Register Number:

DATE: 28-10-2019

ST. JOSEPH'S COLLEGE (AUTONOMOUS), BENGALURU-27

B.Sc. STATISTICS - V SEMESTER

SEMESTER EXAMINATION - OCTOBER 2019

ST: 5217 –STATISTICAL METHODS FOR QUALITY MANAGEMENT

Time: 2½hrs **Max: 70 Marks**

This question paper has **TWO** printed pages and **THREE** parts

SECTION – A

I Answer any FIVE of the following: **5 x 3 = 15**

1. Write down any three objectives of quality control.
2. Explain need for control charts for attributes
3. Write down 3 – σ control limits for mean when standards are unknown
4. If USL = 62 cm, LSL = 38 cm and σ = 1.5 cm, then draw your inference about process using process capability ratio.
5. Explain single sampling plan
6. Define consumer's risk with reference to acceptance sampling.
7. Define sequential probability ratio test statistic.

SECTION – B

II Answer any FIVE of the following: **5 x 7 = 35**

8. A) Distinguish between process control and product control (4)
   B) Differentiate between natural tolerance limits and specification limits (3)
9. Derive 3 - σcontrol limits for S chart when standards are unknown (7)
10. A) Derive 3 - σcontrol limits for *C* chart and mention assumption involved (4)
    B) Write a note on causes of variations (3)
11. Derive an expression for OC function and ARL for $\bar{X}$chart (7)
12. A) Explain any four criteria's for detecting lack of control with neat diagrams (4)
    B) Justify selection of 3 - σcontrol limits in violation of normality assumption (3)
13. A) Write short note on acceptance sampling (3)
    B) Differentiate between AQL and LTPD. (4)
14. A) Explain double sampling plan (4)
    B) State optimal property of SPRT (3)

SECTION – C

III Answer any TWO of the following: **2 x 10 = 20**

15. A) Write a note on Total Quality Management (5)

    B) Differentiate between 100 % inspection and rectifying inspection plans (5)

16. A) Discuss about process capability ratio with neat diagram (4)

    B) Describe the procedure for construction of control chart for range (3)

    C) Distinguish between defect and defective. Name the distribution on which control chart for number of defects is based upon. (3)

17. A) Derive an expression for OC function of SPRT for testing mean of normal distribution with known variance (7)

    B) Explain the construction of standardized p-chart (3)