

BOARD OF INTERMEDIATE AND SECONDARY EDUCATION, MULTAN.
OBJECTIVE KEY FOR INTERMEDIATE 1st ANNUAL EXAMINATION, 2025

Name of Subject: Statistics (II) Group:

Q. Nos	Paper Code	Correct Answer	Paper Code	Correct Answer	Paper Code	Correct Answer	Paper Code	Correct Answer
	4181		4183		4185		4187	
1	A	0	C	Time	C	Decreases	B	N ⁿ
2	C	35 ⁴	A	$\hat{y} = a + bx$	B	α	D	Sampling Distribution
3	B	$\mu \pm 3\sigma$	D	Mouse	D	Directly	B	0
4	B	N ⁿ	A	0	A	0.4	A	$\bar{x}$
5	D	Sampling distribution	C	35 ⁴	C	α	C	Decreases
6	B	0	B	$\mu \pm 3\sigma$	B	-1 to +1	B	α
7	A	$\bar{x}$	B	N ⁿ	D	$(x-1)(c-1)$	D	Directly
8	C	Decreases	D	Sampling Distribution	C	Time	A	0.4
9	B	$\hat{y} = a + bx$	B	0	A	$\hat{y} = a + bx$	C	α
10	D	Directly	A	$\bar{x}$	D	Mouse	B	-1 to +1
11	A	0.4	C	Decreases	A	0	D	$(x-1)(c-1)$
12	C	α	B	α	C	35 ⁴	C	Time
13	B	-1 to +1	D	Directly	B	$\mu \pm 3\sigma$	A	$\hat{y} = a + bx$
14	D	$(x-1)(c-1)$	A	0.4	B	N ⁿ	D	Mouse
15	C	Time	C	α	D	Sampling Distribution	A	0
16	A	$\hat{y} = a + bx$	B	-1 to +1	B	0	C	35 ⁴
17	D	Mouse	D	$(x-1)(c-1)$	A	$\bar{x}$	B	$\mu \pm 3\sigma$
18								
19								
20								
Gross Check	A B C D		A B C D		A B C D		A B C D	
Total	4 5 4 4		4 5 4 4		4 5 4 4		4 5 4 4	

سرٹیفکیٹ یافتہ سوالیہ پرچہ / مارک گائیڈ Key

ہم نے مشن Statistics پرچہ II گروپ انٹرمیڈیٹ پہلا سالانہ امتحان 2025 کے طالب علموں کے لیے (Subjective & Objective) کو بنظر تفتیش 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 اور انگریزی Version بھی چیک کر لیا ہے۔ یہ Version آپس میں مطابقت رکھتے ہیں۔ نیز اس پرچہ کو معروضی (MCQs) Key کی ہدایت تدریس 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 ہدایات کو مدنظر رکھ کر اس Key میں اور ان کی روشنی میں Key بنائی ہے۔ نیز سب ایگزامینرز کو تفصیلی مارک گائیڈ / مارک گائیڈ / Rubrics / نسخہ تیار کر دی گئی ہیں۔

Prepared & Checked By:

Dated: 09/05/2025

S.#	Name	Designation	Institution	Mobile No	Signature
1	Minza Iqbal Raza	A. P.	Govt. W. H. Isl. G. C., Multan	0321-6303691	M. Iqbal Raza
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4					
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ہم نے اس پرچہ (انشائیہ + معروضی) کو معروضی "Key" اور ہدایات کے حوالہ سے مکمل طور پر چیک کر لیا ہے۔ کسی قسم کی کوئی غلطی نہ ہے۔

Re-Checked By	Name	Designation	Institution	Mobile No	Signature
1	Muhammad Arsalan	Asso. Prof	Govt. Graduate College 7 Science, Multan	0300616184	M. Arsalan
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10-05-2025

