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| A1 | |
| 1 | Find (i) All basic solutions (ii) All feasible basic solutions (iii) All Degenerate solutions hence decide the optimal feasible basic for the following L.P.P.<br>maximise z =$2x_1 - 2x_2 + 4x_3 + 5x_4$<br>Subject to $x_1 + 4x_2 - 2x_3 + 8x_4$ =2<br>$x_1 + 2x_2 + 3x_3 + 4x_4$ =17<br>where $x_1, x_2, x_3, x_4 \geq 0$ |
| 2 | Convert the given LPP into the standard form<br>maximise z =$x_1 - 13x_2 + 4x_3$<br>Subject to<br>$x_1 + 2x_2 + 3x_3$ <-7<br>$3x_1 + 2x_2 + 6x_3$>15<br>$x_1 - 2x_2 + 5x_3$>-23<br>where $x_1, x_2, x_3 \geq 0$ |
| 3 | Solve the given LPP by Simplex method<br>maximise z =$4x_1 + 2x_2 + 5x_3$<br>Subject to<br>$12x_1 + 7x_2 + 9x_3 \leq$1260<br>$22x_1 + 18x_2 + 16x_3 \leq$19008<br>$2x_1 + 4x_2 + 3x_3 \leq$396<br>where $x_1, x_2, x_3 \geq 0$ |
| A2 | |
| 1 | Find (i) All basic solutions (ii) All feasible basic solutions (iii) All Degenerate solutions hence decide the optimal feasible basic for the following L.P.P.<br>maximise z =$2x_1 + 3x_2 + x_3 + x_4$<br>Subject to $4x_1 - 3x_2 + x_3 - x_4$ =6<br>$2x_1 - x_2 - x_3 + x_4$ =4<br>where $x_1, x_2, x_3, x_4 \geq 0$ |
| 2 | Convert the given LPP into the standard form<br>minimise z =$5x_1 - 13x_2 + 4x_3$<br>Subject to<br>$x_1 - 6x_2 + 8x_3$ <-3<br>$3x_1 + 2x_2 + 6x_3$>12<br>$x_1 - 3x_2 + 9x_3$<23<br>where $x_1, x_2, \geq 0$ and $x_3$ is unrestricted in sign. |
| 3 | Solve the given LPP by Simplex method<br>minimise z =$x_1 - 3x_2 + x_3$<br>Subject to<br>$3x_1 - x_2 + 2x_3 \leq$7<br>$2x_1 + 4x_2 \geq$-12<br>$-4x_1 + 3x_2 + 8x_3$<10<br>where $x_1, x_2, x_3 \geq 0$ |
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| A3 | |
| 1 | Find (i) All basic solutions (ii) All feasible basic solutions (iii) All Degenerate solutions hence decide the optimal feasible basic for the following L.P.P.<br>maximise z =$2x_1 + 3x_2 + x_3 + x_4$<br>Subject to $x_1 - 3x_2 + 2x_3 + x_4$ =5<br>$x_1 + x_2 + 3x_3 - 2x_4$ =4<br>where $x_1, x_2, x_3, x_4 \geq 0$ |
| 2 | Convert the given LPP into the standard form<br>maximise z =$5x_1 - 3x_2 + 1\ 4x_3$<br>Subject to<br>$x_1 - 16x_2 + 48x_3$ <-39<br>$3x_1 + 21x_2 + 16x_3$>22<br>$x_1 - 13x_2 + 29x_3$=33<br>where $x_1, x_2, \geq 0$ and $x_3$ is unrestricted in sign. |
| 3 | Solve the given LPP by Simplex method & hence find an infinite solutions<br>maximise z =$4x_1 + 10x_2$<br>Subject to<br>$2x_1 + x_2 \leq$10<br>$2x_1 + 5x_2 \leq$20<br>$2x_1 + 3x_2 \leq$18<br>where $x_1, x_2, x_3 \geq 0$ |
| A4 | |
| 1 | Find (i) All basic solutions (ii) All feasible basic solutions (iii) All Degenerate solutions hence decide the optimal feasible basic for the following L.P.P.<br>maximise z =$2x_1 + 3x_2 - x_3 - x_4$<br>Subject to $4x_1 - 3x_2 + x_3 - x_4$ =6<br>$2x_1 - x_2 - x_3 + x_4$ =4<br>where $x_1, x_2, x_3, x_4 \geq 0$ |
| 2 | Convert the given LPP into the standard form<br>maximise z =$3x_1 - 18x_2 + 24x_3$<br>Subject to<br>$2x_1 + 16x_2 + 28x_3$ <69<br>$3x_1 + 12x_2 - 21x_3$>20<br>$x_1 - 2x_2 + 3x_3$<29<br>where $x_1, x_2, \geq 0$ and $x_3$ is unrestricted in sign. |
| 3 | Solve the given LPP by Simplex method<br>maximise z =$3x_1 + 5x_2 + 4x_3$<br>Subject to<br>$2x_1 + 3x_2 \leq$8<br>$2x_2 + 5x_3 \leq$10<br>$3x_1 + 2x_2 + 4x_3 \leq$15<br>where $x_1, x_2, x_3 \geq 0$ |
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| B1 | |
