2021-2022-S4 2nd TERM EXAM-MATH-CP 1

2021-2022 S4 2nd TERM EXAM MATH CP PAPER 1

> 2021 – 2022 S4 Second Term Examination

MATHEMATICS Compulsory Part

PAPER 1

Question–Answer Book

20th June, 2022 8:15 am – 9:45 am (1 hour 30 minutes) **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.
- 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.
- 5. 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.



Sections	Marks
A (1 – 4)	
A (5 – 10)	
A Total	/44
B Total	/26
TOTAL	/70

Section A(1) (21 marks) Simplify $\frac{(5x^{-3}y)^3}{(x^0y^2)^2}$ and express your answer with positive indices. 1. (3 marks) (a) Factorize $m^2 - 3m - 4$. 2. (b) Hence, factorize $m^2 - 3m - 4 + mn^2 - 4n^2$. (3 marks) Make x the subject of the formula $y = \frac{4x-1}{3x}$. (3 marks) 3.

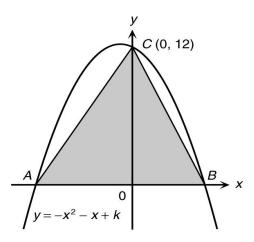
(a)	from this month. Find the amount earned by Mr. Chan next month.	
(a) (b)	Find the overall percentage change in the amount earned by Mr. Chan from last	mon
(0)	next month.	,
	((4 mai
	given that $g(x) = \frac{x}{ax+5}$ and $g(3) = -3$, where <i>a</i> is a constant.	
(a)	Find the value of a . Hence, find the value of $g(-2)+2g(5)$.	(4 mai
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Answers written in the margins will not be marked

6.	In the figure, <i>DB</i> is a diameter of the circle, $\angle DAC = 65^{\circ}$ and $\angle ABD = 32^{\circ}$. Find x and y. (4 marks)
	A 65° X 32° V C B

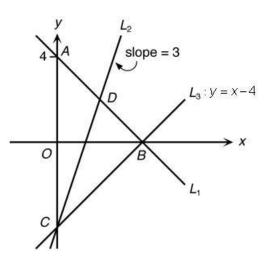
Section A(2) (23 marks)

7. The figure shows the graph of $y = -x^2 - x + k$. It cuts the x-axis at two points A and B, and cuts the y-axis at the point C(0, 12).



Find (a) the value of k, (2 marks) (b) the coordinates of A and B, (3 marks) (c) the area of $\triangle ABC$. (2 marks)

8. In the figure, the straight line L_1 cuts the *y*-axis at A(0, 4) and the *x*-axis at *B*. The straight line L_2 cut the *y*-axis at *C* and has slope 3. The straight line L_3 : y = x - 4 passes through *B* and *C*. L_1 and L_2 intersect at *D*.



(a) Find the x-intercept and the y-intercept of L_3 .(2 marks)(b) Find the equations of L_1 and L_2 .(3 marks)(c) Find the coordinates of D.(1 mark)(d) Find the area of ΔBCD .(3 marks)

Answers written in the margins will not be marked

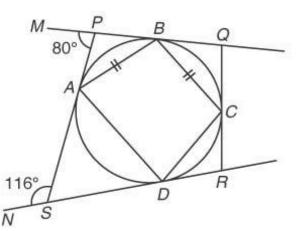
Answers written in the margins will not be marked

 a) Find the values of a and b. b) Factorize f(x). 		(4 marl (3 marl

9.

11. Solve the simultaneous equations $\begin{cases} 6^{2x-y} = \frac{1}{36} \\ 4(2^{y-2y}) = 32 \end{cases}$ (5 m	10. S	Solve the logarithmic equation log	$g_3(x+1) - \log_3(2x-3) = 2$.	(4 marks
1. Solve the simultaneous equations $\begin{cases} 6^{2x-y} = \frac{1}{36} \\ 4(2^{x-2y}) = 32 \end{cases}$ (5 m				
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	1. S	Solve the simultaneous equations	$\begin{cases} 6^{2x-y} = \frac{1}{36} \end{cases}$	(5 marks
			$4(2^{x-2y}) = 32$	

12. In the figure, the circle touches the quadrilateral *PQRS* at the points *A*, *B*, *C* and *D*. *MPBQ* and *NSDR* are straight lines. $\angle APM = 80^\circ$, $\angle ASN = 116^\circ$ and BA = BC.



(a) Find $\angle SAD$.	(2 marks)
(b) Hence or otherwise, find $\angle BAD$.	(3 marks)
(c) Find $\angle ADC$.	(3 marks)
(d) Is <i>PQRS</i> a cyclic quadrilateral? Explain your answer.	(3 marks)

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13.		2+i		marks)
	(b)	Let $z = \frac{4+i}{2+i}(p-2i)$, where p is a real number. If the real part of z is equal	to	2 <i>p</i> -1,
				narks)
		END OF PAPER		