PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(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 Which of the following is a principle of TQM?
(i) Decisions made by top executives only (ii) Intermittent improvement
(iii) Customer-focus (iv) Product-centered system

2 Indicate relation between expected value of R and σ with usual constant factor
(i) $E(R)=d_1\sigma$ (ii) $E(R)=d_2\sigma$
(iii) $E(R)=D_1\sigma$ (iv) $E(R)=D_2\sigma$

3 The expected sample size required to arrive at a decision about the lot is called
(i) Average Quality Limit (ii) Average sample number
(iii) Average Total Inspection (iv) Average Outgoing Quality

4 Variable sampling plan with unknown sigma, the acceptance criterion for an upper limit is
(i) $\bar{X} > U + ks$ (ii) $\bar{X} < U + ks$
(iii) $\bar{X} = U + ks$ (iv) $\bar{X} \leq U - ks$

5 What is the failure cost of a product possessing reliability R=1
(i) Zero (ii) Unity
(iii) Infinity (iv) Negative number

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

6 a Bring out the history of ISO:9000 Series Standards.
OR
b State the principle objectives of TQM.

7 a Compare the Chance and Assignable causes of variation.
OR
b Describe the procedure of constructing c-chart with an example.

8 a Distinguish between producer's risk and consumer's risk.
OR
b Explain the operating procedure of single sampling plan by attributes with flow chart.

9 a Give the advantages and disadvantages of acceptance sampling plan by variables.
OR
b Write the procedure of variable sampling plan by variables . Give the plan parameters of variable sampling plan when standard deviation is known.

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 Delineate about TQM and List the advantages of total quality management

OR

b Explain the features of ISO:9000 Series of Standards. What are the benefits of it.

12 a Discuss the major applications of statistical quality control

OR

b Describe briefly the construction of Mean and Range charts and how will you interpret these charts.

13 a Define (i) Average Sample Number (ii) Average Total Inspection (iii) Average Outgoing quality

OR

b Explain the double sampling plan by attributes. Derive its OC, ASN and ATI functions.

14 a Explain briefly about Normal reduced and Tightened plans

OR

b Derive sample size(n) and acceptance constant(k) when the population standard deviation is unknown.

15 a Define failure density function and hazard function for exponential distribution and show that it satisfies memory less property

OR

b Write short notes on (i) The reliability function (ii) Failure distribution (iii) Hazard rate function.

Z-Z-Z END