國立成功大學

112學年度碩士班招生考試試題

編　號：162

系　　所：自然災害減災及管理國際碩士學位學程

科　　目：統計學

日　　期：0206

節　　次：第 3 節

備　　註：不可使用計算機

※ 考生請注意：本試題不可使用計算機。　請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Given the probabilities of two events A and B, $P(A) = 3/4$ and $P(B) = 2/5$, please calculate $P(A|B)$ and $P(B|A)$ when the intersection probability $P(B \cap A)$ is 7/20. 【20%】

2. A flash flood with a peak discharge 120 m³/s was recorded and estimated as an event with the return period of 10 years. Please calculate the probability that a flood equal to or large than this discharge would happen every year in the following 12-year period. 【20%】

3. A set of 10-year rainfall data in CK watershed is listed below. The rainfall data fit a certain probability distribution function with a frequency factor $K = 0.45 + 1.2 \times (T - 1)/T$, where T is the return period. The standard deviation of the rainfall data in the following table is approximately 160 mm by estimation. Please calculate the rainfall pertaining to a return period of 8 years by using the frequency factor of the probability distribution function. 【30%】

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Rainfall (mm)	240	332	432	584	456	584	203	666	237	426

4. Please define or explain the following terms. 【30%】
   (1) Standard error.
   (2) Interquartile range.
   (3) Exceedance probability.
   (4) Probability density function.
   (5) Random experiment.
   (6) Null hypothesis.