

Reg. No. :

Name :

V Semester B.Sc. Degree (CCSS-Reg./Supple./Imp.)
Examination, November 2014
CORE COURSE IN STATISTICS
5B09 STA : Statistical Quality Control and Operations Research

Time : 3 Hours

Max. Weightage : 30

PART – A

Answer **any 10** questions. Weightage **1 each** :

1. Define slack variables.
2. Define optimum feasible solution.
3. What is producers risk and consumers risk ?
4. Define A.Q.L.
5. Define chance causes.
6. Distinguish between defect and defective.
7. Define basic feasible solution.
8. What are the merits of simplex method ?
9. Define primal and dual problem.
10. Explain loop in transportation problem.
11. What are the applications of C-chart ? (10×1=10)

PART – B

Answer **any 6** questions. Weightage **2 each** :

12. Distinguish between single sampling plan and double sampling plan.
13. Compare control chart for variables and control chart for attributes.

P.T.O.



14. Explain transportation problem.
15. Use the graphical method to solve the following LPP.
 Maximise $Z = 15x_1 + 10x_2$ subject to the conditions
 $4x_1 + 6x_2 \leq 360$;
 $3x_1 \leq 180$
 $5x_2 \leq 200$
 and $x_1, x_2 \geq 0$.
16. Explain any two methods of finding the initial feasible solution a transportation problem.
17. Explain the construction of p-chart.
18. What are natural tolerance limits and specification limits ? Compare them.
19. Distinguish between process control and product control.
20. Give the procedure for finding the initial feasible solution of a transportation problem. (6×2=12)

PART – C

Answer any two questions. Weightage 4 each :

21. a) Solve the following LPP by simplex method.
 Maximise $Z = 3X_1 + 2X_2 + 5X_3$
 such that $X_1 + 2X_2 + X_3 \leq 430$
 $3X_1 + 2X_3 \leq 460$
 $X_1 + 4X_2 \leq 420$
 $X_1, X_2, X_3 \geq 0$.
- b) What are the characteristics of LPP ?
22. Explain the role of statistics in controlling the quality of the product.
23. a) Discuss the method of obtaining the optimum solution in transportation problem.
 b) What is the procedure in the case of degeneracy ?
24. i) Explain the terms :
 a) LTPD and
 b) OC curve.
- ii) Explain modified control limits. (2×4=8)