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**MATHEMATICS  
Methods Units 1 & 2**

**Test 5 – Counting Techniques, Sets and Probability**

**Chapter 15, 16 and 17**

**Semester 1 2019**

**Section One - Calculator Free**

Time allowed for this section

Working time for this section: 26 minutes

Marks available: 26 marks

## Material required/recommended for this section

##### To be provided by the supervisor

This Question/Answer booklet

Formula sheet

##### To be provided by the students

Standard items: pens, pencils, pencil sharpener, eraser, correction fluid, ruler, highlighters

Special items: Nil

## Important note to students

No other items may be used in this section of the assessment. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the assessment room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

1. (4 marks: 2, 2)  
   Clearly shade the region indicated by,





1. (2 marks)

Use set notation to describe the shaded region represented in the Venn Diagram below.



1. (4 marks)

Sets A and B are such that and If there are 39 elements in the Universal Set, construct a Venn Diagram that represents this information.

1. (4 marks: 2, 2)

An experiment consists of drawing a number at random from . Let , and .

* 1. Are Set A and Set B mutually exclusive? Explain
  2. Are Set B and Set C mutually exclusive? Explain

1. (2 marks)

If , and , without calculating, show .

1. (5 marks: 2, 3)

Three students are to be chosen to represent the class in a debate. If the class consists of six boys and four girls, what is the probability that the team will contain,

1. exactly one girl?
2. at least two girls?
3. (5 marks: 1, 2, 2)

Samantha has a collection of 18 fluoro pens in her pink box and 24 fluoro pens in her blue box. Write mathematical expressions for the number of ways Amy can pick:

1. three pens from her pink box.
2. three pens from the pink box and four pens from the blue box.
3. a dozen pens from both boxes.

**End of Section One**