

<b>Semester: Jan – Mar 24</b>		
Maximum Marks: 50	Examination: ETE Exam	Date: 2 <sup>nd</sup> April 2024
<b>Duration: 3 hrs.</b>		
Programme code: 01 Programme: MBA – BA Minor	Class: SY	Semester/Trimester: VI
College: K. J. Somaiya Institute of Management	Name of the department/Section/Center: Business Analytics	
Course Code: 217P01M624	Name of the Course: Predictive to Prescriptive	
<p><b>Instructions:</b></p> <ol style="list-style-type: none"> <li>1. The exam will be conducted in the classroom.</li> <li>2. Students must bring their laptops.</li> <li>3. Answer sheets are not required.</li> <li>4. It is an Open Book Exam</li> <li>5. Write your answers in Excel.</li> <li>6. Save your Excel files in a Folder and upload them to Google Classroom.</li> <li>7. Make suitable assumptions, if required.</li> </ol>		

Question No.		Max. Marks																
Q1	<p>The Grand Maple is a hotel that provides two types of rooms with three rental classes: Super Saver, Deluxe, and Business. The hotel has embarked on enhancing its analytics and data integration to improve decision-making and future strategies. The goal is to partner with analytics firm capable of deploying predictive analytics to refine demand forecasting for its rooms. Mosaic, an esteemed data science consultancy, has been appointed to devise a method for accurately predicting room demand.</p> <p>Type I rooms do not have Internet access and are not available for the Business rental class The Grand Maple’s management is interested a forecast of the demand by rental class for each night in the future. The ultimate objective is maximizing revenue from a resource with constrained supply (i.e. limited number of rooms) and fluctuating demand over time (i.e. night(s) of stay).</p> <p>Imagine you are an employee at Mosaic, a premier data science consultancy, and you have been given the chance to lead this project:</p> <p>I. Forecast the demand by using the best method for each rental class for each night in the future. <b>(Data File: Demand)</b></p> <p>II. The profit per night for each type of room and rental class is as follows:</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse;"> <thead> <tr> <th></th> <th colspan="3">Rental Class</th> </tr> <tr> <th></th> <th>Super Saver</th> <th>Deluxe</th> <th>Business</th> </tr> </thead> <tbody> <tr> <th>Type 1</th> <td style="text-align: center;">30</td> <td style="text-align: center;">35</td> <td style="text-align: center;">-</td> </tr> <tr> <th>Type 2</th> <td style="text-align: center;">20</td> <td style="text-align: center;">30</td> <td style="text-align: center;">40</td> </tr> </tbody> </table> <p>A linear programming model developed to maximize profit is used to determine how many reservations to accept for each rental class. The demand forecast for a particular night is estimated in part I for all rentals (Super Saver class, Deluxe class, and Business class). Round Tree has 100 Type I rooms and 120 Type II rooms. Use linear programming to determine how many reservations to accept in each rental class and how the reservations should be allocated to room types. Is the demand by any rental class not satisfied? Explain.</p> <p>III. How many reservations can be accommodated in each rental class?</p> <p>IV. Management is considering offering a free breakfast to anyone upgrading from a Super Saver reservation to Deluxe class. If the cost of the breakfast to The Grand Maple is \$5, should this incentive be offered?</p>		Rental Class				Super Saver	Deluxe	Business	Type 1	30	35	-	Type 2	20	30	40	<p>10+10+2+2+3+3 = 30</p>
	Rental Class																	
	Super Saver	Deluxe	Business															
Type 1	30	35	-															
Type 2	20	30	40															

