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**BSCSTC 382**

**Choice Based Credit System VI Semester B.Sc.  
Degree Examination, September 2022  
(2021-22 Batch Onwards)  
STATISTICS  
Applied Statistics (Paper – VIII)**

Time : 3 Hours

Max. Marks : 80

**Instructions :** I) A single booklet containing **40** pages will be issued.  
II) **No** additional sheets will be **issued**.

**PART – A**

Answer **any ten** of the following :

**(2×10=20)**

1. a) What do you mean by product control ?
- b) When do you say that a process is in statistical control ?
- c) How do you estimate the process average and process dispersion with  $\bar{X}$  and R chart ?
- d) What are warning limits and trial control limits ?
- e) Briefly explain the statistical basis for control charts for number of defects.
- f) State any two advantages of control charts for attributes.
- g) Define the terms producer's risk and consumer's risk.
- h) Briefly explain SSP by variables with a single lower specification L.
- i) Define "Index Number". Give an example of index number.
- j) Define the term general fertility rate.
- k) Define central mortality rate.
- l) What do you mean by irregular variation in time series ? Give an example.

**PART – B**

Answer **any five** of the following :

**(5×6=30)**

2. Discuss the nature of two types of causes of variation in quality. How do you address these issues ?

**P.T.O.**



3. How do you deal with the problem of varying sample size in a P chart ?
4. What do you mean by a C chart ? How does it differ from U chart ?
5. Explain SSP by attributes  $\begin{bmatrix} N \\ n \\ C \end{bmatrix}$ . Write down an expression for the O.C. function, stating the distributions.
6. Explain the terms AQL, LTPD, ASN and ATI in a single sampling plan by attributes.
7. Briefly explain the steps involved in the construction of cost of living index numbers.
8. Explain ratio to trend method of measuring trend in time series.
9. Define crude death rate and age specific death rate. Also explain the direct method of computing standardised death rate.

## PART – C

Answer **any three** of the following :

**(3×10=30)**

10. Discuss the steps involved in the construction of  $\bar{X}$  and R charts.
11. a) Make a comparative study of R and S charts used along with the  $\bar{X}$  chart.  
b) Explain lot by lot acceptance sampling plan by attributes. Is the second sample always taken ?
12. Derive an expression for the O.C. function of SSP for variables with known standard deviation when a single lower specification L is given. How do you find PR given AQL ?
13. a) Define vital statistics and rate of vital events. Mention any two uses of vital statistics.  
b) With the usual notations prove that

$$I) e_x = \sum_{n=1}^{\infty} \frac{l_{x+n}}{l_x}$$

$$II) p_x = \frac{l_x}{1 + l_{x+1}}$$


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