہے۔ نیز سب ایگزامینرز کیلئے تفصیلی مارکنگ ہدایات / مارکنگ سیم Rubrics بھی تیار کر دی گئی ہیں۔

Prepared & Checked By:

Dated: 07/12/22

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07/12/22

برخ

INTERMEDIATE PART-II (12th CLASS)

STATISTICS PAPER-II

TIME ALLOWED: 2.40 Hours

SUBJECTIVE

MAXIMUM MARKS: 68

NOTE: Write same question number and its part number in answer book,
as given in the question paper.

SECTION-I

2. Write short answers to any eight parts. 8 × 2 = 16

- (i) In a normal distribution the value of S.D = 4. Find the value of second and fourth moments about Mean.
- (ii) In normal distribution $Q_1 = 65$ and $Q_3 = 75$. Find the value of Mean and Median.
- (iii) Define Standard Normal Distribution.
- (iv) If $X \sim N(50, 25)$ then find σ ?
- (v) In a normal distribution with $\mu = 2$, $\sigma^2 = 4$. Then find points of inflexions.
- (vi) Differentiate between estimator and estimate.
- (vii) What do you understand by Confidence interval?
- (viii) What is meant by testing of Hypothesis?
- (ix) Define the terms simple and composite hypothesis.
- (x) Define the term Test Statistic.
- (xi) Write down the main categories of computers.
- (xii) Differentiate between Hardware and Software.

3. Write short answers to any eight parts. 8 × 2 = 16

- (i) If $\mu = 5$ and $\sigma^2 = 2.25$ what would be value of $SE(\bar{X})$ if sample of size 4 are drawn with replacement.
- (ii) For infinite population let $n = 36$ and $\sigma_{\bar{X}} = 2$. Find σ .
- (iii) Define Standard Error.
- (iv) Is parameter is a variable? Comment.
- (v) Differentiate between bias and sampling error.
- (vi) What is sampling unit?
- (vii) If $b_{xy} = 0.11$ and $b_{yx} = 0.22$ find value of correlation coefficient 'r'.
- (viii) Write any two properties of correlation coefficient.
- (ix) Elaborate no correlation.
- (x) Given $X=2,4,6$ and $Y=4,4,4$ find simple correlation coefficient 'r'.
- (xi) Distinguish between regressor and regressand.
- (xii) In regression of Y on X , if $a = 130$, $b = 3.956$ then what is the estimate of Y for $X = 12$.

4. Write short answers to any six parts. 6 × 2 = 12

- (i) Define a contingency table.
- (ii) Explain the term rank correlation.
- (iii) Interpret the meaning of coefficient of association Q when $Q = -1$ and $Q = +1$.
- (iv) Given the pairs of ranks $(4, 2)$, $(1, 3)$, $(2, 1)$, $(3, 4)$. Find $\sum d^2$.
- (v) Explain what is forecasting in time series.
- (vi) What is meant by business cycle?
- (vii) Explain moving average method.
- (viii) If $\hat{Y} = 10 - 2X$. Find the trend values for $X = 0, 1, 2, 3, 4$
- (ix) Suggest any two methods of obtaining secular trend.

SECTION-II**NOTE: Attempt any three questions.****3 × 8 = 24**

- 5.(a) If X is a normal random variable with $\mu = 24$ and $\sigma = 4$, write down its probability density function. Find the ordinate of its normal curve at $x = 21$. Also find its maximum ordinate. 4
- (b) If $X \sim N(24, 16)$, then find (i) P_{33} (ii) D_9 4
- 6.(a) Draw all possible samples of size 2 without replacement from the population 3, 4, 5, 6 find the proportion of even numbers in the samples and show that $\sigma_{(\hat{p})}^2 = \frac{Pq}{n} \frac{N-n}{N-1}$ 4
- (b) Given that $n_1 = 2$, $\mu_1 = 6$, $\sigma_1^2 = 2.67$, $n_2 = 2$, $\mu_2 = 4$, $\sigma_2^2 = 1.67$ find (i) $\mu_{(\bar{X}_1 - \bar{X}_2)}$ (ii) $\sigma_{(\bar{X}_1 - \bar{X}_2)}^2$ If sampling is done with replacement. 4
- 7.(a) Find a 95% confidence interval for the population mean if a sample of 36 values gave a mean of 78. Assume $\sigma = 4$ 4
- (b) A manufacturer of medicines of allergy claims that his medicine is effective in curing allergy is at least 75% of the cases. His medicine is applied on 100 patients of allergy and 80 patients were relieved. Test the manufacturer's claim at 5% level of significance. 4
- 8.(a) Determine the estimated regression equation $\hat{Y} = a + bX$ for the following data:
 $n = 100$, $\bar{X} = 125$, $\bar{Y} = 80$, $\sum XY = 1007425$, $\sum X^2 = 1585000$ 4
- (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 co-efficient of correlation and interpret the result. 4
- 9.(a) Five sacks of coal A, B, C, D and E have different weights, with A being heavier than B, B being heavier than C, and so on. A weight lifter ranks the sacks (heaviest first) in the order A, D, B, E, C. Calculate a co-efficient of rank correlation. 4
- (b) The following table shows the property damaged by road accidents in Punjab for the years 1973 to 1979:
- | Year | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 |
|------------------|------|------|------|------|------|------|------|
| Property damaged | 201 | 238 | 392 | 507 | 484 | 649 | 742 |
- (i) Obtain the semi-averages trend line 4
- (ii) Find out the trend values 4

