UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2019

Program: BBA LM **Semester – IV**
Subject (Course): Demand Planning and Forecasting **Max. Marks   : 100**
Course Code   : LSCM-2008 **Duration   : 3 Hrs**
No. of page/s: 2

SECTION A (Attempt all)		
Q1.	**[10x2 = 20 marks]**	
(a) _____forecasts address the business cycle by predicting inflation rates, money supplies, housing starts, tax revenues, levels of employment, gross national product, and other indicators.	2	CO1
(b) Why to use tracking signal and write the formula?	2	CO2
(c) CFE stands for _____ used to measure the forecast accuracy.	2	CO2
(d) MAPD stands for _____.	2	CO2
(e) Which forecasting model employs numerical information and are objective by nature?	2	CO3
(f) Forecast should be expressed in meaningful units such as rupees, units of products, machines and skills needed. *True/ False?*	2	CO1
(g) Sales force composite is similar to consumer panel survey. *True/False?*	2	CO2
(h) Aggregate forecasts are more accurate than disaggregate forecasts. *True/ False?*	2	CO3
(i) LOGWARE is one of the statistical packages used for forecasting. *True/ False?*	2	CO4
(j) Demand forecasting used for both push and pull processes. *True/ False?*	2	CO4
SECTION B (Attempt any four)	**[4x5 = 20 marks]**	
Q2. XUV company using simple exponential smoothing using smoothing constant of 0.2 to forecast its short-term demand. The forecast for the month of July was 500 units whereas the actual sales was only 450 units. What is the forecast for the month of August?	5	CO2
Q3. What are the precautions should be consider in administering the Delphi technique?	5	CO3
Q4. Demand for patient surgery at a hospital has increased steadily in the past few years, as seen in the following table: 	Year	1	2	3	4	5	6	 	Outpatient Surgeries Performed	45	50	52	56	58	?		5	CO2, CO4

The director of medical services predicted six years ago that demand in year 1 would be 42 surgeries. Using exponential smoothing with a weight α = 0.20, develop forecasts for years 2 through 6. What is the MAD?		
Q5. Draw the block diagram to explain the uses of technology forecasting in planning of future discoveries and technologies in different areas.	5	CO4
Q6. Consider, if the actual sales for a product in January 2013 is 2728 units, then how much will be the forecast demand for the month February 2013? Apply Naïve approach.	5	CO2
SECTION C (Attempt all)	**[3x10 = 30 marks]**	
Q7. Draw the flowchart of forecasting hierarchy.	10	CO4
Q8. The forecasters looks for data patterns as: *Data = Historic Pattern + Random Variation* What are the types of "*Historic pattern*" to be forecasted by the forecasters? Explain with the use of graphs and examples. Also, define the term *"Random Variation/Movements"* with an example.	10	CO3
Q9. Data collected on the yearly demand for 50 pounds bags of fertilizer at ABC Fertilizer Company as shown in the following table: Develop a three-year moving average to forecast sales. Then estimate demand again with a weighted moving average in which sales in the most recent year as given a weight of 2 and sales in the other two years are each given a weight of 1. Which method do you think is best?	10	CO2

Table in Q9:

Year	1	2	3	4	5	6	7	8	9	10	11
Demand for fertilizer bags (in thousands)	4	6	4	5	10	8	7	9	12	14	15

SECTION D (Compulsory)	**[30 marks]**	
Q10. Data regarding the sales of a particular item in the 12 time-periods given below. The manager wants to forecast 1 time-period ahead in order to plan properly. Determine the forecasts using: **(a)** Naïve method **(b)** 3 period moving average **(c)** Simple exponential smoothing taking alpha = 0.1 and the previous forecast is 30. Also, compute the errors MAD, MAPE and MSE to check the forecasting accuracy for the last six periods.	30	CO1, CO2, CO4

Table in Q10:

Time Period (T)	1	2	3	4	5	6	7	8	9	10	11	12
Demand (D)	28	27	33	25	34	33	35	30	33	35	27	29

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SECTION A (Attempt all)		
Q1.	**[10x2 = 20 marks]**	
(a) Economic forecasts is defined as _____.	2	CO1
(b) Why to use tracking signal and write the formula?	2	CO2
(c) CFE stands for _____ used to measure the forecast accuracy.	2	CO2
(d) MAPD stands for _____.	2	CO2
(e) Which forecasting model employs numerical information and are objective by nature?	2	CO3
(f) Forecast should be expressed in meaningful units such as rupees, units of products, machines and skills needed. *True/ False?*	2	CO1
(g) Sales force composite is defined as _____.	2	CO2
(h) Aggregate forecasts are more accurate than disaggregate forecasts. *True/ False?*	2	CO3
(i) SPSS is one of the statistical packages used for forecasting. *True/ False?*	2	CO4
(j) Demand forecasting used for only pull processes. *True/ False?*	2	CO4
SECTION B (Attempt any four)	**[4x5 = 20 marks]**	
Q2. REEO company using simple exponential smoothing using smoothing constant of 0.2 to forecast its short-term demand. The forecast for the month of July was 500 units whereas the actual sales was only 450 units. What is the forecast for the month of August?	5	CO2
Q3. Draw the block diagram to explain the uses of technology forecasting in planning of future discoveries and technologies in different areas.	5	CO4
Q4. Demand for patient surgery at a hospital has increased steadily in the past few years, as seen in the following table:	5	CO2, CO4

Year	1	2	3	4	5	6
Outpatient Surgeries Performed	45	50	52	56	58	?

The director of medical services predicted six years ago that demand in year 1 would be 42 surgeries. Using exponential smoothing with a weight α = 0.20, develop forecasts for years 2 through 6. What is the MAD?		
Q5. What are the precautions should be consider in administering the Delphi technique?	5	CO3
Q6. Consider, if the actual sales for a product in January 2013 is 2728 units, then how much will be the forecast demand for the month February 2013? Apply Naïve approach.	5	CO2
SECTION C (Attempt all)	**[3x10 = 30 marks]**	
Q7. What are the components of time series analysis? Explain with graphs and example.	10	CO3
Q8. Data collected on the yearly demand for 50 pounds bags of fertilizer at TTT Pesticides Company as shown in the following table: Develop a three-year moving average to forecast sales. Then estimate demand again with a weighted moving average in which sales in the most recent year as given a weight of 2 and sales in the other two years are each given a weight of 1. Which method do you think is best?	10	CO4
Q9. Draw the flowchart of forecasting hierarchy.	10	CO2
SECTION D (Compulsory)	**[30 marks]**	
Q10. Data regarding the sales of a particular item in the 12 time-periods given below. The manager wants to forecast 1 time-period ahead in order to plan properly. Determine the forecasts using: **(a)** Naïve method **(b)** 3 period moving average **(c)** Simple exponential smoothing taking alpha = 0.1 and the previous forecast is 30. Also, compute the errors MAD, MAPE and MSE to check the forecasting accuracy for the last six periods.	30	CO1, CO2, CO4

Table in Q8:

Year	1	2	3	4	5	6	7	8	9	10	11
Demand for fertilizer bags (in thousands)	4	6	4	5	10	8	7	9	12	14	15

Table in Q10:

Time Period (T)	1	2	3	4	5	6	7	8	9	10	11	12
Demand (D)	28	27	33	25	34	33	35	30	33	35	27	29