**JAIPURIA INSTITUTE OF MANAGEMENT, INDORE**

**PGDM FIRST TRIMESTER (Batch 2021-23)**

**END TERM EXAMINATION, OCT-2021**

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| Course Name | Statistics for Management | Course Code | OM 101 |
| Max. Time | **2 hours** | Max. Marks | **40** |

**INSTRUCTIONS:**

* *Students can use personal Laptops in examination.*
* *Students can use MS-Excel data analysis tool pack in the examination.*
* *Students should save excel file with their name enrollment no. and section on the desktop.*
* *Students are advised to write their comments in text box along with output in Excel file only.*
* *Each question should be solved in separate excel sheet. Only ONE Excel file per student should be submitted.*

**Question No. 1 (7 Marks)**

Mechno-Tech Inc. is a mechanical equipment manufacturing organization engaged in supply of components to dairy industry across the globe. The company’s market is primarily divided in two regions, Oriental markets and western markets. The sales data for last ten years in presented below. Examine the data, state the null and alternative hypothesis and generate meaningful insights at 0.02 level of significance.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Year** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** |
| Oriental market sale ($ Billion) | 354 | 378 | 400 | 422 | 450 | 464 | 478 | 501 | 522 | 545 |
| Western Market sale ($ Billion) | 388 | 420 | 420 | 450 | 489 | 481 | 521 | 532 | 553 | 560 |

**Questions.2 (8 Marks)**

“Tiku’s Food” is a chain of restaurant offering sandwiches to customers in Indore. The chain has five restaurants in various locations in Indore. The most popular sandwich is Mumbai Masala sandwich. A random sample of some customers was taken to determine the average time (minutes) for completion of customer order for Mumbai Masala Sandwich. Examine the data, state the null and alternative hypothesis and generate meaningful insights.

|  |  |
| --- | --- |
| **Location** | **Time for making Mumbai Masala Sandwich (Minutes)** |
| Opp. Kasturi Sabha Grah | 10 | 12 | 10 | 17 | 13 | 12 | 14 | 15 | 12 | 10 | 10 |
| Vijay Nagar | 9 | 10 | 11 | 8 | 9 | 12 | 7 | 9 | 11 |  |  |
| Rajiv Gandhi Circle | 7 | 8 | 8 | 10 | 6 | 8 | 9 | 8 | 7 | 7 | 6 |
| Annapurna Road | 15 | 12 | 10 | 13 | 11 | 10 | 8 | 10 | 11 | 8 |  |
| Airport Road | 13 | 14 | 12 | 11 | 10 | 9 | 9 | 10 | 8 | 10 |  |

**Questions. 3 (12 Marks)**

“Fitness Fellows” is a Gymnasium in Indore which offers fitness programs. The gymnasium claims that on an average, an individual loses weight after completion of two-month program. State the null and alternative hypothesis, apply relevant concepts and generate meaningful management insights.

*(Use Data from attached Excel File)*

**Question No. 4 (13 Marks)**

Alex Sharpe sat in her home office and pondered her investment strategy for her children’s educational savings. Currently, this money was invested in the Vanguard 500 index fund, a mutual fund constructed to track the performance of the market index S&P500. In order to achieve higher returns, Sharpe has been considering changing her passive investment strategy to one that was more active. She wanted to begin conservatively by adding carefully chosen stocks to her current equity portfolio, and she has narrowed her search to Hasbro and Reynolds. In addition to comparing the returns, on the individual components of her portfolio, Sharpe also wanted to fully compare the risk profiles of the two companies to that of the Vanguard Fund. She wanted to ensure that the expected return of her new portfolio would provide adequate compensation for taking on any new risky assets.

Ms. Sharpe has collected data presented in the attached file (File name: Alex’s Portfolio Data). You are required to advise Ms. Sharpe with the best alternative by analyzing the data using descriptive and simple linear regression techniques to compare the risk and return of all the present and the possible stocks for investment.

Apply relevant conceptual frameworks to Alex Sharpe’s data and generate meaningful insights.

*(Use Data from attached Excel File)*