**Decision Science**

**April 2024 Examination**

**Q1. Calculate the probability for the following statements. Draw the Probability tree diagram also.**

**In a medical college of Pune (a class of 100 people), 30 % people Like to have Misal-pav on the farewell party as per the google form survey. Remaining people have chosen vadapav. Out of those who have chosen Misal-pav 50 % said that they would eat only Jain Misal pav. Well, 30 % of those have chosen Vadapav, also said they would have Jain Vadapav only.**

**What is the stack (percent & number) of people Who will have Jain Food (including MISal pav and Vadapav)**

**What is the probability of selecting a person who would eat Misal pav given that person’s diet type is Jain. (10 Marks)**

**Note: Handmade drawing of Diagram is prohibited; prepare it with the help of software like MS-Word.**

**Ans 1**-

**Introduction:**

In the diverse tapestry of culinary preferences that color our social gatherings, selecting food becomes critical, showing social dispositions and specific preferences. In this context, a captivating circumstance unfolds within the districts of a medical university in Pune, where a friend of 100 individuals is preparing for a farewell celebration. The menu selection for this special event has been shaped by a precise survey through Google Forms. This survey not only determines the choice for two iconic road foods-- Misal-pav and Vadapav-- but delves deeper into the nuanced choices within these culinary realms. The appealing dynamics include considerations for both nutritional and cultural proclivities, with participants sharing

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**Q2. Write the interpretation for the following regression model. You are advised to run the analysis using MS EXCEL.**

**Here Hiranmayee Dhar, an entrepreneur who is running “Pashminaa” a store of Pashmina shawls. She is targeting customers via social media applications; she has chosen Instagram as a platform and had also chosen REELs to advertise her products. She is looking for a forecasting model to understand the impact of no of likes of the REELs demonstrating product and its sales (in number of units). (10 Marks)**

|  |  |  |
| --- | --- | --- |
| **Reel****Number** | **Number****of units sold** | **Number****of likes** |
| **Reel 1** | **24** | **1503** |
| **Reel 2** | **24** | **1564** |
| **Reel 3** | **24** | **1649** |
| **Reel 4** | **24** | **1882** |
| **Reel 5** | **26** | **1924** |
| **Reel 6** | **28** | **1937** |
| **Reel 7** | **28** | **1944** |
| **Reel 8** | **29** | **2086** |
| **Reel 9** | **30** | **2150** |
| **Reel 10** | **31** | **2215** |
| **Reel 11** | **32** | **2366** |
| **Reel 12** | **32** | **2472** |
| **Reel 13** | **35** | **2622** |
| **Reel 14** | **35** | **2792** |
| **Reel 15** | **36** | **2871** |
| **Reel 16** | **36** | **2973** |
| **Reel 17** | **38** | **3000** |
| **Reel 18** | **38** | **3024** |
| **Reel 19** | **39** | **3319** |
| **Reel 20** | **40** | **3336** |
| **Reel 21** | **41** | **3337** |
| **Reel 22** | **41** | **3413** |
| **Reel 23** | **41** | **3479** |
| **Reel 24** | **42** | **3577** |
| **Reel 25** | **46** | **3617** |
| **Reel 26** | **46** | **3922** |
| **Reel 27** | **46** | **4332** |
| **Reel 28** | **48** | **4562** |
| **Reel 29** | **48** | **4577** |
| **Reel 30** | **48** | **4763** |
| **Reel 31** | **49** | **4964** |

**Write the regression model.**

**Discuss the R-square, Multiple R**

**Discuss the ANOVA**

**Discuss the Significance of Independent variable and B1 value.**

**Ans-2**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| *Regression Statistics* |  |  |  |  |  |  |
| Multiple R | 0.97949592 |  |  |  |  |  |
| R Square | 0.959412257 |  |  |  |  |  |
| Adjusted R Square | 0.95801268 |  |  |  |  |  |
| Standard Error | 1.669041837 |  |  |  |  |  |
| Observations | 31 |  |  |  |  |  |
|  |  |  |  |  |  |  |

