**JAIPURIA INSTITUTE OF MANAGEMENT, INDORE**

**PGDM**

**FIRST TRIMESTER (Batch 2022-24)**

**END TERM (Special Improvement) EXAMINATION, January 2023**

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| --- | --- | --- | --- |
| Course Name | Statistics for Management | Course Code | 40501 |
| Max. Time | **2 hours** | Max. Marks | **40** |

**INSTRUCTIONS:**

* *Examination shall be conducted in IT Lab. Students cannot 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)**

Indian Auto Research Bureau is comparing performance of cars using two type of fuels, Normal petrol and 98 Octane petrol. The mileage of each car with these different type of fuels is tabulated below. Assume that all other conditions remain same during the tests. State the null and alternative hypothesis, apply appropriate statistical tool and generate meaningful insights.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Car No.** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** |
| Normal Petrol (KM/Liter) | 14 | 15 | 14 | 13 | 14 | 15 | 13 | 12 | 15 | 14 | 14 | 13 |
| 98 Octane Petrol(KM/Liter) | 17 | 18 | 16 | 17 | 18 | 17 | 16 | 18 | 15 | 16 | 17 | 18 |

**Questions.2 (7 Marks)**

“Costa Coffee” has six coffee outlets in Mumbai. The owner wanted to find out if the performance of all outlets is at par and comparable with each other. So, he collected data on time taken to make a cup of coffee for most famous product – “Coffee Cappuccino”. The time for these outlets are tabulated below. State the null and alternative hypothesis, apply appropriate statistical tool (at α = 0.02) and generate meaningful management insights.

|  |  |
| --- | --- |
| **Location** | **Time (Minutes)** |
| Khar | 10 | 11 | 10 | 9 | 9 | 8 | 10 | 11 | 12 | 10 | 10 | 12 | 13 | 10 | 9 |  |  |
| Juhu | 15 | 16 | 15 | 14 | 10 | 12 | 19 | 16 | 14 | 12 | 18 | 13 | 14 | 15 |  |  |  |
| Korum Mall Thane | 10 | 11 | 11 | 12 | 13 | 10 | 9 | 13 | 14 | 15 | 16 | 17 | 18 | 12 | 10 | 13 | 11 |
| High Street Parel | 9 | 13 | 15 | 16 | 16 | 15 | 14 | 13 | 17 | 18 | 14 | 15 | 14 | 18 | 11 | 13 |  |
| Arita Mall, Worli | 10 | 13 | 12 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 15 | 14 | 11 | 13 | 14 |  |  |
| Palladium Mall, Parel | 10 | 12 | 13 | 12 | 8 | 19 | 18 | 17 | 12 | 11 | 13 | 13 | 13 | 13 |  |  |  |

**Question No. 3 (10 Marks)**

“Ms. Radhika Shukla’s” was concerned about her portfolio of NIFTY 200 stocks. Currently she only has stocks of Adani India Limited in her portfolio. She wishes to diversify her portfolio and so, she has shortlisted three stocks, Dabur, Jindal and Bata India Limited. However, due to financial constraints, currently she can invest in one company’s stock only. Apply relevant conceptual framework to Ms. Radhika Shukla’s data and generate meaningful insights.

*(Use Data sheet “Ms. Radhika Shukla’s* *Portfllio” from attached Excel File)*

**Questions. 4 (16 Marks)**

“Cola Cola” is a famous Soft drinks brand. The brand has sales across USA, Europe and Latin America. The CEO of Cola Cola wanted to find out effectiveness of their marketing activities globally as well as in each region i.e. USA, Europe and Latin America. She collected relevant data of sales and promotion expenditure each year, which is enclosed in excel sheet (All data is in US dollars).

State the null and alternative hypothesis, apply relevant concepts and generate meaningful management insights. (Assume that all other conditions in the market remained unchanged)

*(Use Data sheet “Cola Cola* Data*” from attached Excel File)*