	<p>V. With a little work, an unused office area could be converted to a rental room. If the conversion cost is the same for both types of rooms, would you recommend converting the office to a Type I or a Type II room? Why?</p> <p>VI. If the linear programming solution falls short of optimality, introduce Goal Programming with defined priority objectives to find an improved solution.</p>													
Q2	<p>Evan Smith has been holding shares of ITR Ltd. since March 2019, purchasing them at \$184 each. By December 2022, the shares had appreciated to \$320. However, as of January 2023, the share price has seen a volatile pattern, raising concerns about potential losses for Evan. To protect his investment, Evan is considering purchasing put options. Evan chose to maintain his position, convinced that stock's recent acquisitions would elevate its stock value. Anticipating the synergies to materialize in three months, he planned to reevaluate his decision to hold onto ITR Ltd stocks at that juncture. To safeguard his position until then, Evan pinpointed three put options as potential risk mitigators. Following is the list of options:</p> <table border="1" data-bbox="513 580 1099 701"> <thead> <tr> <th colspan="4">Put Option Information</th> </tr> </thead> <tbody> <tr> <td>Exercise Price</td> <td>200.00</td> <td>220.00</td> <td>250.00</td> </tr> <tr> <td>Premium</td> <td>2.00</td> <td>3.30</td> <td>4.45</td> </tr> </tbody> </table> <p>I. Apply the LOGNORMAL STOCK PRICING Model to predict the future price of ITR Ltd. Shares. (Use 200 simulation trials, Total Transaction days in a year =330). (Data File: ITR Stock Prices)</p> <p>II. What long/short positions for each put option would he consider to minimize risk and maximize return?</p>	Put Option Information				Exercise Price	200.00	220.00	250.00	Premium	2.00	3.30	4.45	5 + 10 = 15
Put Option Information														
Exercise Price	200.00	220.00	250.00											
Premium	2.00	3.30	4.45											
Q3	<p>DJS Investment Services must develop an investment portfolio for a new client. As an initial investment strategy, the new client would like to restrict the portfolio to a mix of two stocks:</p> <table border="1" data-bbox="263 1173 1366 1368"> <thead> <tr> <th>Stock</th> <th>Price/share</th> <th>Estimated Annual Return</th> </tr> </thead> <tbody> <tr> <td>AGA Products</td> <td>\$50</td> <td>6 %</td> </tr> <tr> <td>Key Oil</td> <td>\$100</td> <td>10 %</td> </tr> </tbody> </table> <p>The client wants to invest \$50,000 and established the following two investment goals:</p> <p>Priority Level 1 Goal</p> <p>Goal 1: Obtain an annual return of at least 9%.</p> <p>Priority Level 2 Goal</p> <p>Goal 2: Limit the investment in Key Oil, the riskier investment, to no more than 60% of the total investment.</p> <p>I. Formulate a goal programming model for the DJS Investment problem.</p> <p>II. Use the solver goal programming procedure to obtain a solution.</p>	Stock	Price/share	Estimated Annual Return	AGA Products	\$50	6 %	Key Oil	\$100	10 %	5			
Stock	Price/share	Estimated Annual Return												
AGA Products	\$50	6 %												
Key Oil	\$100	10 %												

Date	Super Saver	Deluxe	Business
1/1/2021	126	54	20
1/4/2021	128	62	15
1/5/2021	133	64	19
1/6/2021	134	60	22
1/7/2021	128	62	24
1/8/2021	136	60	19
1/11/2021	136	68	23
1/12/2021	137	58	16
1/13/2021	133	53	18
1/14/2021	134	56	16
1/15/2021	123	58	20
1/18/2021	122	58	16
1/19/2021	129	64	21
1/20/2021	126	59	21
1/21/2021	129	51	20
1/22/2021	124	63	24
1/25/2021	129	65	20
1/27/2021	129	59	18
1/28/2021	122	54	19
1/29/2021	121	53	23
2/1/2021	121	65	16
2/2/2021	128	55	23
2/3/2021	123	50	22
2/4/2021	137	62	22
2/5/2021	137	65	25
2/8/2021	135	58	17
2/9/2021	138	55	18
2/10/2021	134	54	22
2/11/2021	140	65	24
2/12/2021	135	59	16
2/15/2021	121	55	24
2/16/2021	123	61	21
2/17/2021	126	52	15
2/18/2021	137	56	16
2/19/2021	129	55	18
2/22/2021	124	56	31
2/23/2021	122	62	26
2/24/2021	123	65	27
2/25/2021	125	55	25
2/26/2021	133	53	31
2/27/2021	122	69	29
2/28/2021	139	55	33
3/1/2021	134	51	27
3/2/2021	131	52	30
3/3/2021	126	59	34
3/4/2021	123	63	33
3/5/2021	133	70	26

