

**Avinashilingam Institute for Home Science and Higher Education for Women  
(Deemed to be University) Coimbatore- 641043.**

**Master's Degree Examination – November 2018  
Semester - III**

**Class : II PG**  
**Major : Mathematics**

**Time: 3 hours**  
**Max. Marks: 60**

**17MMAC16 – ADVANCED STATISTICAL QUALITY CONTROL**

**Part A**

**Choose the correct answer**

**10 x 1/2 = 5**

1. \_\_\_\_\_ is an inbuilt function for majority of clothing industry
  - a) Quality control
  - b) Eco labeling
  - c) Reporting
  - d) Quality monitoring
2. Which of the following is the confirmation of the product to the accepted level of standards set by standardization organization, buyer or the consumer-----
  - a) Quality
  - b) Management
  - c) Involvement
  - d) Finishing
3. Which of the following is true for a Poisson distribution -----
  - a) Mean > Variance
  - b) Mean < Variance
  - c) Mean = Variance
  - d) Mean = SD
4. The variance of a binomial distribution is measured by -----
  - a) np
  - b) np(1 - p)
  - c) pq
  - d) nq
5. What chart helps to identify the relatively few factors that impact the performance of a manufacturing or service process?
  - a) SPC
  - b) Pareto analysis
  - c) Fishbone chart analysis
  - d) Diagnostic chart
6. Control charts can be developed for -----
  - a) both variables and attributes
  - b) variables alone
  - c) attributes only
  - d) for population values only
7. In a control chart, expected variation is defined by the -----
  - a) standard deviation
  - b) standard error of the distribution.
  - c) only upper control limits.
  - d) upper and lower control limits.
8. Which probability distribution is used to develop a control chart for sample means?
  - a) Normal distribution
  - b) Chi-square distribution
  - c) Mann-Whitney test
  - d) Binomial distribution
9. Which of the following is not considered a cost of nonconformance to quality?
  - a) Scrap
  - b) Rework
  - c) Expediting
  - d) Process control
10. Quality control is the technical processes that \_\_\_\_\_ the project's progress against the performance standards.
  - a.) Inspect, certify, and verify
  - b) examine, analyze, and report
  - c) inspect, examine, and determine
  - d) identify, measure, and report

**PART – B****5 x 4 = 20****Answer ALL the Questions****Each answer should not exceed 200 words or one page**

11 a. . Explain Total Quality Management .

(Or)

b. Illustrate about the Statistical Process Control

12.a . Five samples of drop-forged steel handles, with four observations in each sample, have been taken. The weight of each handle in the samples is given below (in ounces). Use the sample data to construct an X-chart and an R-chart to monitor the future process.

Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
10.2	10.3	9.7	9.9	9.8
9.9	9.8	9.9	10.3	10.2
9.8	9.9	9.9	10.1	10.3
10.1	10.4	10.1	10.5	9.7

(Or)

b. Define and state the characteristics for normal distribution.

13.a. Construct and write some uses of Control Charts

(Or)

b. What assumptions are necessary for constructing an X bar chart ?

14.a. Evaluate how well a single acceptance sampling plan discriminates between good and bad lots.

(Or)

b. Discuss the key differences between common and assignable causes of variation

15.a. Draw the flow chart for continuous sampling .

(Or)

b. Explain ASN ( average sample number ) .

**PART – C****5 x 7 = 35****Answer ALL the Questions****Each answer should not exceed 600 words or three pages**

16.a. Compose the dimensions of quality for manufactured products and for service

(Or)

b. (i) Discuss the key differences between common and assignable causes of variation. Give examples.

(ii) What are the upper and lower control limits? What does it mean if an observation falls outside the control limits?

17.a. . Explain the differences between X-bar and R-charts.

(Or)

b. How can x-bar and R-charts used together and why would it be important to use them together?

18.a. Explain the use of p-charts and c-charts. When would you use one rather than the other?

(Or)

b. Give examples of measurements for both p-charts and c-charts.

19. a. Explain the three categories of statistical quality control (SQC).

How are they different, what different information do they provide, and how can they be used together?

(Or)

b. Describe the process of acceptance sampling. What types of sampling plans are there?

What is acceptance sampling used for? .

20.a. Define strategic planning. Explain briefly seven steps towards strategic planning .

(Or)

b.(i) Analyse CSP and its classifications . (ii) Compare CSP and skip lot sampling plan.