**4017-08** **Printed Pages : 08**

**P.G. (Vocational) (Sem.-II) Examination, 2021**

# STATISTICAL AND NUMERICAL COMPUTING

**[ Paper : Third ]**

**[ PPU-CS-22 ]**

**Time : Three Hours]** **[Maximum Marks : 70**

**Note :** Candidates are required to give their answers in their own words as far practicable. Attempt all parts as directed.

## PART-A

### (Objective Type Questions)

**Note :** Answer **all** questions. Each question carries **2** marks. [2x10 = 20]

1. (i) Which of the following values is used as a summary measure for a sample, such as a sample mean ?



(a) Population parameter

(b) Sample parameter

(c) Sample statistics

(d) Population mean

(ii) Which of the following is a branch of statistics ?

(a) Descriptive statistics

(b) Inferential statistics

(c) Industry statistics

(d) Both (A) and (B)

(iii) The control charts and procedures of descriptive statistics which are used to enhance a procedure can be classified into which of these categories ?

(a) Behavioural tools

(b) Serial tools

(c) Industry satistics

(d) Statistical tools

(iv) Which of the following can also be represented as sample statistics ?

(a) Lowercase Greek letters

(b) Roman letters

(c) Associated Roman alphabets

(d) Uppercase Greek letters

(v) To which of the following options do individual respondents, focus groups and panels of respondents belong ?

(a) Primary data sources

(b) Secondary data sources

(c) Itemized data sources

(d) Pointed data sources

(vi) What are the variables whose calculation is done according to the weight, height and length known as ?

(a) Flowchart variables



(b) Discreate variables

(c) Continuous variables

(d) Measuring variables

(vii) Which methed used to examine inflation rate anticipation, unemployment rate, and capacity utilization to produce products ?

(a) Data exporting technique

(b) Data importing technique

(c) Forecasting technique

(d) Data supplying technique

(viii) Specialized processes such as graphical and numerical methods are utilized in which of the following ?

(a) Education statistics

(b) Descriptive statistics

(c) Business statistics

(d) Social statistics

(ix) What is the scale applied in statistics, imparting a difference of magnitude and proportions, is considered as ?

(a) Expornential scale

(b) Goodness scale

(c) Ratio scale

(d) Satisfactory scale

(x) Review of performance appraisal, labour turnover rates, planning of incentives, and training programs are the examples of which of the following ?

(a) Statistics in production

(b) Statistics in marketing

(c) Statistics in finance

(d) Statistics in personnel management



## PART-B

### (Short Answer Type Questions)

**Note :** Answer **any four** questions. Each question carriers 5 marks. [4x5 = 20]

2. Establish Simpson's 1/3rd rule for numerical integration.

3. What do you understand by the measures of Central tendency ? Write down the various measures of Central tendency.

4. What is the Interpolation ? Differentiate Interpolation from Extrapolation with suitable examples.

5. Describe, in brief, mass function, density function and distribution function.

6. State and prove Taylor's series method of differential equation.

7. What do you understand by Regression Analysis ? Explain with example in detail.

## PART-C

### (Long Answer Type Questions)

**Note :** Answer **any three** questions. Each question carries **10** marks.

[3x10 = 30]

8. Find approximate value of $I = \int_3^5 \frac{dx}{(4+3^x)} dx$ using Simpson's 1/3rd rule taken $h = 0.5$.

9. Solve the following IVF using Euler's method :

$Y = 1 - 2xy, y(0.2) = 0.1948$. Find $y(0.4)$ with $h = 01$.

10. For $f(x) = 5x^3 - 4x^2 + 9$, find $\Delta^3 f(x)$ in terms of $h$, which is an equally spaced interval.

11. Solve by Jacobi's method, the following system of linear equations :

$$3x_1 - x_2 + x_3 = -1$$
$$x_1 + 3x_2 - x_3 = 6$$
$$x_1 - x_2 + 2x_3 = -3$$

12. In partially destroyed laboratory record of an analysis of correlation data, the following results are legible :

The equations of two regression lines are as follows :

$$3X + 12Y = 18$$
$$3Y + 9X = 45$$

Obtain (i) mean value of $X$ and $Y$.

(ii) The values of regression coefficients.

(iii) The value of correlation coefficient.

----- x -----