3/6/2021	132	54	26
3/7/2021	128	68	34
3/8/2021	123	63	28
3/9/2021	127	67	27
3/10/2021	139	67	34
3/11/2021	123	52	33
3/12/2021	130	63	33
3/13/2021	137	67	25
3/14/2021	123	63	28
3/15/2021	137	65	34
3/16/2021	133	53	26
3/17/2021	139	66	29
3/18/2021	133	69	31
3/19/2021	123	57	31
3/20/2021	126	69	34
3/21/2021	121	68	29
3/22/2021	135	56	25
3/23/2021	121	66	31
3/24/2021	124	62	26
3/25/2021	124	52	26
3/26/2021	139	64	34
3/27/2021	133	60	34
3/28/2021	137	52	27
3/29/2021	126	53	31
3/30/2021	125	54	31
3/31/2021	137	57	28
4/1/2021	130	57	34
4/2/2021	128	55	32
4/3/2021	140	55	27
4/4/2021	128	51	33
4/5/2021	126	57	33
4/6/2021	126	61	25
4/7/2021	140	55	34
4/8/2021	131	54	28
4/9/2021	123	69	28
4/10/2021	122	54	27
4/11/2021	132	57	32
4/12/2021	128	63	28
4/13/2021	128	66	35
4/14/2021	140	55	28
4/15/2021	139	52	35
4/16/2021	133	67	25
4/17/2021	137	61	34
4/18/2021	137	69	32
4/19/2021	134	66	34
4/20/2021	135	56	40
4/21/2021	139	56	36
4/22/2021	138	60	31

4/23/2021	134	54	37
4/24/2021	120	63	36
4/25/2021	126	67	33
4/26/2021	128	53	35
4/27/2021	137	70	38
4/28/2021	130	60	31
4/29/2021	131	67	36
4/30/2021	129	52	34
5/1/2021	137	54	32
5/2/2021	129	63	40
5/3/2021	122	61	39
5/4/2021	128	65	36
5/5/2021	137	64	31
5/6/2021	133	65	34
5/7/2021	136	57	36
5/8/2021	135	57	36
5/9/2021	120	51	36
5/10/2021	137	64	36
5/11/2021	123	69	32
5/12/2021	134	55	37
5/13/2021	128	61	33
5/14/2021	128	55	34
5/15/2021	133	57	32
5/16/2021	138	67	36
5/17/2021	139	53	37
5/18/2021	122	69	30
5/19/2021	136	70	31
5/20/2021	131	52	37
5/21/2021	124	64	34
5/22/2021	136	51	36
5/23/2021	135	62	36
5/24/2021	134	56	37
5/25/2021	127	65	31
5/26/2021	131	63	30
5/27/2021	134	50	34
5/28/2021	128	61	35
5/29/2021	132	64	30
5/30/2021	130	63	33
5/31/2021	125	64	34
6/1/2021	135	52	32
6/2/2021	138	63	34
6/3/2021	137	54	38
6/4/2021	125	69	52
6/5/2021	125	70	47
6/6/2021	130	56	40
6/7/2021	129	56	55
6/8/2021	130	61	44
6/9/2021	130	55	59

6/10/2021	139	56	40
6/11/2021	123	67	50
6/12/2021	139	56	52
6/13/2021	129	55	45
6/14/2021	139	51	56
6/15/2021	131	52	42
6/16/2021	128	68	54
6/17/2021	133	58	48
6/18/2021	127	65	54
6/19/2021	126	56	42
6/20/2021	134	52	46
6/21/2021	133	54	50
6/22/2021	137	55	44
6/23/2021	129	67	59
6/24/2021	132	65	57
6/25/2021	127	68	56
6/26/2021	120	51	41
6/27/2021	122	51	54
6/28/2021	121	70	42
6/29/2021	131	67	55
6/30/2021	135	66	52
7/1/2021	128	55	47
7/2/2021	129	62	44
7/3/2021	123	61	40
7/4/2021	138	57	45
7/5/2021	137	67	51
7/6/2021	122	54	51
7/7/2021	130	56	56
7/8/2021	121	58	52
7/9/2021	130	52	60
7/10/2021	133	60	56
7/11/2021	138	59	48
7/12/2021	125	55	53

