**Decision Science**

**December 2021 Examination**

**Q1. Calculate the probabilities for the following statements as per the given scenario and draw the probability tree diagram also (Note: This diagram can be prepared in MS-Paint or manually).**

**A study undertaken by the Rajan Supervisor of Elections in 2002 revealed that 44% of registered voters are ‘DharwadiYuth’, 37% are Rajmoti, and 19% are others. If two registered voters are selected at random, what is the probability that both of them have the same party affiliation? (10 Marks)**

**Ans 1.**

**Introduction**

Probability is a statistical concept that may be used to the job diffusion process. The feature may be utilized to predict arrangement progress or to choose new customer acquisition strategies from a predefined displaying framework. Probability is a term that refers to the danger of achieving a certain event that is not predetermined by a particular situation. Additionally, opportunity may be defined as the probability of an event happening divided by the expected consequences of the occurrence. Probability is decided for various affairs by setting every case into discrete, solitary Its Half solved only

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**Q 2. 2.Calculate the correlation between pairs (recommendedbelow) of the following variables and write interpretation for each correlation coefficient.(Note:Forthe followingpairs,correlationcanbecalculatedusingEXCEL.) (10Marks)**

**RecommendedPairs**:

**1. Correlationbetween‘numberoffemalemigrantsforwork/employment’v/s ‘Number**

**ofmalemigrantsforwork/employment**

**2.Correlationbetween‘numberoffemalemigrants \_ Education’v/s ‘Numberofmale migrants \_Education’**

**3.Correlationbetween‘numberoffemalemigrants \_Business’v/s ‘Numberofmale migrants \_Business’**

**4.Correlationbetween‘numberoffemalemigrants \_Marriage’v/s ‘Numberofmale**

**migrants \_marriage’**

**Table:Statetostatemigrationwithreasons of migrationas percensus 2011.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Work/employment** | **Business** | **Education** | **Marr iage** | **Work/employment** | **Business** | **Education** | **Marr iage** |
| **State****\_name** | **Females** | **Fem ales** | **Females** | **Females** | **Male** | **Male** | **Male** | **Male** |
| JAMMU&KASHMIR (01) | 4,911 | 495 | 1,085 | 43,130 | 22,716 | 1,985 | 1,762 | 1,372 |
| HIMACHA L PRADESH (02) | 13,938 | 493 | 3,200 | 1,08,153 | 95,255 | 3,188 | 5,647 | 1,932 |

**Ans 2.**

**Introduction**

The association coefficient is used by specialists to determine the strength and direction of the fast connection between two numerical additions. X and Y. For data visualization purposes, r denotes the connection coefficient. While the term "connection" may refer to any two related things, investigators prefer to use it in reference to two quantity components. The association coefficient is the appropriate word for connection. Various connection metrics were developed;

**Q 3:From the following uniformly distributed data scene calculate the probability w.r.t statement.**

**The weekly output of a steel mill is a uniformly distributed random variable that lies between 110 and 175 metric tons.**

**1. Compute the probability that the steel mill will produce more than 150 metric tons next week.**

**2. Determine the probability that the steel mill will produce between 120 and 160 metric tons**

**Ans 3.**

**Introduction**

The uniform apportionment is a statistical scattering that can be applied over a wide variety of occasions. It is based on an average of occasions that may be comparably inclined to occur. While running out of worries that are distributed uniformly over the system, don't forget to

**Conclusion**

Each essential is free since the outcome of the previous toss does no longer select or affects the development of the current toss. A binomial check has just possible results and is performed n times. A binomial movement's limitations are n and p, where n is the endless number of stars and p is the probability of success in every primer.

**Q. 3b. Draw the histogram separately (for Person, male and female) and write the interpretation.**

**The following table shows the age group-wise total number of Migrants as per census 2011.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Age Group** | **Total number of Migrant****persons** | **Total number of Migrant****Males** | **Total number of Migrant****Females** |
| **0-4** | **1,89,62,713** | **98,34,738** | **91,27,975** |
| **5-9** | **2,09,17,565** | **1,09,59,506** | **99,58,059** |
| **10-14** | **2,38,76,335** | **1,24,25,108** | **1,14,51,227** |
| **15-19** | **2,92,02,399** | **1,26,83,733** | **1,65,18,666** |
| **20-24** | **4,68,55,749** | **1,31,97,283** | **3,36,58,466** |
| **25-29** | **5,05,67,231** | **1,30,45,214** | **3,75,22,017** |
| **30-34** | **4,64,20,105** | **1,21,34,009** | **3,42,86,096** |
| **35-39** | **4,51,14,917** | **1,20,60,030** | **3,30,54,887** |
| **40-44** | **3,81,61,379** | **1,09,00,143** | **2,72,61,236** |
| **45-49** | **3,31,51,742** | **97,04,026** | **2,34,47,716** |
| **50-54** | **2,57,83,138** | **79,40,152** | **1,78,42,986** |
| **55-59** | **2,13,54,664** | **61,61,754** | **1,51,92,910** |
| **60-64** | **1,97,49,108** | **54,01,736** | **1,43,47,372** |
| **65-69** | **1,38,28,278** | **36,87,082** | **1,01,41,196** |
| **70-74** | **96,96,149** | **26,62,421** | **70,33,728** |
| **75-79** | **48,34,573** | **13,41,572** | **34,93,001** |
| **80+** | **57,14,991** | **14,61,296** | **42,53,695** |

***Source: D4 table, census 2011***

**Note: Here, Students may use EXCEL for the preparation of the Histogram.(5 Marks)**

**Ans 3b.**

**Histogram:** It is a graphical representation that categorizes information elements according to the consumer-specified levels. Although it resembles a bar graph, the histogram visualizes large data sets by dividing them into stages or bins. A histogram groups distinct findings into columns