**Q3.a) Draw an appropriate chart for the following. Also write your clarification for choosing that graph. For each variable identify a time-series component present if you consider the long- term pattern. (5 Marks)**

**Table: Production of Commercial crops. (Source: RBI)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Groundnut (Lakh Tonnes)** | **Rapeseed &****Mustard (Lakh Tonnes)** | **Soyabean (Lakh Tonnes)** |
| **2000-01** | **64** | **42** | **53** |
| **2001-02** | **70** | **51** | **60** |
| **2002-03** | **41** | **39** | **47** |
| **2003-04** | **81** | **63** | **78** |
| **2004-05** | **68** | **76** | **69** |
| **2005-06** | **80** | **81** | **83** |
| **2006-07** | **49** | **74** | **89** |
| **2007-08** | **92** | **58** | **110** |
| **2008-09** | **72** | **72** | **99** |
| **2009-10** | **54** | **66** | **100** |
| **2010-11** | **83** | **82** | **127** |
| **2011-12** | **70** | **66** | **122** |
| **2012-13** | **47** | **80** | **147** |
| **2013-14** | **97** | **79** | **119** |
| **2014-15** | **74** | **63** | **104** |
| **2015-16** | **67** | **68** | **86** |
| **2016-17** | **75** | **79** | **132** |
| **2017-18** | **93** | **84** | **109** |
| **2018-19** | **67** | **93** | **133** |

|  |  |  |  |
| --- | --- | --- | --- |
| **2019-20** | **100** | **91** | **112** |
| **2020-21** | **102** | **102** | **126** |
| **2021-22** | **101** | **118** | **130** |

**Note: Here you are advised to use Software like EXCEL for making Graphs, copy them and paste in your assignment file. Snapshots are not allowed.**

**Ans—3 (a)**

|  |  |  |
| --- | --- | --- |
| Year  | Year  | Groundnut (Lakh Tonnes)  |
| 2000-01  | 2000.5 | 64 |
| 2001-02  | 2001.5 | 70 |
| 2002-03  | 2002.5 | 41 |
| 2003-04  | 2003.5 | 81 |
| 2004-05  | 2004.5 | 68 |
| 2005-06  | 2005.5 | 80 |
| 2006-07  | 2006.5 | 49 |
| 2007-08  | 2007.5 | 92 |
| 2008-09  | 2008.5 | 72 |
| 2009-10  | 2009.5 | 54 |
| 2010-11  | 2010.5 | 83 |
| 2011-12  | 2011.5 | 70 |
| 2012-13  | 2012.5 | 47 |
| 2013-14  | 2013.5 | 97 |
| 2014-15  | 2014.5 | 74 |
| 2015-16  | 2015.5 | 67 |
| 2016-17  | 2016.5 | 75 |
| 2017-18  | 2017.5 | 93 |
| 2018-19  | 2018.5 | 67 |
| 2019-20  | 2019.5 | 100 |
| 2020-21  | 2020.5 | 102 |
| 2021-22  | 2021.5 | 101 |

**Q3.b) Write the sampling plan for the following study. Also write, what is recommended according to you, census survey or sample Survey?**

**Imagine yourself doing PhD in NMIMS, for one of your research papers you do require a primary survey to understand the social media consumption of LinkedIn users. Your goal is to understand why they are using LinkedIn, for how many hours a day, and their activities they do on the same platform. You do have research questionnaire in your hand as per your proper literature study. Now, the question is about survey and data collection. (5 Marks)**

**Ans-3 (b)**

**Sampling Plan:**

**1. Population:**

The target population for this study is LinkedIn users.

Define the qualities of the population, such as specialists, students, work applicants, industry-specific teams, and so on

**2. Sampling Frame:**

Create a sampling frame by determining the source from which the sample will be drawn. This could be LinkedIn user teams, firm pages, schools, or other appropriate sources.