Date	ITR Stock Prices
1/1/2019	230.9
1/2/2019	229.2
1/3/2019	227.8
1/4/2019	229.5
1/7/2019	230.0
1/8/2019	232.2
1/9/2019	237.2
1/10/2019	236.5
1/11/2019	241.2
1/14/2019	240.4
1/15/2019	242.2
1/16/2019	240.2
1/17/2019	240.1
1/18/2019	238.1
1/21/2019	236.8
1/22/2019	236.7
1/23/2019	226.5
1/24/2019	227.8
1/25/2019	228.0
1/28/2019	224.4
1/29/2019	227.4
1/30/2019	225.0
1/31/2019	227.6
2/1/2019	229.4
2/4/2019	226.3
2/5/2019	223.9
2/6/2019	226.8
2/7/2019	228.9
2/8/2019	225.0
2/11/2019	226.3
2/12/2019	224.9
2/14/2019	227.0
2/15/2019	228.8
2/18/2019	224.4
2/19/2019	225.4
2/20/2019	225.3
2/21/2019	224.7
2/22/2019	224.0
2/25/2019	226.0
2/26/2019	225.0
2/27/2019	224.7
2/28/2019	225.5
3/1/2019	227.2
3/5/2019	230.8
3/6/2019	233.4
3/7/2019	237.0
3/8/2019	238.5

3/11/2019	239.3
3/12/2019	240.5
3/13/2019	240.9
3/14/2019	241.4
3/15/2019	237.5
3/18/2019	239.8
3/19/2019	244.6
3/20/2019	244.1
3/22/2019	243.6
3/25/2019	241.0
3/26/2019	239.6
3/27/2019	239.4
3/28/2019	245.0
4/1/2019	242.8
4/2/2019	243.3
4/3/2019	241.9
4/4/2019	240.8
4/5/2019	240.6
4/8/2019	239.1
4/9/2019	242.0
4/10/2019	240.7
4/11/2019	242.1
4/12/2019	249.7
4/15/2019	249.5
4/16/2019	250.9
4/18/2019	248.6
4/22/2019	246.5
4/23/2019	247.8
4/24/2019	250.3
4/25/2019	248.4
4/26/2019	248.8
4/30/2019	246.1
5/2/2019	249.1
5/3/2019	248.5
5/6/2019	250.8
5/7/2019	246.6
5/8/2019	245.6
5/9/2019	244.9
5/10/2019	243.2
5/13/2019	236.3
5/14/2019	240.4
5/15/2019	242.6
5/16/2019	240.7
5/17/2019	246.2
5/20/2019	250.8
5/21/2019	249.9
5/22/2019	249.5
5/23/2019	239.9



5/24/2019	241.8
5/27/2019	242.1
5/28/2019	240.5
5/29/2019	239.8
5/30/2019	240.3
5/31/2019	231.9
6/3/2019	231.9
6/4/2019	232.5
6/6/2019	229.5
6/7/2019	229.1
6/10/2019	232.6
6/11/2019	233.0
6/12/2019	233.0
6/13/2019	233.6
6/14/2019	231.5
6/17/2019	228.9
6/18/2019	229.0
6/19/2019	230.8
6/20/2019	230.6
6/21/2019	228.3
6/24/2019	230.0
6/25/2019	231.8
6/26/2019	230.9
6/27/2019	227.7
6/28/2019	228.0
7/1/2019	228.9
7/2/2019	228.0
7/3/2019	230.3
7/4/2019	231.1
7/5/2019	232.6
7/8/2019	231.0
7/9/2019	227.3
7/10/2019	227.4
7/11/2019	229.5
7/12/2019	229.0
7/15/2019	225.5
7/16/2019	226.4
7/17/2019	227.2
7/18/2019	227.3
7/19/2019	223.3
7/22/2019	220.1
7/23/2019	225.3
7/24/2019	225.5
7/25/2019	223.0
7/26/2019	225.1
7/29/2019	222.9
7/30/2019	223.8
7/31/2019	224.9

