**JAIPURIA INSTITUTE OF MANAGEMENT, INDORE**

**PGDM, FIRST TRIMESTER (Batch 2019-21)**

**END TERM IMPROVEMENT EXAMINATION, NOVEMBER-2019**

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| --- | --- | --- | --- |
| Course Name | **Statistics for Management** | Course Code | **OM 101** |
| Max. Time | **2 hours** | 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 section on the desktop.

**Questions.1 (10 Marks)**

The Scholar’s University offers management education to students. The university in recent past feels that there is no significant difference in the marks scored by female students and male students. In order to validate this claim, the university collected data. State the null and alternative hypothesis, analyses data and interpret the output.

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Roll No.** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** | **15** | **16** | **17** | **18** | **19** | **20** | **21** | **22** | **23** | **24** | **25** |
| **Gender** | **M** | **M** | **M** | **F** | **M** | **F** | **F** | **M** | **F** | **F** | **M** | **F** | **M** | **F** | **M** | **F** | **M** | **F** | **M** | **F** | **M** | **F** | **F** | **M** | **F** |
| **Marks** | **45** | **48** | **76** | **72** | **53** | **78** | **87** | **65** | **85** | **75** | **76** | **57** | **45** | **98** | **71** | **93** | **49** | **73** | **66** | **59** | **82** | **76** | **80** | **49** | **69** |

**Questions.2 (10 Marks)**

“Great Impact” is an advertising agency which claims that their advertisements always help in increase of sale. “Fun–n–Fashion” a garment manufacturing company is a customer of “Great Impact” and has gathered data on advertisement cost (Million rupees) and sales (Billion rupees). This data was processed using some software and the following output was received. The significance level was 0.05.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Advertisement cost (Million rupees)** | **25** | **22** | **23** | **25** | **17** | **30** | **32** | **19** | **18** | **25** | **27** | **30** |
| **Sales (Billion rupees).** | **150** | **124** | **120** | **144** | **98** | **201** | **198** | **110** | **130** | **176** | **180** | **155** |

1. Draw a scatter diagram.
2. Generate Output
3. Analyze output. Does it appear that advertising and sales are linearly related?
4. Predict sales when advertising is 87 Million

**Questions. 3 (10 Marks)**

“Good-Food” is a chain of fast food restaurant in NCR, Delhi. The chain has five restaurants in NCR region. A random sample of some customers was taken to determine the average time (minutes) for completion of customer order for Veg. Burger.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Noida Sector 62 | 8 | 9 | 9 | 7 | 10 | 12 | 10 | 15 | 13 | 8 | 10 |
| Rohini | 8 | 8 | 6 | 8 | 9 | 5 | 8 | 9 | 10 |  |  |
| Rajiv Gandhi Circle | 6 | 7 | 7 | 8 | 6 | 8 | 7 | 8 | 9 | 8 | 6 |
| Hauz Khas | 5 | 6 | 6 | 7 | 6 | 8 | 7 | 6 | 5 | 8 |  |
| Sarita Vihar | 12 | 13 | 11 | 15 | 10 | 9 | 12 | 11 | 8 | 10 |  |

1. Use appropriate statistical test and generate Excel output at 0.05 significance level.
2. Do all the restaurants have same average service time?
3. Which restaurant needs improvement in service time.
4. Which restaurant is consistent in service time?

**Questions. 4**

Rajesh Dubey is credit manager of a bank which operates in NCR, Delhi region. The bank has three modes of collection of payments; phone call, legal letter and personal visit. Past record indicates that 65 percent overdue accounts are called over phone, 20 percent accounts are sent a legal letter and 15 percent overdue accounts are visited personally. The probability of collecting an overdue amount from an account with the three methods are 0.70, 0.90 and 0.75 respectively.

Mr. Rajesh Dubey has just received payment from a past overdue account. What is the probability that this account was

1. Called over phone?
2. Personally visited?
3. Sent a letter?

**(10 Marks)**