INTERMEDIATE PART-II (12 th Class)			2025 (1 st -A)	Roll No:														
STATISTICS PAPER-II																		
TIME ALLOWED: 2.40 Hours		SUBJECTIVE		MAXIMUM MARKS: 68														
NOTE: Write same question number and its parts number on answer book, as given in the question paper.																		
SECTION-I																		
2. Attempt any eight parts.				8 × 2 = 16														
(i)	Define normal probability distribution																	
(ii)	What is the relation between Mean, Median and Mode of normal distribution?																	
(iii)	What is the role of mean μ in normal distribution?																	
(iv)	In a normal distribution $\mu = 9$, $Q_3 = 171$ find σ .																	
(v)	In a normal distribution $\mu_2 = 4$ find μ_3 and μ_4	(vi)	What is meant by point estimation?															
(vii)	If $\bar{X} = 100$, $\sigma = 8$ and $n = 64$, set up a 95% confidence interval for μ .																	
(viii)	Give one example of each type-I error and type-II error.																	
(ix)	Distinguish between null and alternative hypothesis.																	
(x)	Compute test statistic Z if $\bar{X} = 116$, $\mu = 120$, $\sigma = 15$ and $n = 100$.																	
(xi)	Differentiate between RAM and ROM.	(xii)	Write down the types of computers.															
3. Attempt any eight parts.				8 × 2 = 16														
(i)	Define probability sampling.	(ii)	Explain standard error.															
(iii)	What is meant by sample survey?																	
(iv)	If $\sigma = 4$, $N = 6$, $n = 2$ find $\sigma_{\bar{X}}$ when sampling is without replacement.																	
(v)	Given $n = 25$, $\sigma_{\bar{X}} = 5$ find value of σ^2 .	(vi)	Given $n = 5$, $p = 0.5$ find σ_p^2															
(vii)	What is meant by scatter diagram?	(viii)	Given $\bar{X} = 1$, $\bar{Y} = 1$ and $b = 2$ find a .															
(ix)	Given $S_{xy} = 36$, $S_x = 4$ and $S_y = 18$ compute b_{yx} and b_{xy} .																	
(x)	Write down two properties of correlation coefficient.	(xi)	Given $S_{xy} = 36$, $S_x = 8$ and $S_y = 9$ find r															
(xii)	Given $S_x = 4$, $S_y = 18.75$ and $r_{xy} = 0.48$ find S_{xy}																	
4. Attempt any six parts.				6 × 2 = 12														
(i)	Define time series.	(ii)	Give four examples of irregular variation.															
(iii)	Define seasonal variation.	(iv)	Name different methods of measuring secular trend.															
(v)	Estimate Y for $X = 10$ from the given information by fitting a straight line. $n = 5$, $\sum X = 0$, $\sum Y = 20$, $\sum XY = 62$, $\sum X^2 = 10$																	
(vi)	Given $\hat{Y} = 13 + 0.8X$ is fitted to the years (2001 – 2005) with origin at 2003. Find estimated value for the year 2007.																	
(vii)	Define coefficient of association.	(viii)	Define dichotomy.															
(ix)	If there are 144 A's and 384 B's in 1024 observations, how many AB's will be if 'A' and 'B' are independent?																	
SECTION-II																		
NOTE: Attempt any three questions.				3 × 8 = 24														
5.(a)	If $X \sim N(36, 25)$, find Q_1 and Q_3			4														
(b)	If $X \sim N(49, 36)$, find $P(X < 40)$, $P(X > 55)$ & $P(40 < X < 60)$			4														
6.(a)	A random sample of size $n_1 = 2$ with replacement is drawn from a population 2, 4. Another random sample of size $n_2 = 2$ with replacement is drawn from another population 4, 8. Form a sampling distribution of $\bar{X}_2 - \bar{X}_1$ and show that $\mu_{\bar{X}_2 - \bar{X}_1} = \mu_2 - \mu_1$			4														
(b)	What will be the mean and variance of sample means if sample of size 4 is drawn without replacement from the population. 1, 2, 3, 4, 4, 4, 5, 5, 6, 6. Use property.			4														
7.(a)	If $\bar{X} = 400$, $\sigma = 8$, $n = 64$. Construct a 95% confidence interval for the population mean μ .			4														
(b)	A random sample of size 36 is taken from a normal population with known variance $\sigma^2 = 25$. If the mean of sample is $\bar{X} = 42.6$. Test the null hypothesis $H_0: \mu = 45$ against $H_1: \mu \neq 45$ with $\alpha = 0.05$.			4														
8.(a)	The following statistics have been computed $\bar{X} = 14.19$, $\bar{Y} = 21.65$, $S_x = 5.71$, $S_y = 6.73$ and $r = 0.651$. Construct the regression equation X on Y .			4														
(b)	Given the following informations:			4														
	<table><tr><td>X</td><td>50</td><td>43</td><td>52</td><td>40</td><td>80</td><td>65</td></tr><tr><td>Y</td><td>68</td><td>57</td><td>70</td><td>55</td><td>90</td><td>75</td></tr></table>	X	50	43	52	40	80	65	Y	68	57	70	55	90	75			
X	50	43	52	40	80	65												
Y	68	57	70	55	90	75												
	Compute and interpret the correlation coefficient.																	
9.(a)	During influenza epidemic 15 boys and 8 girls became ill out of a class of 22 boys and 28 girls.			4														
(i)	Draw up a contingency table	(ii)	Test the hypothesis of no dependence of attributes at $\alpha = 0.05$															
(b)	Calculate three years moving averages of following data:			4														
	<table><tr><td>Years</td><td>1980</td><td>1981</td><td>1982</td><td>1983</td><td>1984</td><td>1985</td></tr><tr><td>Values</td><td>12</td><td>14</td><td>16</td><td>18</td><td>17</td><td>16</td></tr></table>	Years	1980	1981	1982	1983	1984	1985	Values	12	14	16	18	17	16			
Years	1980	1981	1982	1983	1984	1985												
Values	12	14	16	18	17	16												

