**JAIPURIA INSTITUTE OF MANAGEMENT, INDORE**

PGDM, FIRST TRIMESTER (Batch 2020 - 22)

END TERM EXAMINATION, November - 2020

|  |  |  |  |
| --- | --- | --- | --- |
| Course Name | **Statistics For Management** | Course Code | **OM 101** |
| Max. Time | 2 hours & 15 Minutes | Max. Marks | **40** |

**INSTRUCTIONS:** *Students can use MS-Excel Data Analysis tool pack in the examination. Students should save excel file with their name and provide details on the first sheet. Interpretation of output can be saved as Text box in excel sheet or as a separate MS word file. Student need to appear in this examination with their webcam in on position and under supervision of a PGP staff member.*

Q1. “Speed Garage” claim that after a regular service in the garage, cars shall have a significant improvement in average mileage. An independent researcher decided to verify this claim and collected the following data on one model of the cars: -

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Car No.** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Mileage before servicing (KM/Liters) | 15.2 | 16.1 | 15.3 | 16.8 | 14.9 | 16.2 | 14.8 | 15.2 | 15.6 | 15.8 |
| Mileage After servicing (KM/Liters) | 16.3 | 16.6 | 16.8 | 17.3 | 16.9 | 17.9 | 17.3 | 16.7 | 15.8 | 17.0 |
|  |  |  |  |  |  |  |  |  |  |  |
| **Car No.** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
| Mileage before servicing (KM/Liters) | 15.4 | 16.1 | 17.0 | 14.8 | 15.0 | 15.2 | 15.7 | 15.8 | 16.1 | 14.9 |
| Mileage After servicing (KM/Liters) | 16.7 | 16.9 | 17.2 | 17.5 | 16.2 | 16.9 | 16.8 | 17.3 | 16.2 | 17.3 |

1. Analyze the data using appropriate statistical tools. Use α = 0.05
2. Generate meaningful insights from your analysis.

 **(8 Marks)**

Q2. “Better Basket” is a chain of small supermarkets in Indore. The average billing time for customers in five of its branches in a week is as under: -

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Week Day | Mon | Tue | Wed | Thu | Fri | Sat | Sun |
| Palasia | 8 | 7 | 11 | 10 | 13 | 11 | 17 |
| Vijay Nagar | NA | 10 | 11 | 17 | 18 | 12 | 20 |
| Annapurna Road | 19 | 16 | NA | 16 | 12 | 17 | 18 |
| Kanadia Road | NA | NA | 14 | 9 | 10 | 18 | 15 |
| Rajbada | 17 | 18 | 10 | NA | NA | 17 | 19 |

1. Use appropriate statistical test and generate Excel output at 0.10 significance level.
2. Analyze the output and develop meaningful insights for “Better Basket”.

**(8 Marks)**

Q3. “Electronic Bazar” is a medium size electronics supermarket in Indore. The super market mainly promotes itself using local TV advertisements and through city level event sponsorships. The relevant data on sale and expenditure for last year is tabulated below: -

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Adv. Exp. (Thousand Rupees) | 14 | 16 | 17 | 17 | 18 | 19 | 11 | 10 | 10 | 19 | 18 | 14 |
| Event Promo Exp. (Thousand Rupees) | 19 | 24 | 16 | 24 | 26 | 20 | 12 | 15 | 17 | 18 | 13 | 15 |
| Sales (Lac Rupees)  | 18 | 20 | 22 | 26 | 28 | 25 | 12 | 15 | 13 | 28 | 20 | 22 |

1. Analyze the above data and generate meaningful business insights for “Electronic Bazar”.
2. Which promotion medium you will suggest to “Electronic Bazar” and why?
3. Predict sales in January next year when planned advertising expenditure is Rs. 28,000 and planned event sponsorship is Rs. 36,000. **(8 Marks)**

Q4. A premium telecom company is an equal opportunity employer. The company has a number of executives to handle customer queries. The company feels that gender has no role in employee performance in handling customer queries. The performance data of a sample of employees is as under: -

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Employee No. | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Gender | M | F | M | F | M | M | F | F | M | M |
| Average number of Customers handled in a day | 15 | 17 | 17 | 22 | 15 | 17 | 21 | 23 | 18 | 19 |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Employee No. | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** |
| Gender | M | F | F | M | F | F | M | M | F | F |
| Average number of Customers handled in a day | 16 | 22 | 20 | 19 | 18 | 23 | 18 | 19 | 21 | 19 |

1. State null and alternate hypothesis.
2. Analyze the data using appropriate statistical tool(s) and generate output.
3. At 0.05 level of significance, can we conclude that the company’s assumption correct? **(8 Marks)**

Q5. A researcher has collected Share Market Data. Analyze the data using appropriate statistical tools and generate meaningful insights. **(8 Marks)**