B.Sc. (Part - III) (Semester - V) Examination, April - 2017
STATISTICS
Operations Research (Paper - XII)
Sub. Code : 65861

Day and Date : Friday, 21-04-2017   Total Marks : 40
Time : 3.00 p.m. to 5.00 p.m.

Instructions :   1)   All questions are Compulsory.
                   2)   Figures to the right indicate full marks.

Q1) Choose the correct alternative from given four alternatives: **[8]**

a)   Sample value of random variable X having exponential distribution with mean 1 for random number 0.5 is_____.

   i)   ln 2   ii)   ln 0.25

   iii)   ln 0.5   iv)   ln 1

b)   Which of the following method is not used for obtaining I.B.F.S. of T.P.

   i)   N.W.C.R. method   ii)   MODI method

   iii)   V.A.M.   iv)   None of these

c)   Graphical method is used to solve

   i)   T.P.   ii)   A.P.

   iii)   S.P.   iv)   L.P.P. in 2 variables

d)   Big-M method is used if_____variable is present.

   i)   Basic   ii)   Slack

   iii)   Surplus   iv)   Artificial

e)   Maximization assignment problem is transformed into minimization problem by

   i)   Adding each entry in a column from the maximum value in that column

   ii)   Subtracting each entry in a column from the maximum value in that column

   iii)   Subtracting each entry in the table from the maximum value in that table

   iv)   Any one of the above

P.T.O.

f) The constraints of L.P.P. are $2x_1 + 3x_2 \le 10$, $12x_1 + 13x_2 \le 20$, $x_1 + 3x_2 \le 5$. To write L.P.P. in standard form, we need

    i)   2 slack and 1 surplus variables

    ii)   1 slack and 2 surplus variables

    iii)   2 slack, 1 surplus variables and 1 artificial variables

    iv)   None of these

g) Which criterion is used for decision making under uncertainty?

    i)   Pessimistic   ii)   Optimistic

    iii)   Both (i) and (ii)   iv)   EMV

h) I.B.F.S of transportation problem having m origins and n destinations is degenerate if

    i)   No. of positive allocations $= m + n - 1$

    ii)   No. of positive allocations $< m + n - 1$

    iii)   No. of positive allocations $> m + n - 1$

    iv)   None of these

Q2) Attempt any two of the following: **[16]**

    a)   Explain T.P. and the terms

        i)   balanced T.P.

        ii)   un-balanced T.P.

        iii)   B.F.S. of T.P.

        iv)   optimal B.F.S. of T.P.

    b)   Explain V.A.M. and NWCR method.

    c)   Explain Monte Carlo Method of simulation. State any two

        i)   Advantages

        ii)   Disadvantages

        iii)   Applications of simulation.

Q3) Attempt any four of the following:

a)   Explain Big.-M method of solving L.P.P.

b)   Explain balanced A.P. and unbalanced A.P. How to convert them to balanced one.

c)   Describe sequencing problem of n jobs through 2 machines.

d)   Explain Hungarian Method of obtaining optimal solution of A.P.

e)   State Primal and Dual forms of L.P.P.

f)   Explain criteria of optimism and criteria of pessimism of decision making under uncertainty.

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B.Sc. (Part -III) (Semester -V) (New) Examination, April - 2016
STATISTICS
Operations Research (Paper - XII)
Sub. Code: 65861

Day and Date :Tuesday, 05 - 04 - 2016   Total Marks : 40
Time :12.00 noon to 2.00 p.m.

Instructions :   1)   All questions are compulsory.
                 2)   Figures to the right indicate full marks.

Q1) Choose the correct alternative from given four alternatives: [8]

   a)   The constraints fo L.P.P. are $2x_1 + 3x_2 \leq 10, 12x_1 + 13x_2 \geq 20, x_1 + 3x_2 \leq 5$. To write L.P.P. in standard form, we need

      i)   2 slack and 1 surplus variables

      ii)   1 slack and 2 surplus variables

      iii)   2 slack, 1 surplus variables and 1 artificial variables

      iv)   1 slack, 1 surplus variables and 1 artificial variables

   b)   Which of the following method is not used for obtaining I.B.F.S. of T.P.

      i)   N.W.C.R. method   ii)   MODI method

      iii)   V.A.M.   iv)   none of these

   c)   In Big-M method, –M is cost of _____ variable in objective function.

      i)   basic   ii)   slack

      iii)   surplus   iv)   artificial

d) Maximization assignment problem is transformed into minimization problem by

   i) adding each entry in a column from the maximum value in that column

   ii) subtracting each entry in a column from the maximum value in that column

   iii) subtracting each entry in the table from the maximum value in that table

   iv) any one of the above

e) Graphical method is used to solve L.P.P. in

   i) 2 variables and objective function is of minimization type

   ii) 2 variables and objective function is of maximization type

   iii) both (i) and (ii)

   iv) maximization L.P.P. in 2 or more variables.

f) Which criterion is used for decision making under uncertainty?

   i) Pessimistic   ii) Optimistic

   iii) both (i) & (ii)   iv) EMV

g) I.B.F.S of transportation problem having m origins and n destinations is degenerate if

   i) no. of positive allocations = m+n-1

   ii) no. of positive allocations < m+n-1

   iii) no. of positive allocations > m+n–1

   iv) none of these

h) Sample value of random variable X having exponential distribution with mean 1 for random number 0.5 is _____.

   i) ln2   ii) ln0.25

   iii) ln0.5   iv) ln1

Q2) Attempt any two of the following: [16]

a) Define:

i) a slack variable

ii) surplus variable

iii) artificial variable

iv) basic variable, used in L.P.P.

b) Explain V.A.M. and MODI method.

c) Explain Monte Carlo method of simulation. State any two:

i) advantages

ii) disadvantages

iii) applications, of simulation

Q3) Attempt any four of the following: [16]

a) Explain Big.-M method of solving L.P.P.

b) Explain unbalanced T.P and unbalanced A.P. How to convert them to balanced one.

c) Describe sequencing problem of n jobs through m machines.

d) Explain Hungarian Method of obtaining optimal solution of A.P.

e) State:

i) Primal form of L.P.P.

ii) Standard form of L.P.P.

f) Explain criteria of E.M.V. and E.V.P.I. of decision making under risk.

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