

**2023**  
**B.A./B.Sc.**  
**Fourth Semester**  
**CORE – 10**  
**STATISTICS**  
*Course Code: STC 4.31*  
(Statistical Quality Control)

*Total Mark: 70*  
*Time: 3 hours*

*Pass Mark: 28*

*Answer five questions, taking one from each unit.*

**UNIT-I**

1. (a) Fill in the blank. 1  
Quality is \_\_\_\_\_ proportional to variability. (directly/inversely)
- (b) What are the eight dimensions of quality? Describe. 7
- (c) Write a short note on quality control improvement. 6
2. (a) What do you mean by ISO? What are the roles of ISO? 1+5=6
- (b) Write the name of three quality gurus? Briefly discuss the approaches and philosophy of any one of them in the field of quality improvement. 3+5=8

**UNIT-II**

3. (a) Fill in the blank. 1  
The two \_\_\_\_\_ of variation are: chance and assignable. (causes/ effects)
- (b) What do you mean by control chart for variable? 7
- (c) Write a note on criterion for detecting lack of control in  $\bar{X}$  and R chart. 6
4. (a) What is a control chart? Explain. 4
- (b) Explain  $\bar{X}$  and R chart. 5+5=10

### UNIT-III

5. Distinguish between defects and defectives. Give some examples of defects for which the c-chart is applicable. How do you calculate control limits for a c-chart? Discuss the assumptions and approximations involved in this calculation. 3+2+5+4=14
6. (a) Differentiate between c-chart and p-chart. 4  
(b) How binomial and Poisson distributions are used for calculating control limits? 5  
(c) Describe an np-chart. 5

### UNIT-IV

7. (a) What do you mean by product control? 2  
(b) Write notes on acceptance quality level, lot tolerance percent defective, process average fraction defective, and consumer's risk. 3×4=12
8. (a) Differentiate between single sampling plan and double sampling plan. 6  
(b) How 'n' and 'c' are determined in case of a single sampling plan using different probability distributions? 8

### UNIT-V

9. (a) In SPRT when a null hypothesis is rejected, accepted or sampling is continued by taking an additional observation? 6  
(b) Also define the constants A and B in terms of consumer's risk and producer's risk. 4  
(c) Define OC function. What is its relation with power function? 4
10. (a) Describe Wald's SPRT. 10  
(b) Describe ASN function for SPRT. 4