



PA-003-1173002

Seat No. _____

M. Sc. (Sem. III) (CBCS) Examination

May / June - 2018

Statistics : MS - 302

(Industrial Statistics)

Faculty Code : 003

Subject Code : 1173002

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) Attempt all questions.
(2) Each question carries equal marks.

1 Answer the following : (any **seven**) **14**

- (1) Write down the all control limits for R charts.
- (2) Write Control limits for the \bar{X} bar chart.
- (3) Chart for fraction is define as _____.
- (4) Pareto chart are often used in both the measure and Analyze steps of _____.
- (5) OC curve means _____.
- (6) Upper control limit for P chart is _____.
- (7) What is the lower control limit for EWMA chart ?
- (8) Which chart is widely used in non manufacturing quality improvement methods.
- (9) \bar{X} and R charts is known as chart for _____.
- (10) Control chart for defects is known as _____ chart.

2 Answer the following : (any **two**) **14**

- (1) Explain choice between attributes and variable control charts.
- (2) Explain the sample mean vector and covariance matrix of the multivariate Normal Distribution.
- (3) Explain the exponentially weighted moving average control chart for monitoring the process mean.

- 3** Answer the following : **14**
- (1) Explain Acceptance sampling problem.
 - (2) Explain types of sampling plans.

OR

- 3** Answer the following : **14**
- (1) Explain Pareto chart in statistical quality control.
 - (2) Explain defect concentration diagram.

- 4** Answer the following : (any **two**) **14**
- (1) Explain \bar{X} and R chart.
 - (2) Explain V – mask procedure for CUSUM Chart.
 - (3) Explain Dodge - Romig Sampling plans.

- 5** Answer the following : (any **two**) **14**
- (1) Explain Average Outgoing Quality.
 - (2) Find U – Chart for data on no. of shipping errors in a supply chain network with sample size n=50.

Sample No. (Week)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Non Conformities	2	3	8	1	1	4	1	4	5	1	8	2	4	3	4	1	8	3	7	4

- (3) Explain Cause and effect diagram.
- (4) Explain control charts for fraction, non-conforming.