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| 1 | Find (i) All basic solutions (ii) All feasible basic solutions (iii) All Degenerate solutions hence decide the optimal feasible basic for the following L.P.P.<br>maximise z =$x_1 + 5x_2 - 2\,x_3 + x_4$<br>Subject to $4x_1 - 3x_2 + x_3 - x_4$ =6<br>$2x_1 - x_2 - x_3 + x_4$ =4<br>where $x_1, x_2, x_3, x_4 \geq 0$ |
| 2 | Convert the given LPP into the standard form<br>minimise z =$x_1 - 18x_2 + 4x_3$<br>Subject to<br>$6x_1 - 9x_2 + 2x_3$ <43<br>$3x_1 - 11x_2 + 31x_3$>29<br>$x_1 - 23x_2 + 63x_3$<-25<br>where $x_1, x_2, \geq 0$ and $x_3$ is unrestricted in sign. |
| 3 | Solve the given LPP by Simplex method<br>maximise z =$100x_1 + 50x_2 + 50x_3$<br>Subject to<br>$4x_1 + 3x_2 + 2x_3 \leq$10<br>$3x_1 + 8x_2 + x_3 \leq$8<br>$4x_1 + 2x_2 + x_3 \leq$6<br>where $x_1, x_2, x_3 \geq 0$ |
| B2 | |
| 1 | Find (i) All basic solutions (ii) All feasible basic solutions (iii) All Degenerate solutions hence decide the optimal feasible basic for the following L.P.P.<br>maximise z =$2x_1 + 3x_2 + x_3 + x_4$<br>Subject to $x_1 + 2x_2 - x_3 + x_4$ =5<br>$2x_1 + x_2 + 2x_3 - 2x_4$ =3<br>where $x_1, x_2, x_3, x_4 \geq 0$ |
| 2 | Convert the given LPP into the standard form<br>minimise z =$7x_1 - 48x_2 + 23x_3$<br>Subject to<br>$61x_1 - 29x_2 + 12x_3$ <93<br>$3x_1 - 61x_2 + 81x_3$>9<br>$x_1 - 33x_2 + 53x_3$<-5<br>where $x_1, x_2, \geq 0$ and $x_3$ is unrestricted in sign. |
| 3 | Solve the given LPP by Simplex method<br>maximise z =$3x_1 + 5x_2 + 4x_3$<br>Subject to<br>$2x_1 + 3x_2 \leq$8<br>$2x_2 + 5x_3 \leq$10<br>$3x_1 + 2x_2 + 4x_3 \leq$15<br>where $x_1, x_2, x_3 \geq 0$ |

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| B3 | |
| 1 | Find (i) All basic solutions (ii) All feasible basic solutions (iii) All Degenerate solutions hence decide the optimal feasible basic for the following L.P.P.<br>maximise z =$3x_1 + 5x_2 - x_3 + x_4$<br>Subject to $x_1 + 2x_2 - x_3 + x_4$ =5<br>$2x_1 + x_2 + 2x_3 - 2x_4$ =3<br>where $x_1, x_2, x_3, x_4 \geq 0$ |
| 2 | Convert the given LPP into the standard form<br>minimise z =$2x_1 + 8x_2 - 14x_3$<br>Subject to<br>$61x_1 - 19x_2 + 43x_3$ <46<br>$34x_1 - 23x_2 + 56x_3$>26<br>$x_1 - 3x_2 + 3x_3$<-6<br>where $x_1, x_2, \geq 0$ and $x_3$ is unrestricted in sign. |
| 3 | Solve the given LPP by Simplex method<br>maximise z =$4x_1 + 3x_2 + 6x_3$<br>Subject to<br>$2x_1 + 5x_2 \leq$430<br>$4x_1 + 3x_3 \leq$470<br>$2x_1 + 3x_2 + 2x_3 \leq$440<br>where $x_1, x_2, x_3 \geq 0$ |
| B4 | |
| 1 | Find (i) All basic solutions (ii) All feasible basic solutions (iii) All Degenerate solutions hence decide the optimal feasible basic for the following L.P.P.<br>maximise z =$x_1 + 5x_2 - x_3 + 4x_4$<br>Subject to $4x_1 - 3x_2 + 2x_3 - 3x_4$ =6<br>$2x_1 - x_2 - 4x_3 + 6x_4$ =4<br>where $x_1, x_2, x_3, x_4 \geq 0$ |
| 2 | Convert the given LPP into the standard form<br>Maximise z =$x_1 + 10x_2 + 34x_3$<br>Subject to<br>$6x_1 - 9x_2 + 2x_3$ <40<br>$32x_1 - 21x_2 + 41x_3$>-200<br>$x_1 - 63x_2 + 3x_3$=35<br>where $x_1, x_2, \geq 0$ and $x_3$ is unrestricted in sign. |
| 3 | Solve the given LPP by Simplex method<br>maximise z = $4x_1 + x_2 + 3x_3 + 5x_4$<br>Subject to<br>$-4x_1 + 6x_2 + 5x_3 + 4x_4 \leq$20<br>$-3x_1 - 2x_2 + 4x_3 + x_4 \leq$10<br>$-8x_1 - 3x_2 + 3x_3 + 2x_4 \leq$20<br>where $x_1, x_2, x_3 \geq 0$ |
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