Roll No. : _____

Objective
Paper Code
8185

Intermediate Part Second

STATISTICS (Objective)

Time: 20 Minutes 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 the relevant circle in front of that question number on computerized answer sheet. Use marker or pen to fill the circles. Cutting or filling two or more circles will result in zero marks in that question. Attempt as many questions as given in objective type question paper and leave other circles blank.**

FSD-24

S.#	Questions	A	B	C	D
1	Any hypothesis which is tested for rejection under assumption that it is true is called:	Null hypothesis	Alternative hypothesis	Statistical hypothesis	None of these
2	The point estimator of "μ" is:	$\bar{X}$	X	$\hat{X}$	$\tilde{X}$
3	If $E(\hat{\theta}) = \theta$ then $\hat{\theta}$ is:	Biased	Unbiased	Positively biased	None of these
4	If $\sigma^2 = 5$ and $n = 2$ then $\sigma^2_{\bar{x}}$ is:	2	2.5	3	5
5	A sample is regarded as a subset of:	Data	Set	Distribution	Population
6	Any value calculated from the sample is called:	Parameter	Statistic	Proportion	Mean
7	If $y = 5x + 10$ and $X \sim N(10, 25)$ then mean of y is:	50	60	70	135
8	The mean of the standard normal distribution:	1	μ	0	2
9	The parameters of normal distribution are:	μ and $\frac{\sigma}{n}$	μ and σ^2	np and nq	n and p
10	One byte equals:	8 bits	4 bits	6 bits	12 bits
11	Increase in demand of ice is an example of:	Secular trend	Seasonal variation	Cyclical variation	Random variation
12	Methods of secular trend are:	2	3	4	5
13	If the class frequency (AB) = 0 then value of Q is equal to:	0	1	-1	-1 to $+1$
14	In testing independence in 2×3 contingency table, the number of degree of freedom in χ^2 is:	1	2	3	4
15	Correlation is said to be positively perfect if:	$r_{xy} = r_{yx}$	$r = 0.98$	$r = +1$	$r = 0$
16	The two regression coefficients have always:	Opposite sign	No sign	Same sign	Difficult to tell
17	If $y = 2 + 0.6x$ then the slope of line is:	2	2.6	0.6	Zero

Intermediate Part Second

Roll No. _____

XII124

STATISTICS (Subjective)

Time: 02:40 Hours Marks: 68 FSD-24

SECTION – I

2. **Write short answers to any EIGHT parts.** 16

(i) How much area of the normal distribution lies between $\mu - 2\sigma$ and $\mu + 2\sigma$?

(ii) Write the equation of normal distribution $N(\mu, \sigma^2)$.

(iii) If $X \sim N(25, 25)$, find mean deviation.

(iv) Find Q_1 of a normal distribution whose mean (μ) is 100 and variance (σ^2) is 25.

(v) What is the relation between mean, median and mode of a normal distribution?

(vi) Interpret the statement: A 90% confidence interval for μ is (48.4 , 56.6)

(vii) Describe point estimation.

(viii) Formulate the null and alternative hypothesis for the statement: "No more than 30% people pay Zakat".

(ix) Define composite hypothesis.

(x) Give an example of type-II error.

(xi) What is computer hardware?

(xii) Define input devices in computer.

3. **Write short answers to any EIGHT parts.** 16

(i) Define complete enumeration.

(ii) Express the concept of "sampling distribution" of any statistic.

(iii) If $n = 36$ and $S.E(\bar{X}) = 2$. Find $S.E(\bar{X})$ if sample size is increased to 144.

(iv) A population consists of two values as 4 and 6. Draw all possible samples of size $n = 3$ with replacement.

(v) Write any two properties of sampling distribution of sample proportions (P).

(vi) What is the basic aim of sampling?

(vii) Write at least 2 properties of least square regression equation $\hat{y} = a + bx$.

(viii) Define the term residual in regression.

(ix) If $\sum xy = 300300$, $\sum x = 5000$, $\sum y = 6000$ and $n = 100$. Find covariance S_{xy}.

(x) Define no correlation.

(xi) What is meant by product moment coefficient of correlation?

(xii) Given $\hat{Y} = 11.8 + 2x$ and $\hat{X} = 5.5 + 0.5y$ find Karl Pearson's coefficient of correlation.

4. **Write short answers to any SIX parts.** 12

(i) What is meant by independence of attributes?

(ii) If $n = 600$, $(A) = 240$, $(B) = 270$, what would be the value of (AB), if A and B are independent.

(iii) If A's are 60% and B's are 40%. Find percentage of AB's if A and B are independent.

(iv) What is the cell frequency?

(v) Define consistency of data.

(vi) What is the principle of method of least squares?

(vii) Give the two examples of secular trend.

(viii) Describe any two disadvantages of moving average method.

(ix) Given $\bar{x} = 1$, $\bar{y} = 8$. Find the value of "a" if $b_{yx} = 2$.

SECTION – II Attempt any THREE questions. Each question carries 08 marks.

5. (a) If $X \sim N(36, 25)$ find median, mode, D_9 and P_{67} 04

(b) If $Q_1 = 3$, $Q_3 = 10$, find μ and σ of the normal distribution. 04

(Continued P/2)

FSD-24

6. (a) Take all possible samples of size two with replacement of the population 2 , 2 , 8. Show that the population mean is equal to the mean of means of all samples and population variance is twice the variance of samples means. 04

(b) A population consists of four values 4 , 10 , 15 , 20. Take all possible samples of size two without replacement from this population. Find the proportion of even number and verify that:

$$S.E(\hat{p}) = \sqrt{\frac{Pq}{n}\left(\frac{N-n}{N-1}\right)}$$ 04

7. (a) A restaurant wishes to estimate the average amount of money a customer spends for lunch. A random sample of size $n = 36$ is selected and the sample mean $\bar{x} =$ Rs. 12.40. Assuming $\sigma =$ Rs. 2.4. Find 95% confidence interval for μ 04

(b) For the given set of data, test $H_0 : \mu \geq 73$ against $H_1 : \mu < 73$, $n = 15$, $\bar{x} = 70$, $s^2 = 9$. Use $\alpha = 0.01$ 04

8. (a) Find regression equation of X on Y for the following data: 04

X	15	14	12	10
Y	11	18	17	16

(b) Compute correlation co-efficient between X and Y: 04

X	4	6	1	2
Y	8	9	5	7

9. (a) Compute rank correlation coefficient from the following data: 04

X	4.2	2.7	6.1	2.4	4.7
Y	8.5	5.2	6.3	4.8	8.6

(b) Compute 4 months centered moving average for the following data: 04

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Values	23	26	78	30	31	35	37	32