**Name:**

**Resource Rich Section**

TIME ALLOWED: 30 min Total marks: 27

**Question 7: [3 marks: 1, 1, 1]**

A study of 211 people was done to determine whether gender was independent of chocolate bar consumption on a particular weekend. The results are shown in the table below. What is the probability that a person chosen at random was:

|  |  |  |  |
| --- | --- | --- | --- |
| No. of Choc Bars eaten | Male | Female | TOTAL |
| 0 | 45 | 33 | 78 |
| 1 | 38 | 21 | 59 |
| 2 | 25 | 18 | 43 |
| 3 | 14 | 9 | 23 |
| 4 | 6 | 2 | 8 |
| TOTAL | 128 | 83 | 211 |

a) a person that ate 2 or less chocolate bars?

b) a person that ate 2 or less chocolate bars given that they were male?

c) The study was expanded to include 2000 people. Estimate how many of those did not eat any chocolate bars, based on the table of data above.

**Question 8: [4 marks: 1, 1, 2]**

The probability of Alex achieving an A grade in Maths, Physics and Chemistry are 0.2, 0.3 and 0.9 respectively. If the grades are independent events determine the probability that Alex receives:

a) all A grades

b) no A grades

c) exactly 2 A grade

**Question 9: [6 marks: 3, 1, 1, 1]**

A bag contains 12 marbles; 5 red and 7 blue.

a) Draw a probability tree for taking 2 marbles from the bag without replacement.

b) What is the probability of two reds?

c) What is the probability that the two marbles are not the same colour?

d) What is the probability that the two marbles are the same colour?

**Question 10: [5 marks: 2, 2, 1]**

|  |  |
| --- | --- |
|  | Given ,  and , |
| **a)** | 1. find |
| **b)** | 1. find |
| **c)** | 1. Are events A and B independent? (Justify your answer) |
|  |  |

**Question 11: [2 marks: 1, 1]**

Find the number of different four-digit numbers that can be formed from the digits 1, 2, 3, 4, 5, 6, 7, 8, 9, if each digit:

1. can only be used once
2. can be used more than once

**Question 12: [7 marks: 1, 2, 2, 2]**

|  |  |
| --- | --- |
|  | Fourteen girls and seven boys are applying for five student council positions. Determine how many ways the council positions can be filled if: |
| * 1. **a)** | 1. there are no restrictions |
| * 1. **b)** | 1. three girls and two boys are selected |
| * 1. **c)** | 1. at least four girls are selected |
| * 1. **d)** | 1. at least one girl and one boy are selected. |

**End of Test**