**STA151 Assignment 1/Term test 4 due on Monday the 4th April 2020 at 9h00 30 Marks**

**1**. An experiment involves rolling a single balanced dice. Specify the outcomes in the following events:

1. A: Observed a 4 **(1)**
2. B: Observed an even number **(1)**
3. C: Observed a number less than 3 **(1)**
4. D: Observed a number greater than 2 **(1)**

**2**. Determine the probabilities of events A, B, C, and D. **(2)**

**3**. Determine P(B or C) **(2)**

**4**. Determine P(A or C) **(2)**

**5**. Determine P(B or D) **(2)**

**6**. An investor is concerned about the market return for the coming year, where the market return is defined as the percentage gain over the year. There are five possible economic scenarios in the coming year and the investor estimated that the market returns for these scenarios are respectively: 0-<3%; 3-9%; 9-<15%; 15-<18% and 18-<23%. The probabilities of these outcomes are given in the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Return | 0-<3% | 3-9% | 9-<15% | 15-<18% | 18-<23% |
| Probability | 0.08 | 0.15 | 0.25 | 0.4 | 0.12 |

**6.**1What is the probability that the market return will be less than 9%? **(2)**

**6.2** What is the probability that the market return will be 3% or more, but less than 15%? **(2)**

**6.3** What is the probability that the market return will not be in the interval 9% to less than 15%? **(2)**

**7**. In a group of 50 people, 15 have invested in stocks and bonds. Find the probability that a randomly selected person from this group has invested in stocks and bonds **(2)**

**8**. Given that P(A)=0,02; P(B)=0,01 where events are independents; What is the P(A and B)? Assuming that the events above are not mutually exclusive: Determine: P(A or B) **(2)**

**9**. How many ways can four letters  and  be arranged in order taken two at a time? What can be the sample space? **(2)**

**10.** A bowl contains 10 red, 4 blue, 8 yellow and 6 green marbles. Find the number of ways 2 red, 1 blue, 2 yellow and 3 green marbles can be selected **(2)**

**11**. In how many ways can 10 people be seated on a bench if only four seats are available and order is important **(2).**

**12**. At a certain newspaper, 40% of the employees are journalists, 24% of the employees are women and 18% of the employees are female journalists. If an employees is selected at random, what is the probability that the employee is a journalist, given that the employee is female? **(2).**