**PSG COLLEGE OF ARTS & SCIENCE**
(AUTONOMOUS)

**BSc DEGREE EXAMINATION MAY 2024**
(Sixth Semester)

Branch – **STATISTICS**

**INDUSTRIAL STATISTICS**

Time: Three Hours Maximum: 50 Marks

**SECTION-A (5 Marks)**
Answer **ALL** questions
**ALL** questions carry **EQUAL** marks (5 x 1 = 5)

1 Indicate Quality is _____ variability.
(i) Opposite of (ii) Proportional to
(iii) inversely proportional to (iv) equal to

2 The control limit for p – chart when standard deviation are unknown is
(i) $\bar{p} \pm A_2\bar{R}$ (ii) $\bar{p} \pm A\sqrt{\bar{p}\bar{q}}$ (iii) $\bar{p} \pm A_2\sqrt{\bar{p}\bar{q}}$ (iv) $\bar{p} \pm \sqrt{\bar{p}\bar{q}}$

3 Identify a curve showing the probability of accepting a lot of quality p is known as
(i) OC curve (ii) AOQ curve (iii) ATI curve (iv) ASN curve

4 Name the decision about the acceptance or rejection of a lot by variables is
(i) less reliable than attributes (ii) more reliable than attributes
(iii) not feasible (iv) All the above

5 Reliability function is also known as
(i) Failure distribution (ii) Hazard function
(iii) Survival function (iv) Instantaneous function

**SECTION - B (15 Marks)**
Answer **ALL** Questions
**ALL** Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Compare between chance cause of variation and assignable cause of variation.
OR
b Explain the various techniques used in statistical quality control.

7 a Sketch the general structure of Shewart control chart.
OR
b State the types of attribute control charts.

8 a Write short notes on producer's risk and consumer's risk.
OR
b Define (i) ASN (ii) AOQ and (iii) AOQL

9 a State the merits and limitations of acceptance sampling by variables.
OR
b Sketch the diagrammatic representation of TNT scheme.

10 a Describe the concept of Mean Time to Failure (MTTF).
OR
b Explain failure modes with Bath tub curve.

**Cont...**

## SECTION -C (30 Marks)

Answer **ALL** questions
**ALL** questions carry **EQUAL** Marks (5 x 6 = 30)

11 a Highlight the need for statistical quality control techniques in industries.

OR

b Distinguish control limits and specification limits.

12 a Examine the criterion for detecting lack of control in $\bar{X}$ and R charts.

OR

b Write detailed note on C chart, discuss its various applications.

13 a Explain the operating procedure of single sampling plan with OC, AOQ and ASN curves.

OR

b Elucidate the step by step procedure of double sampling plan.

14 a Summarize variable sampling plan with a specified OC curve.

OR

b Describe Normal, Tightened and Reduced inspections.

15 a Write short notes on
(i) The Reliability function
(ii) Failure Distribution
(iii) Hazard rate function

OR

b Elucidate the concept of Exponential distribution as a life model and show that it satisfy memoryless property.

Z-Z-Z END