8/1/2019	222.7
8/2/2019	220.2
8/5/2019	216.3
8/6/2019	215.5
8/7/2019	211.1
8/8/2019	214.6
8/9/2019	211.6
8/13/2019	205.0
8/14/2019	207.1
8/16/2019	210.6
8/19/2019	209.4
8/20/2019	205.2
8/21/2019	201.0
8/22/2019	199.8
8/23/2019	196.5
8/26/2019	201.9
8/27/2019	204.4
8/28/2019	204.7
8/29/2019	200.8
8/30/2019	204.5
9/3/2019	201.1
9/4/2019	202.5
9/5/2019	203.3
9/6/2019	203.0
9/9/2019	204.4
9/11/2019	202.9
9/12/2019	200.4
9/13/2019	199.7
9/16/2019	199.3
9/17/2019	197.5
9/18/2019	199.2
9/19/2019	197.0
9/20/2019	198.2
9/23/2019	212.1
9/24/2019	213.1
9/25/2019	206.1
9/26/2019	208.4
9/27/2019	210.6
9/30/2019	216.3
10/1/2019	213.0
10/3/2019	217.8
10/4/2019	214.1
10/7/2019	209.7
10/9/2019	205.7
10/10/2019	202.4
10/11/2019	203.1
10/14/2019	203.2
10/15/2019	206.1

10/16/2019	202.8
10/17/2019	204.7
10/18/2019	205.2
10/22/2019	207.2
10/23/2019	209.0
10/24/2019	207.3
10/25/2019	206.2
10/27/2019	208.4
10/29/2019	210.8
10/30/2019	215.9
10/31/2019	214.5
11/1/2019	217.5
11/4/2019	217.1
11/5/2019	218.8
11/6/2019	217.6
11/7/2019	221.3
11/8/2019	216.8
11/11/2019	216.0
11/13/2019	211.3
11/14/2019	211.4
11/15/2019	208.7
11/18/2019	208.7
11/19/2019	207.5
11/20/2019	208.7
11/21/2019	204.5
11/22/2019	206.2
11/25/2019	206.2
11/26/2019	207.4
11/27/2019	205.6
11/28/2019	205.4
11/29/2019	205.1
12/2/2019	203.9
12/3/2019	203.2
12/4/2019	202.4
12/5/2019	205.6
12/6/2019	202.6
12/9/2019	201.0
12/10/2019	196.1
12/11/2019	197.8
12/12/2019	198.6
12/13/2019	201.1
12/16/2019	197.2
12/17/2019	200.7
12/18/2019	204.1
12/19/2019	203.4
12/20/2019	200.7
12/23/2019	198.9
12/24/2019	198.7

12/26/2019	197.1
12/27/2019	197.2
12/30/2019	198.3
12/31/2019	197.9
1/1/2020	198.2
1/2/2020	199.7
1/3/2020	198.5
1/6/2020	195.7
1/7/2020	195.9
1/8/2020	195.0
1/9/2020	196.3
1/10/2020	198.1
1/13/2020	199.2
1/14/2020	202.5
1/15/2020	201.8
1/16/2020	200.4
1/17/2020	199.7
1/20/2020	201.4
1/21/2020	198.5
1/22/2020	198.2
1/23/2020	198.0
1/24/2020	198.2
1/27/2020	195.3
1/28/2020	192.1
1/29/2020	197.0
1/30/2020	194.8
1/31/2020	195.7
2/3/2020	172.8
2/4/2020	179.5
2/5/2020	180.2
2/6/2020	177.8
2/7/2020	177.6
2/10/2020	175.3
2/11/2020	177.0
2/12/2020	177.4
2/13/2020	176.4
2/14/2020	172.9
2/17/2020	170.5
2/18/2020	169.7
2/19/2020	172.1
2/20/2020	172.7
2/24/2020	169.0
2/25/2020	168.0
2/26/2020	165.3
2/27/2020	164.4
2/28/2020	164.4
3/2/2020	162.6
3/3/2020	161.4

