Name: ______ Class: _____ No. : _____

FUKIEN SECONDARY SCHOOL S1 First Term Examination (2020-2021) Mathematics (1 hour 30 minutes)

Date: 6th January 2021 Time: 10:00 a.m. - 11:30 a.m.

Instructions to students:

- This paper consists of THREE parts, Conventional Questions, Multiple-choice Questions and Bonus Question. There are Section A and Section B in Conventional Questions. Section A carries 61 marks, Section B carries 19 marks, Multiple-choice Questions carry 20 marks and Bonus Question carries 4 marks.
- 2. The maximum score of this paper is 100.
- 3. Attempt ALL questions in Conventional Questions and Multiple-choice Questions. Write your answers in the spaces provided in this Question / Answer Book.
- 4. Unless otherwise specified, show your workings clearly.
- 5. Unless otherwise specified, numerical answers should be exact.
- 6. The diagrams in this paper are not necessarily drawn to scale.

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Co	nvent	ional Questions					
Sec	tion A	A (61 marks)					
1.	Find	the H.C.F. of 96 and 120 by	using prime factoriz	zation			
							(3 marks)
2	F 1						
2.	Eval	uate each of the following. (12)		(1.)			
	(a)	$(+13) - (-98) \div (-7)$		(b)	(-3.5)[(-2.2) - (-2.8)]		
		(5) + (7)(+21)			$\begin{pmatrix} 2 \end{pmatrix} \begin{pmatrix} 1 \end{pmatrix} \begin{pmatrix} 2 \end{pmatrix}$)	
	(c)	$\frac{(-3)+(-7)(+21)}{(-8)}+(+8)$		(d)	$\left(-\frac{3}{2}\right)\times\left(+1\frac{1}{7}\right)\div\left(-2\frac{2}{5}\right)$	<u> </u>	
		())	(8 marks)
							(o marks)
						·	

3. Simplify the following algebraic expressions.

.....

(a) (8+3y-6x)-(7x+4-5y)

(c)
$$(-6u^2v^3) \times 7u^4v^5$$

(e)
$$\left(-\frac{2p^8}{q^9}\right)^4$$

(b)
$$2n + 2n^3 + 5n - 4n^2 - n^3 + n^2$$

(d) $\frac{18m^9n^{12}}{8m^{11}n}$

 $(2x - 5y)^2$

(10 marks)

- 4. Expand and simplify the following algebraic expressions.
 - (a) (x-3)(x+2) (b)
 - (c) 10 (7x 9)(5 6x)

(6 marks)

5.	Consider the formula $P = 3a^2 - 2bc$. If $a =$	-4, $b = 3$ and $c = -2$, find the value of P .	
			(3 marks)
6.	Solve the following equations.		
	(a) $20 - 3s = -7$	(b) $5p - 12 = 4p + 8 - 9p$	
	(-) 2(4 2) 2(1 2) 12	(1) $2n-1$ $1-3n$ $-7n$	
	(c) $2(4x-3) - 3(1-2x) = 12$	(d) $-\frac{3}{3} - \frac{2}{2} = \frac{6}{6}$	
			(8 marks)
			´

- 7. Write down the missing terms of the following sequences.
- (a) 3, -6, 12, -24, ____, ... (b) -9, -1, 7, 15, ____, ... (c) 4.5, ____, 0.5, $\frac{1}{6}$, $\frac{1}{18}$, ... (d) 4,9,16,____, 36, ... (4 marks) 8. Round up 135.49 to the nearest ten. (a) Round down 2.855 to 1 decimal place. (b) Round off 0.0356 to 2 significant figures. (c) (3 marks) 9. Consider the polynomial 9x + 5xy + 10yx - 12 - 4x, write down the number of terms, (a) (b) the constant term, all the like terms. (c) (4 marks) _____ 10. Consider the polynomial $9y^2 + 4x^2 - 16xy^4 + 7y - 12y^3$, write down the degree of the polynomial, (a) (b) arrange the terms of the polynomial in ascending powers of y. (2 marks)

11. There are some \$10 coins and \$2 coins inside a bag. The total number of coins is 13. If the value of the coins in the bag is \$58, find the number of \$2 coins.

