SCHOLARSHIP EXAMINATION

MATHEMATICS

2022

Time: 1 hour

Name: …….

School: …….

Non Calculator

Total Marks 55

1. Without a calculator, work out

57×5.3

(Total for Question 1 is 2 marks)

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2. Find the answers to these. Give the answer as a mixed number or as a fraction in its simplest form.

a) $2\frac{2}{3} \div 1\frac{2}{7} =$

(2)

b) $\frac{1}{7}\left(\frac{1}{3} - \frac{1}{4}\right)^2 =$

(3)

(Total for Question 2 is 5 marks)

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3. Divide 84 in the ratio 2:4:6

.....

(2)

(Total for Question 3 is 2 marks)

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4. Write 96 as a product of its prime factors using indices.

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(Total for Question 4 is 3 marks)

5. Write the following decimals as fractions in their lowest terms:

(i) 0.048

(ii) 0.12

(4)

(Total for Question 5 is 4 marks)

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6. The cost of an iPhone is increased by 25%. By what percentage must it be reduced in order for the price to be brought back to the original price?

(Total for Question 6 is 2 marks)

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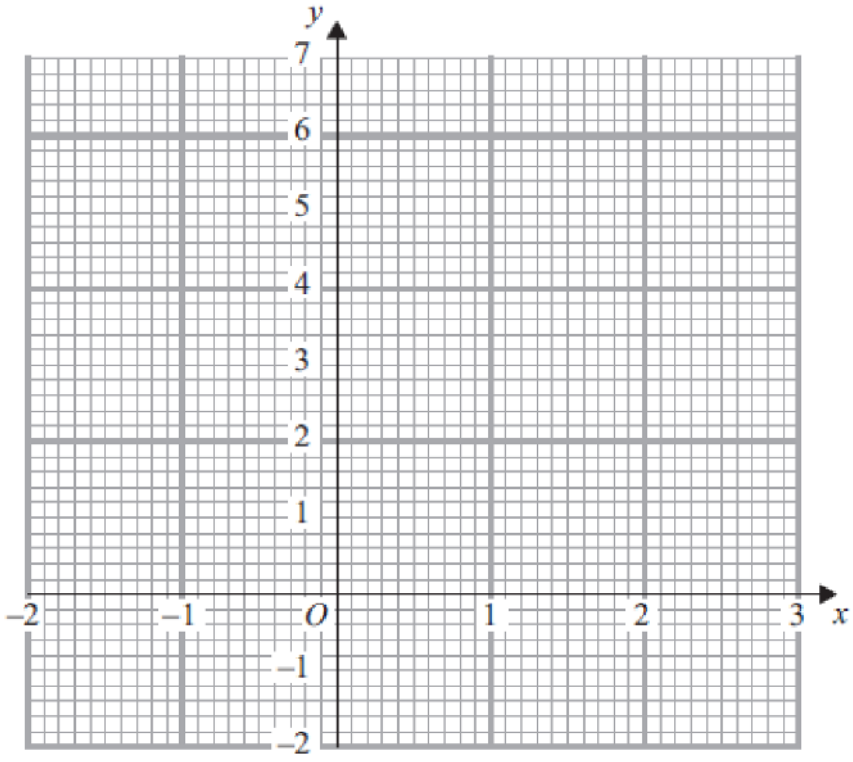
7. (a) Complete the table of values for $3x + 2y = 6$

x	–2	–1	0	1	2	3
y			3			

(3)

(b) On the grid, draw the graph of $3x + 2y = 6$



(2)

(Total for Question 7 is 5 marks)

8 (a) Solve $7(2x + 1) - 2(6x - 7) = 28$

t = ...

(2)

(b) Expand and simplify $2(a - 5b) - 3(2a - 7b)$

.....

(2)

(Total for Question 8 is 4 marks)

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9. Solve the simultaneous equations

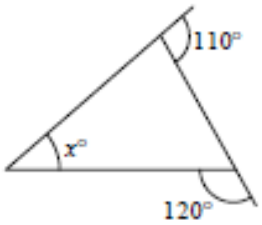
$$2x + y = 3$$

$$2x - 3y = 31$$

x = ..., y = ...

(Total for Question 9 is 4 marks)

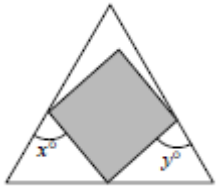
10. What is the value of x in this triangle?



(Total for Question 10 is 2 marks)

11. The diagram shows a square inside an equilateral triangle.

What is the value of x + y ?



(Total for Question 11 is 3 marks)

12. $y = a^2 - 3bx$

$a = -3$
$b = -2$
$x = -5$

(a) Work out the value of y.

.....

(3)

(Total for Question 12 is 3 marks)

13. $-3 \times n/2 < 2$

n is an integer.

(a) Write down all the possible values of *n*.

.....

(2)

(b) What is the maximum value of n^2

.....

(1)

(Total for Question 13 is 3 marks)

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14. (a) Simplify $a^3 \times a^4$

.....

(1)

(b) Evaluate $\frac{5^5}{5^3}$

.....

(1)

(Total for Question 14 is 2 marks)

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15. Evaluate the following expressions and then rank them in order of size, smallest to largest.

A $\frac{2}{3} + \frac{4}{5}$ B $\frac{2}{3} \times \frac{4}{5}$ C $\frac{3}{2} + \frac{5}{4}$ D $\frac{2}{3} \div \frac{4}{5}$ E $\frac{3}{2} \times \frac{5}{4}$

.....

(4)

(Total for Question 15 is 4 marks)

16. (a) Expand $x(2x - 3)$

.....

(1)

(b) Factorise fully $4y - 2y^2$

.....

(2)

(c) Solve $4(7-x) = 18$

x = ...

(2)

(d) Solve the equation

$$\frac{1 - 2x}{5} = -2$$

(2)

(Total for Question 16 is 7 marks)