Signature of Supdt.

Roll No. _____

# Statistics (Part - II)

Fic No. _____

اہال میں موبائل فون لانا بالکل منع ہے

Fic No. _____

Total Time : 3:00 Hrs.

# Statistics (Part - II)

Total Marks : 75

**NOTE :** There are THREE sections in this paper i.e. Section A, B and C.

Time : 20 Mins.

## "Section - A"

Marks : 15

Note: Use this sheet for this section. No mark will be awarded for cutting, erasing or over writing.

**Q. 1** Write the correct option i.e. A, B, C or D in the empty box provided opposite to each part.

i) The difference between the population mean and sample mean is ...................... ☐
   (a) Parameter    (b) Standard error    (c) Sampling error    (d) None of these

ii) The mean, median and mode of a symmetrical distribution are ..................... ☐
   (a) Different    (b) Unequal    (c) Equal    (d) Both

iii) Estimation of parameter by a range of values is called ...................... estimation. ☐
   (a) Range    (b) Point    (c) Internal    (d) Confidence

iv) Normal distribution is a limiting form of ...................... distribution. ☐
   (a) Binomial    (b) Student's    (c) Chi-square    (d) Bernoulli

v) Accepting of a false hypothesis is called ...................... ☐
   (a) Type-1 error    (b) Type-II error    (c) Standard error    (d) Estimation

vi) A binary characteristics of a population is referred as ...................... ☐
   (a) Mean    (b) Median    (c) Proportion    (d) Parameter

vii) If the co-efficient of correlation is a positive value, then the slope of the regression line is ............... ☐
   (a) Zero    (b) Negative
   (c) Negative or positive    (d) Positive

viii) The objective of statistical inference is to make inference about ................... ☐
   (a) Population    (b) Sample    (c) Both A and B    (d) Statistic

ix) Total area under the normal curve is ................... ☐
   (a) 0.5    (b) 1    (c) 10    (d) 100

x) In regression analyses the variable which is being predicted is called................... variable. ☐
   (a) Standard normal    (b) Independent    (c) Dependent    (d) Discrete

xi) Relationship between two categorical variables is called ................... ☐
   (a) Regression    (b) Estimation    (c) Correlation    (d) Association

xii) Semi averages for the numbers 2, 3, 7, 8, 9, 10 will be................... ☐
   (a) (4, 9)    (b) (7, 8)    (c) (3, 9)    (d) (9, 4)

xiii) Which one is the input device ................... ☐
   (a) Floppy disk    (b) Keyboard    (c) Magnetic tap    (d) Hard disk

xiv) In testing $H_0 : \mu = \mu_0$ vs $H_1 : \mu > \mu_0$, the critical region will be located to ............... ☐
   (a) Two sides    (b) Three sides    (c) One side    (d) None of these

xv) Total samples of size "n" drawn from a population of size "N" with replacement are ................... ☐
   (a) $(n)^N$    (b) $^N C_n$    (c) $^n C_N$    (d) $(N)^n$

# Statistics (Part - II)

## "Section - B"

**Q. 2** Answer any Ten parts. Each part carries equal marks.

(i) Differentiate between sampling error and non sampling error.

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

(iii) Define estimation also write down the two types of estimation.

(iv) Differentiate between simple and composite hypothesis.

(v) Define regression and correlation.

(vi) Calculate semi averages for the following data.

| Years | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|-------|------|------|------|------|------|------|------|------|
| Income | 38 | 40 | 65 | 72 | 69 | 60 | 87 | 95 |

(vii) Define univariate and bivariate categorical data.

(viii) Construct 95% C.I for $\mu$ when $\bar{x} = 42.7$, $n=100$, $\delta = 8$.

(ix) What is meant by analysis of time series?

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

(xi) A population consist of -2, 0, 2 and 4. Draw all possible samples of size n = 2 with replacement.

(xii) Define Hardware and Software of a Computer.

(xiii) Calculate the value of Chi-square for the following data.

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

## "Section - C"

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

**Q. 3** The demand for a new product is assumed to be normally distributed with $\mu = 200$ and $\delta = 40$. Find the following.

i) $P(180 < x < 220)$ 
ii) $P(x > 250)$
iii) $P(x < 100)$ 
iv) $P(225 < x < 250)$

**Q. 4** For the following data test the claim that the mean of population "A" is larger than the mean of population "B".

| Population | n | $\bar{x}$ | $\delta^2$ |
|---|---|---|---|
| A | 35 | 400 | 210 |
| B | 35 | 396 | 105 |

Complete the text at the 5% level of significance.

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

| x | 12 | 2 | 6 | 9 | 7 | 2 | 8 | 4 | 10 | 5 |
|---|----|----|----|----|----|----|----|----|----|----|
| y | 4 | 10 | 8 | 5 | 5 | 8 | 3 | 8 | 2 | 5 |

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