STATISTICS PAPER-II

TIME ALLOWED: 20 Minutes

OBJECTIVE

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 bubble in front of that question number, on bubble sheet. Use marker or pen to fill the bubbles. Cutting or filling two or more bubbles will result in zero mark in that question. No credit will be awarded in case BUBBLES are not filled. Do not solve question on this sheet of OBJECTIVE PAPER.

Q.No.1

- (1) In a normal distribution all odd order moments are:
 - (A) Zero
 - (B) Negative
 - (C) Positive
 - (D) None of these
- (2) In a normal distribution $\sigma^2 = 5$ then $\mu_4 =$
 - (A) 25
 - (B) 75
 - (C) 0
 - (D) $\sqrt{5}$
- (3) In a normal distribution Mean deviation approximately:
 - (A) $\frac{2}{3}\sigma^2$
 - (B) $\frac{2}{3}\sigma$
 - (C) $\frac{4}{5}\sigma^2$
 - (D) $\frac{4}{5}\sigma$
- (4) If $N = 4$ and $n = 3$, then number of all possible samples with replacement will be:
 - (A) 4
 - (B) 12
 - (C) 24
 - (D) 64
- (5) The standard error decreases when the sample size is:
 - (A) Increased
 - (B) Decreased
 - (C) Fixed
 - (D) None of these
- (6) If T be the sample statistic and θ be the parameter then Bias =
 - (A) $T - \theta$
 - (B) $\theta - T$
 - (C) $E(T) - \theta$
 - (D) None of these
- (7) A Judge can acuit a guilty person:
 - (A) Type - I error
 - (B) Type - II error
 - (C) Correct decision
 - (D) None of these
- (8) An estimator T is unbiased for θ if:
 - (A) $E(T) = \theta$
 - (B) $E(T) = -\theta$
 - (C) $E(T) < \theta$
 - (D) $E(T) > \theta$
- (9) Which of them cannot be Null Hypothesis?
 - (A) $\theta \geq \theta_0$
 - (B) $\theta \leq \theta_0$
 - (C) $\theta = \theta_0$
 - (D) $\theta \neq \theta_0$
- (10) In the regression equation, $\hat{y} = a + bx$, a is called:
 - (A) y - intercept
 - (B) Slope of line
 - (C) Dependent variable
 - (D) Independent variable
- (11) If $r_{xy} = -0.42$, then $r_{yx} =$
 - (A) -0.42
 - (B) 0.42
 - (C) -0.24
 - (D) 0.24
- (12) If two regression lines are $\hat{y} = a + bx$ and $\hat{x} = c + dy$, then correlation coefficient between x and y is:
 - (A) $\sqrt{bc}$
 - (B) $\sqrt{ac}$
 - (C) $\sqrt{ad}$
 - (D) $\sqrt{bd}$
- (13) For two attributes, the number of ultimate class is:
 - (A) 4
 - (B) 1
 - (C) 8
 - (D) 2
- (14) For test of independence of $r \times c$ contingency table degrees of freedom are:
 - (A) $(r - 1)(c - 1)$
 - (B) $(r + 1)(c + 1)$
 - (C) $(r + 1)(c - 1)$
 - (D) $(r - 1)(c + 1)$
- (15) Basic components of time series are:
 - (A) Two
 - (B) Three
 - (C) Four
 - (D) Five
- (16) Irregular movements are:
 - (A) Signal
 - (B) Systematic
 - (C) Secular
 - (D) Noise
- (17) Keyboard, mouse and scanner are:
 - (A) Input devices
 - (B) Output devices
 - (C) Memory storage
 - (D) None of these

STATISTICS PAPER-II

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- (9) If $N = 4$ and $n = 3$, then number of all possible samples with replacement will be:
(A) 4 (B) 12 (C) 24 (D) 64
- (10) The standard error decreases when the sample size is:
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(A) $\sqrt{bc}$ (B) $\sqrt{ac}$ (C) $\sqrt{ad}$ (D) $\sqrt{bd}$

STATISTICS PAPER-II

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- (14) In a normal distribution $\sigma^2 = 5$ then $\mu_4 =$
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