3/4/2020	156.1
3/5/2020	156.5
3/6/2020	151.3
3/9/2020	147.5
3/11/2020	146.2
3/12/2020	129.7
3/13/2020	135.1
3/16/2020	122.6
3/17/2020	124.2
3/18/2020	125.4
3/19/2020	134.7
3/20/2020	146.1
3/23/2020	128.4
3/24/2020	124.6
3/25/2020	122.7
3/26/2020	130.2
3/27/2020	135.9
3/30/2020	132.5
3/31/2020	142.9
4/1/2020	138.5
4/3/2020	148.1
4/7/2020	151.1
4/8/2020	148.7
4/9/2020	154.2
4/13/2020	151.2
4/15/2020	157.6
4/16/2020	155.1
4/17/2020	156.6
4/20/2020	150.4
4/21/2020	149.5
4/22/2020	151.7
4/23/2020	150.3
4/24/2020	149.9
4/27/2020	149.7
4/28/2020	149.4
4/29/2020	151.6
4/30/2020	151.5
5/4/2020	144.9
5/5/2020	144.8
5/6/2020	136.4
5/7/2020	134.0
5/8/2020	131.7
5/11/2020	131.9
5/12/2020	137.4
5/13/2020	137.7
5/14/2020	136.4
5/15/2020	137.1
5/18/2020	137.1

5/19/2020	142.1
5/20/2020	146.3
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2/24/2023	277.3
2/27/2023	278.3
2/28/2023	284.1
3/1/2023	269.5
3/2/2023	253.6
3/3/2023	237.8
3/6/2023	214.6
3/8/2023	227.3
3/9/2023	188.6
3/10/2023	174.3
3/13/2023	169.5
3/14/2023	159.9
3/15/2023	179.4
3/16/2023	178.4
3/17/2023	147.6
3/20/2023	118.9
3/21/2023	101.3
3/22/2023	130.1
3/23/2023	147.1
3/24/2023	101.1
3/27/2023	86.4
3/28/2023	98.5
3/29/2023	102.0
3/31/2023	125.5
4/3/2023	124.7
4/5/2023	149.9
4/6/2023	146.2

4/10/2023	133.2
4/11/2023	178.2
4/12/2023	75.8
4/13/2023	56.1
4/17/2023	71.9
4/18/2023	81.6
4/19/2023	93.1
4/20/2023	95.0
4/21/2023	108.9
4/24/2023	71.3
4/25/2023	60.1
4/26/2023	47.6
4/27/2023	63.0
4/28/2023	104.3
5/2/2023	108.5
5/3/2023	90.1
5/4/2023	80.3
5/5/2023	91.9
5/8/2023	91.7
5/9/2023	97.5
5/10/2023	110.5
5/11/2023	105.4
5/12/2023	127.4
5/15/2023	130.3
5/16/2023	124.6
5/17/2023	139.0
5/18/2023	127.6
5/19/2023	116.6
5/22/2023	116.5
5/23/2023	119.5
5/24/2023	174.2
5/25/2023	200.0
5/26/2023	195.9
5/29/2023	216.0
5/30/2023	227.8
5/31/2023	195.6
6/1/2023	191.0
6/2/2023	198.7
6/5/2023	190.0
6/6/2023	218.4
6/7/2023	197.4
6/8/2023	187.9
6/9/2023	192.7
6/12/2023	182.0
6/13/2023	200.1
6/14/2023	194.0
6/15/2023	194.2
6/16/2023	199.7

6/19/2023	223.1
6/20/2023	223.7
6/21/2023	231.9
6/22/2023	220.7
6/23/2023	188.6
6/26/2023	208.0
6/27/2023	201.3
6/28/2023	260.3
6/30/2023	289.9
7/3/2023	298.7
7/4/2023	306.1
7/5/2023	304.4
7/6/2023	321.9
7/7/2023	319.8
7/10/2023	320.5
7/11/2023	319.6
7/12/2023	320.1
7/13/2023	216.0
7/14/2023	206.1
7/17/2023	204.4
7/18/2023	212.0
7/19/2023	189.7
7/20/2023	185.1
7/21/2023	203.2
7/24/2023	180.3
7/25/2023	176.1
7/26/2023	178.6
7/27/2023	187.6
7/28/2023	195.5
7/31/2023	195.8
8/1/2023	215.8
8/2/2023	231.9
8/3/2023	229.2
8/4/2023	230.8
8/7/2023	232.6
8/8/2023	232.0
8/9/2023	229.6
8/10/2023	218.8
8/11/2023	223.2
8/14/2023	247.0
8/16/2023	252.1
8/17/2023	233.5
8/18/2023	231.2
8/21/2023	247.3
8/22/2023	243.5
8/23/2023	260.6
8/24/2023	262.4
8/25/2023	242.8

