



M 9943

Reg. No. : .....

Name : .....

V Semester B.A./B.Sc./B.Com./B.B.A./B.B.A.T.T.M./B.B.A.R.T.M./B.B.M./  
B.C.A./B.S.W./ B.A. Afsal-UI-Ulama Degree (CCSS-Reg./Supple./Improv.)  
Examination, November 2015  
Open Course  
5D02 STA : OPERATIONS RESEARCH

Time : 2 Hours

Max. Weightage : 20

PART – A

Answer **all** questions. **Each** bunch of **four** questions carries **one** weightage.

1. The optimum solutions of a LPP can occur at
  - a) Inside the feasible region
  - b) Out side the feasible region
  - c) Vertices of the feasible region
  - d) All are correct
2. Which of the following is correct ?
  - a) Objective function is linear
  - b) All constraints are linear
  - c) All decision variables are non-negative
  - d) All are correct
3. Consider the LPP maximize  $z = -5x$  subject to  $x + y \leq 1$ ,  $0.5x + 5y \geq 0$ ,  $x > 0$ ,  $y > 0$  then
  - a) No feasible solution
  - b) Unbounded solution
  - c) Unique optimum solution
  - d) Multiple optimum solution
4. Which of the following method can be used to solve a LPP with 3 variables ?
  - a) Graphical
  - b) Simplex
  - c) Both graphical and simplex
  - d) None

(W. = 1)

P.T.O.







- 13. Explain the use of artificial variable in LP.
- 14. Define basic variable.
- 15. Find the dual of the LPP  
Maximize  $z = 5x + 3y$ ,  
Subject to  $3x + 4y \leq 15, x + 2y \leq 10, x > 0, y > 0$ .
- 16. Describe a transportation problem.
- 17. Explain the raw minimum method for finding the basic feasible solution of a transportation problem.
- 18. What is an assignment problem ? (W. : 6×1=6)

PART – C

Answer **any four** questions. **Each** question carries a weightage of **two**.

- 19. Explain the advantages of LPP.
- 20. Describe the graphical method to solve a LPP.
- 21. Explain the method of obtaining the dual of a LPP.
- 22. Explain the big-M method for solving a LPP.
- 23. Using an example show that dual of a dual is primal.
- 24. Find the initial basic feasible solution of the following transportation problem by north west corner method.

	D1	D2	D3	D4	Availability
A	5	3	6	2	19
B	4	7	9	1	37
C	3	4	7	5	34
<b>Requirement</b>	<b>16</b>	<b>18</b>	<b>31</b>	<b>25</b>	



25. Explain Vogel's approximation method.

26. Describe Hungarian Algorithm.

(W. : 4×2=8)

PART – D

Answer **any one** question. **Each** question carries a weightage of **four**.

27. Solve the following LPP graphically.

$$\text{Maximize } z = 5x + 3y,$$

$$\text{Subject to } x + y \leq 6, 2x + 3y \geq 6, x \leq 4, y \leq 3, x \geq 0, y \geq 0.$$

28. Solve the following LPP using simplex method.

$$\text{Maximize } z = 3x + 2y,$$

$$\text{Subject to } x + y \leq 4, x - y \leq 2, x > 0, y > 0.$$

29. Solve the following assignment problem to find the maximum total expected sale.

Area	I	II	III	IV
Salesmen A	42	35	28	21
Salesmen B	30	25	20	15
Salesmen C	30	25	20	15
Salesmen D	24	20	16	12

(W. : 1×4=4)