Roll No: ----------

UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2019

Program: BBA Core (Spz. Operations)
Semester – IV
Subject (Course): Demand Forecasting and Production Planning **Max. Marks : 100**
Course Code : LSCM-2016 **Duration : 3 Hrs**
No. of page/s: 3

SECTION A (Attempt all)		
Q1.	**[10x2 = 20 marks]**	
(a) Dependent demand is defined as _____.	2	CO4
(b) ATP stands for _____.	2	CO4
(c) CPFR stands for _____.	2	CO3
(d) What is the relation between Tracking Signal and MAD?	2	CO2
(e) Safety stock is defined as _____ .	2	CO3
(f) Associative models is a part of qualitative models and also known as Causal models. *True/ False?*	2	CO3
(g) Chase strategy is one of the type of aggregate planning strategy. *True/False?*	2	CO3
(h) Forecasting is essentially the study of internal and external forces that shape demand and supply. *True/ False?*	2	CO1
(i) . Educated guesses/suggestions about the future are more valuable to organization managers than are uneducated guesses. *True/ False?*	2	CO4
(j) Aggregate forecasts are more inaccurate than disaggregate forecasts. *True/ False?*	2	CO4
SECTION B (Attempt any four)	**[4x5 = 20 marks]**	
Q2. Draw the flowchart for explaining the steps involved in forecasting process.	5	CO1
Q3. What is Delphi Technique? Give one drawback.	3+2	CO2
Q4. AKKI Co. Ltd. having a demand level of 1000 units i.e. forecasted for the current month. The actual demand for the current month is 950 units. The value of the weighting factor is = 0.3. How much would be the expected value for demand in next month?	5	CO4
Q5. Draw the block diagram to explain the uses of technology forecasting in planning of future discoveries and technologies in different areas.	5	CO3

Q6. The following quarterly data represent a demand time series for a product:

	Quarter			
	1	2	3	4
Last Year	1200	700	900	1100
This Year	1400	1000		

RAXY wants to forecast the demand for the third quarter of this year. Consider the value of alpha is 0.2 and the previous forecast is constructed from the average for the four quarters of last year.

5 | CO2

SECTION C (Attempt all) | **[3x10 = 30 marks]**

Q7. Sales of Super Cool brand of motorbikes are being analyzed. The monthly sales figures for the previous year are furnished below:

Month	1	2	3	4	5	6	7	8	9	10	11	12
Demand	8	5	9	11	13	13	10	11	14	15	16	18

(a) Get a 3-month moving average for the various months of the year

(b) Get a 3-month weighted moving average with weights of:

- Current month: 0.5; Previous Month: 0.3; and Previous to previous month: 0.2

(c) Which method seems give a better fit? You may base your reply upon MAD calculations.

10 | CO3

Q8. Customer footfalls in 'Carnival' shopping mall are being analysed. The data for the last few weeks are given in the table below:

Week No.	Number of footfalls (in '00)
1	85
2	95
3	110
4	100
5	115
6	130
7	150
8	145

Test the following forecast models for their performance.

(a) Exponential smoothing with alpha = 0.4. Start with the forecast for week 4 at 96.3 (in '00) footfalls.

(b) 4-week simple moving average.

(c) Which method seems give a better fit? You may base your reply upon MSE calculations.

10 | CO2, CO4

Q9. What is the difference between Qualitative Model and Quantitative Model? Draw the forecasting hierarchy.

2+8 | CO2

SECTION D (Compulsory)	[30 marks]	
Q10. CCC wishes to forecast the number of incoming calls it receives in a day from the customers of one of its clients, BMI. CCC schedules the appropriate number of telephone operators based on projected call volumes. CCC believes that the most recent 12 days of call volumes are representative of the near future call volumes. **(a)** Calculate 3 Days Moving Average to develop a forecast of the call volume in Day 13. **(b)** Use the 3 days weighted moving average method and weights of **.1**, **.3**, and .6 to develop a forecast of the call volume in Day 13. **(c)** If a smoothing constant value of .25 is used and the exponential smoothing forecast for Day 3 is the same as the actual call volume, what is the exponential smoothing forecast over the most recent 9 days? **(d)** Which forecasting method is preferred, based on the MAPE over the most recent 9 days?	30	CO1, CO2, CO4

Day	1	2	3	4	5	6	7	8	9	10	11	12
Calls	159	217	186	161	173	157	203	195	188	168	198	159

Roll No: ----------

UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2019

Program: BBA Core (Spz. Operations)
Semester – IV
Subject (Course): Demand Forecasting and Production Planning **Max. Marks : 100**
Course Code : LSCM-2016 **Duration : 3 Hrs**
No. of page/s: 3

