### 2018-2019 S4 1st TERM EXAM-MATH-CP 1

18-19 F.4 1<sup>st</sup> TERM EXAM MATH CP PAPER 1

> 2018 – 2019 Form 4 1<sup>st</sup> Term Examination

## **MATHEMATICS Compulsory Part**

# PAPER 1

### **Question-Answer Book**

4<sup>th</sup> January, 2019. 8:15 a.m. – 9:15 a.m. (1 hour) **This paper must be answered in English.** 

#### INSTRUCTIONS

- 1. Write your name, class and class number in the spaces provided on this cover.
- This paper consists of THREE sections, A(1), A(2) and B.
- 3. Attempt ALL questions in this paper. Write your answers in the spaces provided in this Question-Answer Book. Do not write in the margins. Answers written in the margins will not be marked.
- 4. Unless otherwise specified, all working must be clearly shown.
- Unless otherwise specified, numerical answers should be either exact or correct to 3 significant figures.
- 6. The diagrams in this paper are not necessarily drawn to scale.



Section	Marks
A (1 – 2)	
A (3 – 8)	
A Total	/ 35
B Total	/ 15
TOTAL	/ 50

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Section A(1) (16 marks)  $\frac{ab^{-1}}{a^{-2}(3b^{4})^{3}}$  and express your answer with positive indices. 1. Simplify -(3 marks) Make x the subject of the formula (2-x)(2-y) = x. (3 marks) 2. Simplify  $\frac{6}{\sqrt{12}} - \sqrt{75} + 7\sqrt{3}$ . 3. (3 marks)

Answers written in the margins will not be marked. 18-19 F.4 1<sup>st</sup> TERM EXAM-MATH-CP 1- 2

Solve the quadratic equation  $4x^2 - 5 = x(x+6)$  and express your answers in surd form if 4. necessary. (3 marks) (a) Factorize  $9x^2 - y^2$ . 5. **(b)** Simplify  $\frac{2x+y}{3x-y} + \frac{2y(y-8x)}{9x^2-y^2}$ (4 marks)

#### Section A(2) (19 marks)

- Let  $f(x) = 2x^3 + ax^2 5x + b$ . When f(x) is divided by x 2, the remainder is 12. 6. f(x) is divisible by x+1. (4 marks)
  - (a) Find the values of a and b.
  - (b) Factorize f(x) completely.
    - (c) It is given that  $g(x) = 6x^3 5x^2 + kx + 3$ , where k is an integer. Is it possible that

f(x) and g(x) have two common linear factors? If possible, factorize g(x)completely. (3 marks)

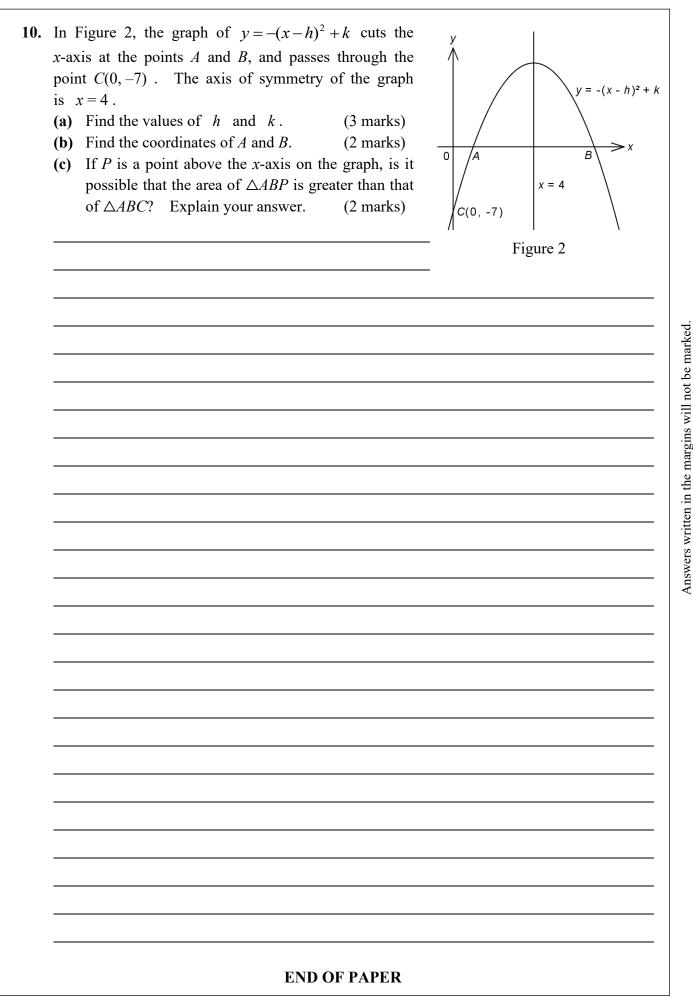
(2 marks)

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$L_2$ intersec	gure, two straight lines t at $A(2, a)$ . $L_1$ is perpe		(2, a)
	-1. The values of $k$ and $a$ . The equation of $L_2$ .	(3 marks) (2 marks)	$L_1: y = 2x + k$
			<u> </u>
			Figure 1

(a) (b)	Find the value of $k$ . Bowie claims that $f(g(0)) = g(f(0))$	)). Do you agree?	(3 1 Explain your answer.
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<ul> <li>Section B (15 marks)</li> <li>9. The quadratic equation x<sup>2</sup> - (2k + 3)x + k<sup>2</sup> = 0 has real roots.</li> <li>(a) Find the range of values of k.</li> <li>(b) Let α and β be the roots of the equation.</li> <li>(i) Express the value of α<sup>2</sup> + β<sup>2</sup> in terms of k.</li> </ul>	(3 marks)
(ii) If $k = 3$ , form a quadratic equation in x with roots $\alpha^2$ a	and $\beta^2$ . (5 marks)



Answers written in the margins will not be marked. 18-19 F.4 1<sup>st</sup> TERM EXAM-MATH-CP 1- 8