

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM & ENERGY STUDIES
End Semester Examination (Online) – July, 2020

Program: MBA LSCM
Subject/Course: Optimization through spreadsheet
Course Code: DSBA 7003

Semester: II
Max. Marks: 100
Duration: 3 Hours

IMPORTANT INSTRUCTIONS

1. The student must write his/her name and enrolment no. in the space designated above.
2. The questions have to be answered in this MS Word document.
3. After attempting the questions in this document, the student has to upload this MS Word document on Blackboard.

	Please solve the questions in the excel attached	Marks	Cos																									
Q.1	Data Table, Goal Seek (Refer to excel sheet) The quantity of water bottles sold for Rs. 10 is 40000. The fixed cost of setting the plant is Rs. 50000 and the variable cost per bottle is Rs. 7. A) Find the net profit in the excel sheet. Using goal seek function, find the price at which water bottles be sold for a profit of Rs. 120000. B) Fill the data table for the values of net profit considering Quantity of water bottles sold as row input and unit prices as column input.	20	CO1																									
Q.2	Consider the assignment problem having the following cost table <table border="1" data-bbox="256 1241 1167 1430"><thead><tr><th>Assignee/Task</th><th>I</th><th>II</th><th>III</th><th>IV</th></tr></thead><tbody><tr><td>A</td><td>8</td><td>6</td><td>5</td><td>7</td></tr><tr><td>B</td><td>6</td><td>5</td><td>3</td><td>4</td></tr><tr><td>C</td><td>7</td><td>8</td><td>4</td><td>6</td></tr><tr><td>D</td><td>6</td><td>7</td><td>5</td><td>6</td></tr></tbody></table> i. Use excel to calculate how should the tasks be allocated, one per assignee, so as to minimize the total cost?	Assignee/Task	I	II	III	IV	A	8	6	5	7	B	6	5	3	4	C	7	8	4	6	D	6	7	5	6	20	CO3
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Q.3	A manufacturer of leather belts makes three types of belts A, B and C, which are processed on three machines M1, M2, and M3. Belt A requires 5 hours on machine M1 and 3 hours on machine M2 and 2 hours on machine M3. Belt B requires 3 hours on machine M1, 2 hours on machine M2 and 2 hours on machine M3 and Belt C requires 5 hours on machine M2 and 4 hours on machine M3. There are 8 hours of time per day available on machine M1, 10 hours of time per	20	CO2																									

	<p>day available on machine M2, 15 hours of time per day available on machine M3. The profit gained from belt A is Rs. 3 per unit, from belt B is Rs. 5 per unit, from belt C is Rs. 4.5 per unit. What should be the daily production of each type of belt so that the products yield the maximum profit?</p>																																																
Q.4	<p>The Cost-Less Corp. supplies its four retail outlets from its four plants. The shipping cost per shipment from each plant to ach retail outlet is given below</p> <table border="1"> <thead> <tr> <th>Plant/Retail</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>Supply</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>\$700</td> <td>\$800</td> <td>\$500</td> <td>\$200</td> <td>10</td> </tr> <tr> <td>B</td> <td>\$200</td> <td>\$900</td> <td>\$100</td> <td>\$400</td> <td>20</td> </tr> <tr> <td>C</td> <td>\$400</td> <td>\$500</td> <td>\$300</td> <td>\$100</td> <td>20</td> </tr> <tr> <td>D</td> <td>\$200</td> <td>\$100</td> <td>\$400</td> <td>\$300</td> <td>10</td> </tr> <tr> <td>Demand</td> <td>20</td> <td>10</td> <td>10</td> <td>20</td> <td></td> </tr> </tbody> </table> <p>Determine the optimal distribution that minimize total shipping cost through excel solver.</p>	Plant/Retail	1	2	3	4	Supply	A	\$700	\$800	\$500	\$200	10	B	\$200	\$900	\$100	\$400	20	C	\$400	\$500	\$300	\$100	20	D	\$200	\$100	\$400	\$300	10	Demand	20	10	10	20		20	CO4										
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Q.5	<p>Consider a firm having two factories. The firm is to ship its products from the factories to three retail stores. The number of units available at factories X and Y are 400 and 600, while those demanded at retail stores A, B and C are 200, 350 and 450, respectively. Rather than shipping the products directly from factories to retail stores, it is asked to investigate the possibility of trans-shipment. The transportation cost(in rupees) per unit is given the table below</p> <table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="2">Factory</th> <th colspan="3">Retail Store</th> </tr> <tr> <th colspan="2"></th> <th>X</th> <th>Y</th> <th>A</th> <th>B</th> <th>C</th> </tr> </thead> <tbody> <tr> <th rowspan="2">Factory</th> <th>X</th> <td>0</td> <td>8</td> <td>7</td> <td>8</td> <td>9</td> </tr> <tr> <th>Y</th> <td>6</td> <td>0</td> <td>5</td> <td>4</td> <td>3</td> </tr> <tr> <th rowspan="3">Retail store</th> <th>A</th> <td>7</td> <td>2</td> <td>0</td> <td>5</td> <td>1</td> </tr> <tr> <th>B</th> <td>1</td> <td>5</td> <td>1</td> <td>0</td> <td>4</td> </tr> <tr> <th>C</th> <td>8</td> <td>9</td> <td>7</td> <td>8</td> <td>0</td> </tr> </tbody> </table>			Factory		Retail Store					X	Y	A	B	C	Factory	X	0	8	7	8	9	Y	6	0	5	4	3	Retail store	A	7	2	0	5	1	B	1	5	1	0	4	C	8	9	7	8	0	20	CO3
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