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UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, May 2018

Program: BBA LM
Subject (Course): Demand Planning and Forecasting
Course Code : BBCG - 132
No. of page/s: 3

Semester – IV
Max. Marks : 100
Duration : 3 Hrs

SECTION A (Attempt all)	
Q1.	[20]
(a) In the Linear Regression Equation i.e. $Y = a + bX$, where 'a' is known as _____ and 'b' is known as _____.	2 Marks
(b) _____ measures the amount of variation in the dependent variable about its mean i.e. explained by the regression line and denoted by symbol _____.	2 Marks
(c) ETO stands for _____.	1 Mark
(d) PTO stands for _____.	1 Mark
(e) ORACLE stands for _____.	1 Mark
(f) SAP stands for _____.	1 Mark
(g) CPFR stands for _____.	1 Mark
(h) ATP stands for _____.	1 Mark
(i) MAPD stands for _____.	1 Mark
(j) The statistical packages like SPSS, Minitab, Spreadsheets, and SAS are the forecasting software. <i>True/False?</i>	1 Mark
(k) Long-term forecasts are less accurate than short-term forecasts. <i>True/False?</i>	1 Mark
(l) Sales Force Composite is a bottom-up approach in which companies use to forecast the sales more accurately. <i>True/False?</i>	1 Mark
(m) Forecast error increases as the distance from customer increases. <i>True/False?</i>	1 Mark
(n) Quantitative models are objective in nature and employ numerical information. <i>True/False?</i>	1 Mark
(o) Safety stock act as a buffer stock in case the sales are greater than planned and/or the supplier is unable to deliver the additional units at the expected time. <i>True/False?</i>	1 Mark
(p) Demand forecasting used for both push and pull processes. <i>True/False?</i>	1 Mark
(q) Forecasts are always wrong. <i>True/False?</i>	1 Mark

(r) The duration for long term forecasting time horizon is typically 5 to 10 years and nature of data is largely subjective by nature. <i>True/False?</i>	1 Mark																																																				
SECTION B (Attempt any four)	[4x5 = 20]																																																				
<p>Q2. Explain with the support of suitable example(s) and/or diagram as required:</p> <p>(a) DRP (b) Flowchart of forecasting hierarchy (c) Components of Time Series (d) Evolution of ERP (e) Steps for forecasting seasonality</p>	5 Marks each																																																				
SECTION C (Attempt all)	[30]																																																				
<p>Q3. Central Call Centre (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. With the help of 3 days moving average (3DMA) method and exponential smoothing ($\alpha = 0.25$), the near future call volumes for all days as given in Table 1 respectively.</p> <p style="text-align: center;">Table 1</p> <table border="1" data-bbox="228 898 1187 1465" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Days</th> <th>Calls</th> <th>Forecast Calls (3DMA)</th> <th>Forecast Calls ($\alpha = 0.25$)</th> </tr> </thead> <tbody> <tr><td>1</td><td>159</td><td>177.3</td><td>174.1</td></tr> <tr><td>2</td><td>217</td><td>190.2</td><td>186.4</td></tr> <tr><td>3</td><td>186</td><td>189.7</td><td>185.9</td></tr> <tr><td>4</td><td>161</td><td>187.3</td><td>186</td></tr> <tr><td>5</td><td>173</td><td>188</td><td>179.8</td></tr> <tr><td>6</td><td>157</td><td>173.3</td><td>178.1</td></tr> <tr><td>7</td><td>203</td><td>163.7</td><td>172.8</td></tr> <tr><td>8</td><td>195</td><td>177.7</td><td>180.4</td></tr> <tr><td>9</td><td>188</td><td>185</td><td>184</td></tr> <tr><td>10</td><td>168</td><td>195.3</td><td>185</td></tr> <tr><td>11</td><td>198</td><td>183.7</td><td>180.8</td></tr> <tr><td>12</td><td>159</td><td>184.7</td><td>185.1</td></tr> </tbody> </table> <p>(a) With the help of formula, calculate the forecast error for both 3DMA and exponential smoothing ($\alpha = 0.25$)? (b) Which forecasting method (3DMA or $\alpha = 0.25$) is preferred, based on the MAD over the most recent 9 days?</p>	Days	Calls	Forecast Calls (3DMA)	Forecast Calls ($\alpha = 0.25$)	1	159	177.3	174.1	2	217	190.2	186.4	3	186	189.7	185.9	4	161	187.3	186	5	173	188	179.8	6	157	173.3	178.1	7	203	163.7	172.8	8	195	177.7	180.4	9	188	185	184	10	168	195.3	185	11	198	183.7	180.8	12	159	184.7	185.1	15 Marks
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<p>Q4. What is the role of aggregate planning? Discuss Chase, Level and Time flexibility strategies with an example.</p>	7.5 Marks																																																				

Q5.

Discuss different production process types with the help of flowchart and support with suitable examples.

OR

Draw the diagram for the steps involved in S&OP Process. List down the Quantitative and Qualitative benefits of S&OP Planning.

7.5 Marks

SECTION D (Compulsory)

[30]

Q6. A manufacturer of tricycles for children in the age group of two to four years commissioned a market research firm to understand the factors that influenced the demand for its product. After some detailed studies, the market research firm concluded that the demand was a simple linear function of the number of newly married couples in the city. Based on this assumption, build a causal model for forecasting the demand for the product using the data given below in Table 2 collected for a residential area in a city. Also, estimate the demand for tricycles if the number of new marriages is 150 and 250.

Table 2

S.No.	New Marriages	Demand for tricycles
1	200	165
2	235	184
3	210	180
4	197	145
5	225	190
6	240	169
7	217	180
8	225	170

30 Marks