SECTION A (Attempt all)		
Q1.	**[10x2 = 20 marks]**	
(b) Independent demand is defined as _____.	2	CO4
(b) MTS stands for _____.	2	CO4
(c) MTO stands for _____.	2	CO3
(d) What is the relation between Tracking Signal and CFE?	2	CO2
(e) Safety stock is defined as _____ .	2	CO3
(f) Associative models is also named as _____ .	2	CO3
(g) Chase strategy is one of the type of aggregate planning strategy. *True/False?*	2	CO3
(h) Forecasting is essentially the study of internal and external forces that shape demand and supply. *True/ False?*	2	CO1
(i) . Educated guesses/suggestions about the future are more valuable to organization managers than are uneducated guesses. *True/ False?*	2	CO4
(j) Aggregate forecasts are more inaccurate than disaggregate forecasts. *True/ False?*	2	CO4
SECTION B (Attempt any four)	**[4x5 = 20 marks]**	
Q2. Explain the steps involved in forecasting process.	5	CO1
Q3. The following quarterly data represent a demand time series for a product:	3+2	CO2

	Quarter			
	1	2	3	4
Last Year	1200	700	900	1100
This Year	1400	1000		

REME wants to forecast the demand for the third quarter of this year. Consider the value of alpha is 0.2 and the previous forecast is constructed from the average for the four quarters of last year.

<table>
<tr><td>Q4. RUBU company having a demand level of 1000 units i.e. forecasted for the current month. The actual demand for the current month is 950 units. The value of the weighting factor is = 0.3. How much would be the expected value for demand in next month?</td><td>5</td><td>CO4</td></tr>
<tr><td>Q5. Draw the block diagram to explain the uses of technology forecasting in planning of future discoveries and technologies in different areas.</td><td>5</td><td>CO3</td></tr>
<tr><td>Q6. Discuss Delphi Technique.</td><td>5</td><td>CO2</td></tr>
<tr><td colspan="2">SECTION C (Attempt all)</td><td>[2x15 = 30 marks]</td></tr>
<tr><td>Q7. Sales of Super Cool brand of motorbikes are being analyzed. The monthly sales figures for the previous year are furnished below:

<table>
<tr><td>Month</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr>
<tr><td>Demand</td><td>8</td><td>5</td><td>9</td><td>11</td><td>13</td><td>13</td><td>10</td><td>11</td><td>14</td><td>15</td><td>16</td><td>18</td></tr>
</table>
(a) Get a 3-month moving average for the various months of the year
(b) Get a 3-month weighted moving average with weights of:
• Current month: 0.5; Previous Month: 0.3; and Previous to previous month: 0.2
(c) Which method seems give a better fit? You may base your reply upon MAD calculations.</td><td>15</td><td>CO3</td></tr>
<tr><td>Q8. Customer footfalls in ‘Carnival’ shopping mall are being analysed. The data for the last few weeks are given in the table below:

<table>
<tr><td>Week No.</td><td>Number of footfalls (in ’00)</td></tr>
<tr><td>1</td><td>85</td></tr>
<tr><td>2</td><td>95</td></tr>
<tr><td>3</td><td>110</td></tr>
<tr><td>4</td><td>100</td></tr>
<tr><td>5</td><td>115</td></tr>
<tr><td>6</td><td>130</td></tr>
<tr><td>7</td><td>150</td></tr>
<tr><td>8</td><td>145</td></tr>
</table>
Test the following forecast models for their performance.
(a) Exponential smoothing with alpha = 0.4. Start with the forecast for week 4 at 96.3 (in ’00) footfalls.
(b) 4-week simple moving average.
(c) Which method seems give a better fit? You may base your reply upon MSE calculations.</td><td>15</td><td>CO2, CO4</td></tr>
<tr><td colspan="2">SECTION D (Compulsory)</td><td>[30 marks]</td></tr>
<tr><td>Q9. CCC wishes to forecast the number of incoming calls it receives in a day from the customers of one of its clients, BMI. CCC schedules the appropriate number of telephone</td><td>15</td><td></td></tr>
</table>

operators based on projected call volumes. CCC believes that the most recent 12 days of call volumes are representative of the near future call volumes.

Day	1	2	3	4	5	6	7	8	9	10	11	12
Calls	159	217	186	161	173	157	203	195	188	168	198	159

(a) Calculate 3 Days Moving Average to develop a forecast of the call volume in Day 13.
(b) Use the 3 days weighted moving average method and weights of **.1**, **.3**, and .6 to develop a forecast of the call volume in Day 13.
(c) If a smoothing constant value of .25 is used and the exponential smoothing forecast for Day 3 is the same as the actual call volume, what is the exponential smoothing forecast over the most recent 9 days?
(d) Which forecasting method is preferred, based on the MAPE over the most recent 9 days?

CO1, CO2, CO4

Q10. Explain forecasting hierarchy. | 15 | CO2