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**MATHEMATICS  
Methods Units 1 & 2**

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

**Chapter 15, 16 and 17**

**Semester 1 2019**

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**Section Two - Calculator Assumed**

Time allowed for this section

Working time for this section: 28 minutes

Marks available: 28 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: drawing instruments, templates, notes on one unfolded sheet of A4 paper, and up to three calculators satisfying the conditions set by the Curriculum Council for this course.

## 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. (8 marks: 2, 2, 2, 2)

The Mathematics Department at a school conducted a random survey involving 200 senior students.

* 38 students did not have any calculator with them
* 142 students has a ClassPad with them
* 52 students had a scientific calculator with them

Use a Venn Diagram, or other method, to answer the following questions.

1. Find the probability that a student chosen at random had only a ClassPad.
2. Find the probability that a student chosen at random had both a ClassPad calculator as well as a scientific calculator.
3. Find the probability that a student chosen at random had either a ClassPad calculator as well as a scientific calculator.
4. Find the probability that a student selected from those who had at least one type of calculator, had both types of calculator.
5. (15 marks: 1, 3, 3, 4, 4)

Consider the digits 0 to 9 inclusive and all the letters of the alphabet. Ten characters consisting of digits and letters are chosen. Determine the number of ways of choosing:

1. all the even numbers and all the vowels.
2. any six digits and any four letters.
3. exactly four vowels.
4. at least four odd digits.
5. Four vowels or four odd digits.
6. (5 marks: 3, 2)

Given that , and ,

* 1. calculate
  2. determine, with reasons, if the events A and B are independent.

**End of Test**