

Cutting, Overwriting, Erasing, Fluid painting and use of Lead Pencil will earn no marks.  
Write answer of the Question No.1 on this sheet and handover it to the supervisory  
staff of examination within first 35 minutes.

## SECTION A

**Sign of Supdt.**

***Time Allowed: 35 Minutes***

***(OBJECTIVE PART)***

**Max. Marks: 30**

**1- a) Encircle the correct answer:**

 $1x10$ 

- i) The statistical techniques that allow us to study samples and then make generalization about the populations from which they were selected is called \_\_\_\_\_.
  - a) Descriptive Statistics
  - b) Inferential Statistics
  - c) Non-parametric statistics
  - d) All of the above
- ii) The characteristic of a sample is called as \_\_\_\_\_.
  - a) Statistic
  - b) Variable
  - c) Parameter
  - d) None of these
- iii) The quartile of distribution is a point which \_\_\_\_\_.
  - a) Divides the distribution into two equal parts
  - b) Gives the relationship of the scores
  - c) Divides the distribution into four equal parts
  - d) None of These
- iv) Spearman's rank correlation can be estimated from the data which is on \_\_\_\_\_.
  - a) Nominal scale
  - b) Range
  - c) Standard deviation
  - d) Variance
- v) One method of finding correlation involving more than two variables is \_\_\_\_\_ correlation.
  - a) Partial
  - b) Multiple
  - c) Bi-serial
  - d) both b and c
- vi) Co-efficient of variation measures \_\_\_\_\_.
  - a) Relative Dispersion
  - b) Absolute Dispersion
  - c) Two-tailed; Non-directional
  - d) Two-tailed; One-tailed
- vii) In a study of the effects of caffeine on driving performance, a researcher predicts that those in the group that is given more caffeine will exhibit worse driving performance. The researcher is using a \_\_\_\_\_ hypothesis.
  - a) Two-tailed
  - b) Directional
  - c) One-tailed
  - d) Both b and c
- viii) Which of the following  $t$  test results has the greatest chance of statistical significance?
  - a)  $t(28) = 3.12$
  - b)  $t(14) = 3.12$
  - c)  $t(18) = 3.12$
  - d)  $t(10) = 3.12$
- ix) The value of the  $t$  test will \_\_\_\_\_ as sample variance decreases.
  - a) Increase
  - b) Decrease
  - c) Stay the same
  - d) Not be affected
- x) Three coins are tossed. The probability that all faces will be different is given by:
  - a)  $1/4$
  - b)  $1/2$
  - c)  $1/8$
  - d)  $3/4$

**b) Encircle True or False:**

*1x10*

- |   |                     |
|---|---------------------|
| i) A parameter is a value that describe a population.   | <b>True / False</b> |
| ii) The independent variable is the one that is observed for changes in order to asses the effect of the treatment. | <b>True / False</b> |
| iii) Mean is not affected by change of origin.  | <b>True / False</b> |
| iv) A nominal scale of measurement labels observations so that they fall into different categories.                 | <b>True / False</b> |
| v) An event that never occurs has a probability of zero.  | <b>True / False</b> |
| vi) In negatively skewed distribution Mean > Median > mode.   | <b>True / False</b> |
| vii) In regression the slope determines how much X variable will change when Y increased by one point.              | <b>True / False</b> |
| viii) The level of significance is the probability of committing type-II error.                                     | <b>True / False</b> |
| ix) The mean of Bernoullis distribution is given by NPQ.  | <b>True / False</b> |
| x) Correlation co-efficient is a pure number.   | <b>True / False</b> |

*(Continued Overleaf)*

**c) Fill in the blanks meaningfully:**

1x10

- i) Given that a correlation coefficient is .45 between a predictor variable and an outcome, the \_\_\_\_\_ explained in outcome by that predictor is 20.25%.
- ii) To test the hypothesis of mean differences in pre and post measures \_\_\_\_\_  
\_\_\_\_\_ t-test is used.
- iii) Nominal scale of measurement corresponds to \_\_\_\_\_ classification.
- iv) In a liner regression model outcome shall be a \_\_\_\_\_ variable.
- v) ANOVA is used to test differences between \_\_\_\_\_ experimental conditions.
- vi) Variability of sampling over repeated samples is called \_\_\_\_\_.
- vii) Average amount of deviation of data from \_\_\_\_\_ is called variance.
- viii) The correlation \_\_\_\_\_ has to lie between  $-1$  and  $+1$ .
- ix) For ordinal data, the correlations coefficient computed is called \_\_\_\_\_.
- x) If  $\text{Mean} > \text{Median} > \text{Mode}$ , the distribution is \_\_\_\_\_ skewed.

Attempt any **FOUR** Questions. All questions carry equal marks

**SECTION B**

**2-** Describe the following with example:

4, 3, 3

- Measure of Central Tendency
- Z-Scores
- Hypothesis Testing

**3-** Find the Arithmetic Mean and Standard Deviation for the following data:

5 x 2

Scores	10-20	20-30	30-40	40-50	50-60	60-70	70-80
f	5	7	8	13	10	5	2

**4-** When 2 dice are rolled, find the probability of getting (Write in Decimal form upto 4 decimal digits)

2 x 5

- A product is greater than 20 or product divisible by 9
- Both faces are non-identical
- Both have even faces
- A product of faces is 18
- A product greater or equal to 24

**5- a)** A random sample of 400 observations has a mean of 50 and standard deviation of 18. Estimate the 95% confidence limit for the means.

5

**b)** Consider the following paired observations:

X = 1,2,3,4,5

Y = 2,1,3,5,4

Obtain the regression line for predicting y from knowledge of x.

5

**6-** The following are data for two samples of subjects under two experimental conditions;

Sample A 2, 5, 7, 9, 6, 7

Sample B 4, 16, 11, 9, 8

Test the significance difference between means using a non directional test by applying independent sample t- test.

10

**7-** A marketing specialist wishes to see whether there is a difference in the average time (in minutes) a customer has to wait in a checkout line in three large self service department stores. The time in minutes are shown below:

Store A	Store B	Store C
3	5	1
2	8	3
5	9	4
6	6	2
3	2	7
1	5	3

Apply ANOVA and test at  $\alpha = 0.05$ , is there a significant difference in the mean waiting times of customers for each store?

10

**8-** Calculate  $\chi$  for the following 3 x 3 table:

	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	Total
B <sub>1</sub>	20	20	10	50
B <sub>2</sub>	5	5	15	25
B <sub>3</sub>	5	5	15	25
Total	30	30	40	100

Does a significance association exist between A and B?

10