8/28/2023	203.1
8/29/2023	206.6
8/30/2023	206.8
8/31/2023	205.8
9/1/2023	185.2
9/4/2023	193.3
9/5/2023	187.5
9/6/2023	194.8
9/7/2023	212.3
9/8/2023	188.6
9/11/2023	190.5
9/12/2023	195.5
9/13/2023	187.0
9/14/2023	182.3
9/15/2023	188.2
9/18/2023	163.3
9/20/2023	146.4
9/21/2023	160.8
9/22/2023	152.5
9/25/2023	156.7
9/26/2023	149.2
9/27/2023	171.9
9/28/2023	168.2
9/29/2023	174.8
10/3/2023	191.1
10/4/2023	208.3
10/5/2023	209.5
10/6/2023	218.2
10/9/2023	218.3
10/10/2023	224.2
10/11/2023	219.3
10/12/2023	217.8
10/13/2023	222.8
10/16/2023	246.8
10/17/2023	255.3
10/18/2023	244.0
10/19/2023	239.9
10/20/2023	237.9
10/23/2023	225.4
10/25/2023	243.1
10/26/2023	246.1
10/27/2023	233.3
10/30/2023	192.3
10/31/2023	195.0
11/1/2023	192.3
11/2/2023	197.3
11/3/2023	177.5
11/6/2023	191.2

11/7/2023	177.3
11/8/2023	184.5
11/9/2023	200.9
11/10/2023	182.6
11/13/2023	179.4
11/15/2023	186.4
11/16/2023	172.4
11/17/2023	171.7
11/20/2023	176.9
11/21/2023	147.8
11/22/2023	133.4
11/23/2023	153.8
11/24/2023	147.3
11/28/2023	149.5
11/29/2023	144.1
11/30/2023	158.7
12/1/2023	177.1
12/4/2023	184.3
12/5/2023	202.9
12/6/2023	235.0
12/7/2023	231.2
12/8/2023	225.1
12/11/2023	230.1
12/12/2023	232.7
12/13/2023	226.6
12/14/2023	227.1
12/15/2023	232.5
12/18/2023	249.5
12/19/2023	257.9
12/20/2023	243.4
12/21/2023	240.9
12/22/2023	254.6
12/26/2023	245.7
12/27/2023	267.2
12/28/2023	275.4
12/29/2023	261.3
1/1/2024	229.4
1/2/2024	236.4
1/3/2024	240.8
1/4/2024	241.9
1/5/2024	217.6
1/8/2024	220.9
1/9/2024	208.7
1/10/2024	210.4
1/11/2024	228.8
1/12/2024	212.3
1/15/2024	210.6
1/16/2024	216.3



1/17/2024	199.9
1/18/2024	197.6
1/19/2024	211.1
1/23/2024	170.5
1/24/2024	156.9
1/25/2024	168.9
1/29/2024	159.1
1/30/2024	152.2
1/31/2024	148.4
2/1/2024	165.7
2/2/2024	167.6
2/5/2024	168.5
2/6/2024	182.8
2/7/2024	204.0
2/8/2024	194.3
2/9/2024	197.9
2/12/2024	191.1
2/13/2024	192.9
2/14/2024	189.1
2/15/2024	177.5
2/16/2024	185.5
2/19/2024	213.6
2/20/2024	214.5
2/21/2024	202.3
2/22/2024	210.4
2/23/2024	217.4
2/26/2024	205.1
2/27/2024	227.8
2/28/2024	226.3