Paper Code Number: 4181		2025 (1 st -A) INTERMEDIATE PART-II (12 th Class)		Roll No: _____	
STATISTICS PAPER-II					
TIME ALLOWED: 20 Minutes			OBJECTIVE		MAXIMUM MARKS: 17
Q.No.1	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.				
S.#	QUESTIONS	A	B	C	D
1	The mean of standard normal distribution is:	0	1	2	3
2	In normal distribution $\mu_4 =$	Negative	0	$3\sigma^4$	β_2
3	The two points containing the middle 99.73% area:	$\mu + 2\sigma$	$\mu \pm 3\sigma$	$\mu \pm 1.5\sigma$	$\mu \pm \sigma$
4	The number of possible samples with replacement sampling is:	N	N^n	n^N	n
5	The probability distribution of a sample statistic is:	Time series	Sample	Frequency distribution	Sampling distribution
6	If $E(\bar{X})=5$ and $\mu = 5$ then bias is:	1	0	10	25
7	The best point estimator for μ is:	$\bar{X}$	P	S^2	r
8	By increasing "n", the length of confidence interval for μ :	Has no effect	Increases	Decreases	None of these
9	The probability of type-I error is:	β	α	$1 - \alpha$	$1 - \beta$
10	If $r = 0.8$ then X and Y are related:	Inversely	Negatively	Unexplained	Directly
11	If $b_{yx} = 0.8$ and $b_{xy} = 0.2$ then correlation is:	0.4	0.16	-0.16	-0.5
12	In regression line $\hat{y} = a + bx$ the intercept is:	$\hat{y}$	X	a	b
13	The coefficient of association lies between:	0 to 1	-1 to +1	$-\infty$ to ∞	0 to ∞
14	In $r \times c$ contingency table the degree of freedom:	$(r+1)(c+1)$	$r+c$	$(r-1)+(c-1)$	$(r-1)(c-1)$
15	Time series is function of:	Groups	Frequency	Time	None of these
16	The equation of linear trend is:	$\hat{y} = a + bx$	$\hat{y} = bx$	$\hat{y} = ab^x$	$\hat{y} = a + bx + cx^2$
17	Which is not an output device?	Plotter	Printer	Monitor	Mouse

Paper Code Number: 4183		2025 (1 st -A) INTERMEDIATE PART-II (12 th Class)		Roll No: _____	
STATISTICS PAPER-II					
TIME ALLOWED: 20 Minutes			OBJECTIVE		MAXIMUM MARKS: 17
Q.No.1	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.				
S.#	QUESTIONS	A	B	C	D
1	Time series is function of:	Groups	Frequency	Time	None of these
2	The equation of linear trend is:	$\hat{y} = a + bx$	$\hat{y} = bx$	$\hat{y} = ab^x$	$\hat{y} = a + bx + cx^2$
3	Which is not an output device?	Plotter	Printer	Monitor	Mouse
4	The mean of standard normal distribution is:	0	1	2	3
5	In normal distribution $\mu_4 =$	Negative	0	$3\sigma^4$	β_2
6	The two points containing the middle 99.73% area:	$\mu + 2\sigma$	$\mu \pm 3\sigma$	$\mu \pm 1.5\sigma$	$\mu \pm \sigma$
7	The number of possible samples with replacement sampling is:	N	N^n	n^N	n
8	The probability distribution of a sample statistic is:	Time series	Sample	Frequency distribution	Sampling distribution
9	If $E(\bar{X})=5$ and $\mu = 5$ then bias is:	1	0	10	25
10	The best point estimator for μ is:	$\bar{X}$	P	S^2	r
11	By increasing "n", the length of confidence interval for μ :	Has no effect	Increases	Decreases	None of these
12	The probability of type-I error is:	β	α	$1 - \alpha$	$1 - \beta$
13	If $r = 0.8$ then X and Y are related:	Inversely	Negatively	Unexplained	Directly
14	If $b_{yx} = 0.8$ and $b_{xy} = 0.2$ then correlation is:	0.4	0.16	-0.16	-0.5
15	In regression line $\hat{y} = a + bx$ the intercept is:	$\hat{y}$	X	a	b
16	The coefficient of association lies between:	0 to 1	-1 to +1	$-\infty$ to ∞	0 to ∞
17	In $r \times c$ contingency table the degree of freedom:	$(r+1)(c+1)$	$r+c$	$(r-1)+(c-1)$	$(r-1)(c-1)$

