**JAIPURIA INSTITUTE OF MANAGEMENT, INDORE**

**PGDM**

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

**END TERM EXAMINATION, OCT-2021**

|  |  |  |  |
| --- | --- | --- | --- |
| Course Name | **Statistics for Management** | Course Code | **40501** |
| 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 child’s educational expenses. She has been investing in small cap funds for a period of 3 years, since 2016, considering higher returns of small cap funds in the recent past. However, the recent volatility in the market has forced her to revisit the investment strategy. Currently, she invests in the form of Systematic Investment Plan of Rs. 5,000 on the 2nd day of the month in the Sundaram Small Cap Fund. The mutual fund tracks the performance of NSE SmallCap100. Now, in order to achieve steady returns with lower volatility, Sharpe has been considering changing her investment strategy from small cap funds to large cap or blue-chip funds. She analyzed a few mutual funds and narrowed her search to Axis Bluechip Fund (Benchmark: S&P BSE 100) and SBI Largecap Fund (Benchmark: S&P BSE 200). 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 mutual funds to that of the Smallcap Fund. She wanted to ensure that the expected return of her new portfolio would provide a balanced return so as to fund the higher education expenses of her child in the next 3 years.

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 statistics and simple linear regression techniques against their individual benchmark indexes to compare the risk and return of all the present and the possible mutual funds for investment.

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

*(Use Data from attached Excel File)*