(4 marks) _____ 12. Eight students want to buy a Christmas tree to decorate their classroom. They have \$32.4, \$18.3, \$12.6, \$8.8, \$9.5, \$20, \$11.7 and \$4.5. (a) Estimate the total amount they have by rounding down each amount to the nearest dollar, (i) (ii) rounding up each amount to the nearest dollar. (b) Using the result of (a), explain if they have enough money to buy the Christmas tree which costs \$110. (6 marks) _____

Section B (19 marks)

13. Figure 1 shows a trapezium.

- (a) Express the perimeter in terms of *y*. (Simplify your answer.)
- (b) It is given that the height and area of trapezium is 12 and 156 respectively.
 - (i) Find the value of *y*.
 - (ii) Find the perimeter of the trapezium.



(7 marks)

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14.	Jasc	n's age is one-fourth of his father's age now. 28 years later, Jason's age will be	e three-fifths of his					
	father's age.							
	(a)	Find the present age of Jason.						
	(b)	How old was Jason when his age was one-ninth of his father's age?						
			(7 marks)					
			(, marks)					

- 15. Consider the polynomial $(2y + 5)(3ky^3 k y^2)$, where k is an integer.
 - (a) Expand the polynomial.
 - (b) Arrange the terms of the polynomial in descending powers of *y*.
 - (c) If y = -1, the value of the polynomial is 33. Find the value of k.

(5 marks)

Multiple-choice Questions (20 marks)

Write down the correct answers in the boxes.

16	17	18	19	20	21	22	23	24	25

16. The L.C.M. of 48, 54, 72 is

- A. 6.
- B. 145.
- C. 216.
- D. 432.
- 17. Which of the following integers is divisible by both 6 and 8?
 - A. 214 096
 - B. 457 136
 - C. 698 514
 - D. 802 776
- 18. In Figure 2, A, B and C are three directed numbers represented on a number line.

$$\underbrace{\begin{array}{cccc} A & B & C \\ & \times & + & \times & \\ & 0 \\ & & \\ &$$

Which of the results of the following expressions are negative?

- I. $(C-A) \times B$
- II. $A \times B C$
- III. $(B-C) \div (A+B)$
- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

19. Arrange the following numbers in descending order.

$$-0.5, 1.2, -\frac{7}{2}, -2.7, \frac{3}{2}$$
A. $-\frac{7}{2}, -2.7, -0.5, 1.2, \frac{3}{2}$
B. $-\frac{7}{2}, -2.7, \frac{3}{2}, 1.2, -0.5$
C. $-0.5, 1.2, -2.7, \frac{3}{2}, -\frac{7}{2}$
D. $\frac{3}{2}, 1.2, -0.5, -2.7, -\frac{7}{2}$

20. The general term a_n of a sequence is given by $a_n = n^2 - n + 4$. Find the 5th term of the sequence.

- A. 5
- B. 9
- C. 24
- D. 25

21. Which of the following equations have the same solution?

$$I. \qquad 4x - 5 = 6x + 7$$

II.
$$4(x-5) = 6(x+7)$$

III.
$$\frac{x+7}{4} - \frac{x-5}{6} = 0$$

- A. I and II only
- B. I and III only
- C. II and III only
- D. None of them have the same solution.

- 22. The prices of five gold rings are \$3450, \$8320, \$6280, \$2540 and \$5660. Estimate the average price of the rings by rounding off each price to 2 significant figures.
 - A. \$5200
 - B. \$5260
 - C. \$5300
 - D. \$5340
- 23. To give the approximate value 6 000, how many significant figures should the value 5 989 be rounded off to?
 - I. 1
 - II. 2
 - III. 3
 - A. I only
 - B. II only
 - C. I or II only
 - D. I, II or III
- 24. In a convenience shop, a bottle of drink costs (20 3x) and a news magazine costs 6x. Derek pays (7x + 54) for two bottles of drink and a news magazine. Find the change that Derek gets.
 - A. (34 2x)
 - B. (7x + 14)
 - C. (7x + 94)
 - D. (13x + 14)
- 25. Which of the following is/are true?
 - I. $8^6 = 8^2 \times 8^3$
 - II. $2^8 \div 2^4 = 2^4$
 - III. $(5^m)^n = (5^n)^m$
 - A. III only
 - B. I and II only
 - C. II and III only
 - D. I, II and III

Bonus Question (4 marks)

26. Let *n* be a positive integer. If the L.C.M. of 324 and *n* is 6480, find the sum of all possible values of *n*.

(4 marks)

END OF PAPER