**Decision Science**

**December 2022 Examination**

**Q1. Your favorite team Garuda is in the final season of Indian Premier League. Raj Kaul, an expert has assigned a probability of 60% that Garuda will win based on his study of the current scenario. Past records indicate that when teams win the championship, they win the first game of the series 70% of the time. When they lose the series, they win the first game 25% of the time.**

**The first game is over; your team has lost. What is the probability that it will win the series?**

**Note:**

**• Probability Tree Diagram is required in this question. You are advised to draw the diagram in Word, PowerPoint etc.**

**• Do not draw the diagram manually, handwritten/ snapshots are not allowed. (10 Marks)**

**Ans 1.**

It is based on the existing scenario; the series of these events, i.e., The Indian Premier League's final season, features their preferred group, Garuda. According to experienced, i.e., Raj Kaul, Garuda's possibility to win is 60% based on his analysis of the current circumstance. When groups win 70% of the time, they win the series opener in the championship, Records from the previous program. After losing 25% of the

**Q2. Run Regression Analysis based on the given Data.**

**1. Calculate the Line of regression Y on X (Don’t use Excel, calculate manually)**

**2. What is b1 telling you about the relationship?**

**Shivani Raje is making Kakhra and selling online via e-commerce websites. Recently she is looking for some insights for improvising the quality of her product. She thought of survey, she asked her recent customers about the quality of the product and their satisfaction level towards the same. Her scale is 1 to 5. Higher the score higher the satisfaction/ quality and lower score value indicates lower level of satisfaction and poor quality.**

|  |  |
| --- | --- |
| **Customer Satisfaction score**  **(Y)** | **Quality Ratings given by Customer**  **(X)** |
| **5** | **5** |
| **5** | **5** |
| **5** | **4** |
| **5** | **4** |
| **5** | **5** |
| **5** | **5** |
| **5** | **3** |
| **5** | **5** |
| **4** | **4** |
| **4** | **4** |
| **4** | **4** |
| **4** | **4** |
| **4** | **3** |
| **4** | **3** |

|  |  |
| --- | --- |
| **4** | **4** |
| **4** | **2** |
| **3** | **3** |
| **3** | **3** |
| **3** | **3** |
| **3** | **2** |
| **2** | **2** |
| **2** | **2** |
| **1** | **1** |
| **1** | **1** |
| **1** | **1** |
| **1** | **3** |
| **1** | **1** |

**Note: You are advised to calculate manually, do not use software. (10 Marks)**

**Ans 2.**

**Calculations of Regression Analysis:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X | Y | X\*Y | χ2 | y² |
| 5 | 5 | 25 | 25 | 25 |
| 5 | 5 | 25 | 25 | 25 |
| 4 | 5 | 20 | 16 | 25 |
| 4 | 5 | 20 | 16 | 25 |
| 5 | 5 | 25 | 25 | 25 |
| 5 | 5 | 25 | 25 | 25 |
| 3 | 5 | 15 | 9 | 25 |
| 5 | 5 | 25 | 25 | 25 |
| 4 | 4 | 16 | 16 | 16 |
| 4 | 4 | 16 | 16 | 16 |

**Q3a. Calculate the Relative Frequency based on the following Data and using ‘Relative frequency’**

**discuss the data by choosing appropriate graph.**

**Data: District wise Micro, Small and Medium Enterprises**

|  |  |  |
| --- | --- | --- |
| **State Name** | **District Name** | **Total MSMEs** |
| **TRIPURA** | **WEST TRIPURA** | **2915** |
| **TRIPURA** | **SOUTH TRIPURA** | **586** |
| **TRIPURA** | **DHALAI** | **439** |
| **TRIPURA** | **NORTH TRIPURA** | **854** |
| **TRIPURA** | **KHOWAI** | **514** |
| **TRIPURA** | **UNAKOTI** | **447** |
| **TRIPURA** | **SEPAHIJALA** | **383** |
| **TRIPURA** | **GOMATI** | **513** |

**Data Source: Data.gov.in**

**Note:**

* **You may use EXCEL, Tableau, Power BI Etc. for creating Graph.**
* **You are allowed to copy graph only, make sure you follow the general instructions for writing assignment. (5 Marks)**

**Ans 3a.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| State Name | District Name | Number of Micro, Small and  Medium Enterprises | Relative Frequency  = Subgroup frequency, the total frequency | Result |
| Tripura | WEST TRIPURA | 2915 | 2915 / 6651 | 0.43 |