UNIVERSITY OF RUHUNA
DEPARTMENT OF MATHEMATICS

Bachelor of Science (General) Degree (Level I)
MATHEMATICS
MAT113δ : INTRODUCTORY STATISTICS

Tutorial No.01 **Semester I, 2022**

Submit the answer sheets on or before 11/11/2022

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1. In a survey of 500 students of a college, it was found that 49% liked watching football, 53% liked watching hockey and 6% liked watching basketball. Also, 27% liked watching football and hockey both, 29% liked watching basketball and hockey both and 28% liked watching football and basket ball both. 5% liked watching none of these games. Make the Venn diagram as per the information given.

(i). How many students like watching all the three games?

(ii). Find the ratio of number of students who like watching only football to those who like watching only hockey.

(iii). Find the number of students who like watching only one of the three given games.

(iv). Find the number of students who like watching at least two of the given games.

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2. A box contains five green balls, three black balls, and seven red balls. Two balls are selected at random without replacement from the box. What is the probability that both balls are the same color?

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3. An Urn contains two coins of type A and one coin of type B. When a type A coin is flipped, it comes up heads with probability $1/4$ and when a type B coin is flipped, it comes up heads with probability $3/4$. A coin is randomly chosen from the urn and flipped. If the flip coin landed on heads,then find the probability that it was a type A coin?

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4. In a County, 51% of the adults are males. One adult is randomly selected for a survey involving credit card usage.

(i). Find the probability that the selected person is a male.

(ii). It is later learned that the selected survey subject was smoking a cigar. Also, 9.5% of males smoke cigars, whereas 1.7% of females smoke cigars. Use this additional information to find the probability that the selected subject is a male.

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5. An aircraft emergency locator transmitter (ELT) is a device designed to transmit a signal in the case of a crash. The Altigauge Manufacturing Company makes 80% of the ELTs, the Bryant Company makes 15% of them, and the Chartair Company makes the other 5%. The ELTs made by Altigauge have a 4% rate of defects, the Bryant ELTs have a 6% rate of defects, and the Chartair ELTs have a 9% rate of defects.

(i). If an ELT is randomly selected from the general population of all ELTs, find the probability that it was made by the Altigauge Manufacturing Company.

(ii). If a randomly selected ELT is then tested and is found to be defective, find the probability that it was made by the Altigauge Manufacturing Company

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