Paper Code Number: 4185		2025 (1 st -A) INTERMEDIATE PART-II (12 th Class)		Roll No: _____	
STATISTICS PAPER-II					
TIME ALLOWED: 20 Minutes		OBJECTIVE		MAXIMUM MARKS: 17	
Q.No.1	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.				
S.#	QUESTIONS	A	B	C	D
1	By increasing "n", the length of confidence interval for μ :	Has no effect	Increases	Decreases	None of these
2	The probability of type-I error is:	β	α	$1-\alpha$	$1-\beta$
3	If $r = 0.8$ then X and Y are related:	Inversely	Negatively	Unexplained	Directly
4	If $b_{yx} = 0.8$ and $b_{xy} = 0.2$ then correlation is:	0.4	0.16	-0.16	-0.5
5	In regression line $\hat{y} = a + bx$ the intercept is:	$\hat{y}$	X	a	b
6	The coefficient of association lies between:	0 to 1	-1 to +1	$-\infty$ to ∞	0 to ∞
7	In $r \times c$ contingency table the degree of freedom:	$(r+1)(c+1)$	$r+c$	$(r-1)+(c-1)$	$(r-1)(c-1)$
8	Time series is function of:	Groups	Frequency	Time	None of these
9	The equation of linear trend is:	$\hat{y} = a + bx$	$\hat{y} = bx$	$\hat{y} = ab^x$	$\hat{y} = a + bx + cx^2$
10	Which is not an output device?	Plotter	Printer	Monitor	Mouse
11	The mean of standard normal distribution is:	0	1	2	3
12	In normal distribution $\mu_4 =$	Negative	0	$3\sigma^4$	β_2
13	The two points containing the middle 99.73% area:	$\mu + 2\sigma$	$\mu \pm 3\sigma$	$\mu \pm 1.5\sigma$	$\mu \pm \sigma$
14	The number of possible samples with replacement sampling is:	N	N^n	n^N	n
15	The probability distribution of a sample statistic is:	Time series	Sample	Frequency distribution	Sampling distribution
16	If $E(\bar{X})=5$ and $\mu=5$ then bias is:	1	0	10	25
17	The best point estimator for μ is:	$\bar{X}$	P	S^2	r

Paper Code Number: 4187		2025 (1 st -A) INTERMEDIATE PART-II (12 th Class)		Roll No:	
STATISTICS PAPER-II					
TIME ALLOWED: 20 Minutes			OBJECTIVE	MAXIMUM MARKS: 17	
Q.No.1	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.				
S.#	QUESTIONS	A	B	C	D
1	The number of possible samples with replacement sampling is:	N	N^n	n^N	n
2	The probability distribution of a sample statistic is:	Time series	Sample	Frequency distribution	Sampling distribution
3	If $E(\bar{X})=5$ and $\mu = 5$ then bias is:	1	0	10	25
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7	If $r = 0.8$ then X and Y are related:	Inversely	Negatively	Unexplained	Directly
8	If $b_{yx} = 0.8$ and $b_{xy} = 0.2$ then correlation is:	0.4	0.16	-0.16	-0.5
9	In regression line $\hat{y} = a + bx$ the intercept is:	$\hat{y}$	X	a	b
10	The coefficient of association lies between:	0 to 1	-1 to +1	$-\infty$ to ∞	0 to ∞
11	In $r \times c$ contingency table the degree of freedom:	$(r+1)(c+1)$	$r+c$	$(r-1)+(c-1)$	$(r-1)(c-1)$
12	Time series is function of:	Groups	Frequency	Time	None of these
13	The equation of linear trend is:	$\hat{y} = a + bx$	$\hat{y} = bx$	$\hat{y} = ab^x$	$\hat{y} = a + bx + cx^2$
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