Student Roll No

0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

Example Student Roll No

2	3	4	7	2	6
0	0	0	0	0	0
1	1	1	1	1	1
●	2	2	2	●	2
3	●	3	3	3	3
4	4	●	4	4	4
5	5	5	5	5	5
6	6	6	6	6	●
7	7	7	●	7	7
8	8	8	8	8	8
9	9	9	9	9	9

ہال میں موبائل فون لانا بالکل منع ہے

Paper Code: 30

MRD-XII-17 (A)

STATISTICS – (Part-II)

Total Time: 3hrs | Total Marks:75

Signature of Supdt.

FILL ROLL NO. COLUMN WISE FROM LEFT TO RIGHT ACCORDING TO EXAMPLE SHOWN ABOVE.

Time: 20min

"SECTION – A"

Marks: 15

NOTE: **Use Black/Blue marker for shading only one bubble for each question. No mark will be awarded for Cutting, erasing, overwriting, and multiple bubble shading.**

Q. 1 **Choose the correct option i.e. A,B,C, and D.**

i. Normal distribution is the limiting form of .....
Ⓐ Binomial Ⓑ Student'st Ⓒ Chi square Ⓓ Bernoulli

ii. The Mean, Median and Mode of a symmetrical distribution are .....
Ⓐ Equal Ⓑ Unequal Ⓒ Different Ⓓ None of these

iii. As the sample size increases, the standard error of the mean will .....
Ⓐ Increases Ⓑ Decreases Ⓒ Remains same Ⓓ Zero

iv. Estimation of parameter by a range of values is called .....
Ⓐ Range estimation Ⓑ Point estimation Ⓒ Interval estimation Ⓓ Confidence estimation

v. Accepting of a false hypothesis is called .....
Ⓐ Type-I error Ⓑ Type-II error Ⓒ Standard error Ⓓ Estimation

vi. The objective of statistical inference is to make inference about .....
Ⓐ Population Ⓑ Sample Ⓒ Statistics Ⓓ Parameter

vii. In regression analysis the variable which is being predicted is called ..... variable.
Ⓐ Discrete Ⓑ Continuous Ⓒ Dependent Ⓓ Independent

viii. Semi averages for the number 2,3,7,8,9,10 will be .....
Ⓐ (3,9) Ⓑ (4,9) Ⓒ (9,4) Ⓓ (7,8)

ix. In testing $H_0: u = u_0$ vs $H_1: u > u_0$ the critical region will be located to .....
Ⓐ One side Ⓑ Two sides Ⓒ Three sides Ⓓ No side

x. Total area under the normal curve l .....
Ⓐ 5 Ⓑ 1 Ⓒ 10 Ⓓ 100

xi. Relationship between two categorical variables is called .....
Ⓐ Correlation Ⓑ Association Ⓒ Estimation Ⓓ Regression

xii. Level of significance refers to .....
Ⓐ Probability of type-I error Ⓑ Probability of type-II error Ⓒ Power of test Ⓓ Confidence limit

xiii. What kind of relationship exists if Y decreases as X increases?
Ⓐ Direct Ⓑ Inverse Ⓒ No relationship Ⓓ None of these

xiv. For a 3×4 contingency table the degree of freedom for chi-square test will be .....
Ⓐ 4 Ⓑ 6 Ⓒ 12 Ⓓ 3

xv. Which one is the input device .....
Ⓐ Floppy disk Ⓑ Keyboard Ⓒ Magnetic tap Ⓓ Hard disk

MRD-XII-17(A) P-249

STATISTICS - (Part-II)

Time Allowed: 2:40 Hrs | **Section – B & C** | Total Marks: 60

"Section – B"

Marks: 40

Q. 2 Write short answer of any TEN of the following parts. Each part carries equal marks.

(i) Write down any four properties of normal distribution.

(ii) Show that: $Var(\bar{x}) = \frac{\delta^2}{n}$

(iii) Differentiate between simple and composite hypothesis.

(iv) Define estimation also write down types of estimation.

(v) Construct 95% C.I for μ when n=10, $\bar{x} = 4.38$

(vi) Differentiate between regression and correlation.

(vii) Define univariate and bivariate categorical data.

(viii) Differentiate between hypothesis and statistical hypothesis.

(ix) A population consists of -2,0,2 and 4. Write all possible samples of size n=2 with replacement.

(x) What is meant by analysis of time series.

(xi) Calculate value of Chi-square:

Grade	A	B	C
Male	32	64	34
Female	18	42	10

(xii) Find $P(Z \geq 2.63)$

(xiii) Define hardware and software of a computer.

"Section – C"

Marks: 20

NOTE: Attempt any TWO questions. Each question carries equal marks.

Q. 3: A population consists of 6 numbers 2,3,3,4,5,6. Draw all possible samples of size n=3 without replacement and fine the sample proportion of odd numbers in the samples verify that:

a. $u_{\hat{p}} = P$ b. $Var(\hat{p}) = \frac{pq}{n}\left(\frac{N-n}{N-1}\right)$

Q. 4: An experiment has been conducted to compare the productivity of two machines. Machine 1 was observed for 40 hours and Machine 2 for 50 hours. The average of Machine 1 is 61.4 and its standard deviation is 3.1 and average of Machine 2 is 59.5 and its standard deviation is 2.8. Do the samples provide sufficient evidence to conclude the productivity of Machine 1 is better than Machine 2? Use $\alpha = 0.05$

Q. 5: Calculate coefficient of correlation for the following data:

X:	45	30	60	90	105	65	90	80	55	75
Y:	40	35	75	65	90	50	90	80	45	65