



**JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA**  
**PGDM / PGDM (M) / PGDM (SM)**  
**III TRIMESTER (Batch 2021-23)**  
**END TERM EXAMINATION, APRIL 2023**  
**SET - 2**

Course Name	Supply Chain Analytics (SCA)	Course Code	<b>20837</b>
Max. Time	<b>2 hours</b>	Max. Marks	<b>40 MM</b>

**INSTRUCTIONS:**

- a. All questions are compulsory to attempt.
- b. Do Question 1 on R studio.
- c. Do Question 2 using MS-Excel.
- d. Do Question 3 on the word file
- e. The dataset for Question 1 is available on Moodle.
- f. Upload three separate files on Moodle for the three questions.
- g. Students may refer to the R codes available on Moodle for solving Question 1

**Question 1:**

The monthly time series data of three years of Kelloggs (breakfast) cereals is given in excel file. Data available in kelloggs.xls. Analyze the data using R programming and perform the following task

- a) Plot the time series data and suggest appropriate forecasting method. **(5 marks)**
- b) Forecast the sales of Kelloggs for next three months using appropriate methods. **(5 marks)**
- c) Plot the time series data with actual and predicted values. **(5 marks)**
- d) Compare different methods with various accuracy methods and suggest the best model. **(5 marks)**

**Question 2:**

An investor is interested in investing Rs.5, 00,000 in a mix of investments. The investment choices and expected rates of return on each one of them are: **(10 Marks)**

<b>Investment</b>	<b>Projected rate of return</b>
Mutual Fund A	0.12
Mutual Fund B	0.09
Money Market Fund	0.08
Government Bonds	0.085
Share Y	0.16
Share X	0.18

The investor wants at least 35% of his investment in government bonds. Because of the higher perceived risk of two shares, he has specified the combined investment in these not to exceed Rs. 80,000. The investor has also specified that at least 20% of the investment should be in the money market fund and that the amount of money invested in shares should not exceed the amount invested in mutual funds. His final investment condition is that the amount invested in mutual fund A should be no more than the amount invested in mutual fund B. The problem is to decide the amount of money to invest in each alternative so as to obtain the highest annual total return. Formulate and solve the above as linear programming problem using excel.

**Question 3:**

***“Supply Chain Analytics can transform the businesses”.*** Justify the statement by illustrating the different applications of analytics in the supply Chain decisions. Write your answer in context to the different branches of analytics – descriptive, diagnostic, predictive and prescriptive.

**(10 Marks)**

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