## ­ST ALOYSIUS’ COLLEGE



## Year 10 Mathematics Stage 5.3

**Assessment 29th March 2018**

### Time allowed: 50 minutes

Name:

Teacher: KCH, MCR, PLU, KAU

Instructions:

* Answer in booklets provided.
* Number your answers and working clearly.
* Approved calculators may be used.
* Begin each section in a new booklet.

**TOTAL MARKS: 36**

**SECTION I:** To be completed in **Booklet 1** 16 Marks

**Multiple Choice:** Questions 1 to 3 (3 marks, 1 mark each)

* Write the letter matching the best answer.
* You may also write working but only the letter matching your response will be marked.

1. Which of the following is equivalent to (2 × 104) cm?

(A) 2000 mm (B) 200 m (C) 20 m (D) 2 km

**2.** A sphere has a volume of 360 cm3. What is its radius (correct to one decimal place)?

(A) 9.3 cm (B) 8.1 cm (C) 4.4 cm (D) 1.7 cm

**3.** The cylinder shown has a height of 10 cm. Its diameter is twice its height.

10 cm

NOT TO SCALE

What is the volume of the cylinder?

(A) 4000π cm3 (B) 1000π cm3 (C) 250π cm3 (D) 200π cm3

**Extended Response:** Questions 4 to 7(13 marks)

* Continue working in Booklet 1.
* Marks for each question are indicated to the right.
* All necessary working is to be shown.
* Marks may be deducted for careless or poorly arranged work.

**4.** How many square millimetres are there in 0.023 square metres?  **1**

**5.** The diagonal of a square is 12 cm long. What is the exact area of the square? **1**

**6.** Consider the square pyramid below with base length 5 cm and height 6 cm.

5 cm

6 cm

*x* cm

NOT TO SCALE

(a) Use Pythagoras’ Theorem to show that the slant height, *x*, is 6.5 cm. **1**

(b) Hence or otherwise, find the:

i. total surface area of the pyramid. **2**

ii. volume of the smallest prism, of the same base area and **2**  
 perpendicular height that could contain the pyramid.

**7.** The steel half cylinder part illustrated below belongs to an industrial sorting-machine.

8 cm

16 cm

9 cm

NOT TO SCALE

1. Find the exact volume of steel needed to make this part. **3**
2. The part is to be silver-plated. Calculate the total surface area of **3**  
   the part correct to the nearest square centimetre.

***Start a New Booklet***

**SECTION II:** To be completed in **Booklet 2** 20 Marks

**Multiple Choice:** Questions 8 to 11(4 marks, 1 mark each)

* Write the letter matching the best answer.
* You may also write working but only the letter matching your response will be marked.

**8.** Simplify 

(A)  (B) 

(C)  (D) 

**9.** Which expression below is equivalent to ?

(A)  (B)  (C)  (D) 

**10.** Write  in simplest form, without negative indices.

(A)  (B)  (C)  (D) 

**11.** Simplify 

(A)  (B)  (C)  (D) 

**Extended Response:** Questions 12 to 16(16 marks)

* Continue working in Booklet 2.
* Marks for each question are indicated to the right.
* All necessary working is to be shown.
* Marks may be deducted for careless or poorly arranged work.

**12.** Simplify the following:

(a)   **1**

(b)   **1**

(c)   **1**

(d)   **1**

(e)   **1**

(f)   **1**

**13.** Find the value of *x* if  **2**

**14.** Simplify ****, giving your answer without negative indices. **2**

**15.** What are the values of *x* and *y* if  ? **3**

**16.** If , what is the value of *x*? **3**

**END OF ASSESSMENT**