Ministry of Higher Education & Scientific Research
Salahaddin University-Erbil
College of Administration and Economics
Department: Statistical and Informatics
Stage: 2

Final Exam Second Semester: Second Trial
2020 – 2021

Subject: Probability Theory
Date: 19 / 6 / 2021
Time: 2 Hours

Q1/ Three unbiased dice are thrown write the columns of **sum** and **frequency** then find the probability of :

1- Sum of three dice **less than 8 ?** **2-** Sum of three dice **equal to 13 ?**

Q2/ A school employ **75** teachers. The following table summarizes their length of service at the school, classified by gender.

	Less than 3 years	3 years to 8 years	More than 8 years	Total
Female	**12**	**20**	**13**	**45**
Male	**8**	**15**	**7**	**30**
Total	**20**	**35**	**20**	**75**

If a teacher is selected at random find probability of :

1- the teacher is a female.

2- the teacher is female, **given that** the teacher has **More than 8 years** service.

3- Show that whether or not the event of **selecting a female teacher** is **independent** of the event of **selecting a teacher with less than 3 years** service.

Q3: **Urn A** contains **9** red marbles and **5** blue marbles, and **urn B** contains **6** red marbles and **8** blue marbles. **(1)** If **a marble** is drawn from **each urn**, what is the probability that they are **both of the same color**? **(2)** If **two marbles** are drawn from **each urn**, what is the probability that all **four marbles** are of the same color? **(3)** If we select a **Urn** at random and then draw a marble at random. What is the probability that a marble is **a red**?

Q4: We are given **two urns** as follows**:**

Urn A contains **7 red** and **5 white** balls, **Urn B** contains **4 red** and **6 white** balls. **An urn is selected** at random, **a ball** is drawn and **put into the other urn**, and then **a ball is drawn** from **the second urn**. Find the probability **that both balls drawn are of the same color.**

Good Luck

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