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E – 1672

Reg. No. :

Name :

Sixth Semester B.Sc. Degree Examination, April 2018
First Degree Programme under CBCSS
STATISTICS
Core Course – 11
ST 1643 : Operations Research and Statistical Quality Control
(2013 Admission Onwards)

Time : 3 Hours

Max. Marks : 80

SECTION – A

Answer **all** questions. **Each** carries **1** mark.

1. Define surplus variable in LPP.
2. What do you mean by a feasible region associated with an LPP ?
3. What is the role of extreme points in solving an LPP ?
4. What is limitation of a graphical procedure in solving an LPP ?
5. When will you use artificial variables in a linear programming problem ?
6. What are the dimensions of quality ?
7. Differentiate between process control and product control.
8. What is producer's risk ?
9. Explain AQL.
10. What do you mean by an ASN curve ?

P.T.O.



SECTION – B

Answer **any 8** questions. **Each** question carries **2** marks.

11. Explain the term basic feasible solution.
12. Define an Assignment problem.
13. Can a linear programming problem always have an optimal solution ? Discuss.
14. Give an example of an LPP with unbounded value to the objective function.
15. Define an assignment problem. Is it a particular case of a transportation problem ?
16. Explain how an unbalanced transportation problem can be converted in to a balanced TP.
17. Explain assignable causes.
18. Give control limit for np charts.
19. What is sampling inspection ?
20. Give the relation between ASN and ATI.
21. Distinguish between trial control limits and warning limits.
22. Define OC curve.

SECTION – C

Answer **any 6** questions. **Each** question carries **4** marks.

23. Outline major steps of solving an LPP by graphical procedure.
24. Define dual of a linear programming problem. Show that dual of the dual is primal.
25. State fundamental theorem of duality. What is its significance ?
26. Explain Vogel's approximation method of finding the initial basic feasible solution of a transportation problem.



27. Solve the assignment problem.

	M_1	M_2	M_3
J_1	22	31	45
J_2	18	28	30
J_3	9	16	21

28. What are the objectives of SQC.

29. Explain single sampling plan and discuss its OC curve.

30. What are the sensitizing rules for control charts ? Explain.

31. Differentiate between charts for variables and charts for attributes.

SECTION – D

Answer **any 2** questions. **Each** question carries **15** marks.

32. Explain simplex iterative procedure for solving a linear programming problem when an initial basic feasible solution is available.

33. Solve the transportation problem:

	D_1	D_2	D_3	D_4	
O_1	7	3	9	10	200
O_2	12	16	20	6	200
O_3	14	24	28	30	100
	175	75	125	125	

34. Explain the working rule of X-bar and R-chart in ensuring quality.

35. Discuss in detail double sampling plan. What are its advantages over single sampling plan ?
