

2017 – 2018  
Form 4 Second Term Uniform Test

**MATHEMATICS**

**Question–Answer Book**

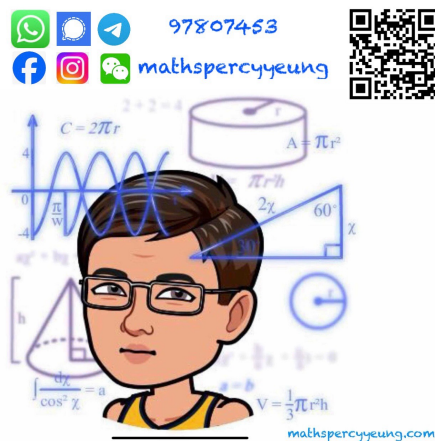
23<sup>rd</sup> April, 2018

8:15 am – 9:30 am (1 hour 15 minutes)

**This paper must be answered in English**

**INSTRUCTIONS**

- Write your name, class and class number in the spaces provided on this cover.
- Answer ALL questions in Section A. You are advised to use an HB pencil to mark all the answers on the Answer Sheet, so that wrong marks can be completely erased with a clean rubber. You must mark the answers clearly; otherwise you will lose marks if the answers cannot be captured. You should mark only ONE answer for each question. If you mark more than one answer, you will receive NO MARKS for that question.
- Attempt ALL questions in Sections B and C. Write your answers in the spaces provided in this Question – Answer Book.
- Unless otherwise specified, all working must be clearly shown and numerical answers should be either exact or correct to 3 significant figures.
- The diagrams in this paper are not necessarily drawn to scale.



Sections	Marks
<b>A Total</b>	<b>/26</b>
B (14 – 15)	
B (16 – 21)	
<b>B Total</b>	<b>/28</b>
<b>C Total</b>	<b>/14</b>
<b>TOTAL</b>	<b>/68</b>

**Section A (26 marks)**

**Choose the best answer for each question.**

1.  $(\sqrt[3]{x}\sqrt{y^3})^2 =$

A.  $x^{\frac{1}{6}}y^{\frac{3}{4}}$ .

B.  $x^{\frac{4}{3}}y^{\frac{3}{4}}$ .

C.  $x^{\frac{2}{3}}y^{\frac{3}{2}}$ .

D.  $x^{\frac{2}{3}}y^3$ .

2. Solve the equation  $3^{2x-1} - 6 = 75$ .

A.  $\frac{5}{2}$

B. 2

C. 13

D. 14

3. If  $x + x^{-1} = 7$ , then  $x^2 + x^{-2} =$

A. 25.

B. 27.

C. 47.

D. 49.

4. Which of the following **MUST** be true?

I.  $(\log a)^2 = 2 \log a$

II.  $\frac{\log a}{\log b} = \frac{a}{b}$

III.  $\log a = \log\left(\frac{a}{b}\right) + \log b$

A. I only

B. III only

C. I and II only

D. II and III only

5. If the straight lines  $L_1: 4x + ky - 12 = 0$  and  $L_2: 5x - y - 4 = 0$  intersect at the  $y$ -axis, find the value of  $k$ .

A. 3

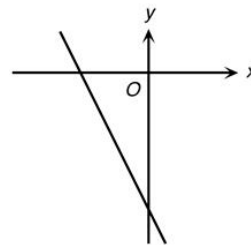
B. -1

C. -3

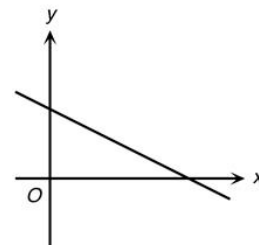
D. -4

6. If  $b > a > 0$  and  $c < 0$ , which of the following graphs may represent the straight line  $L: ax + by + c = 0$ ?

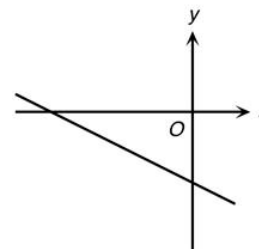
A.



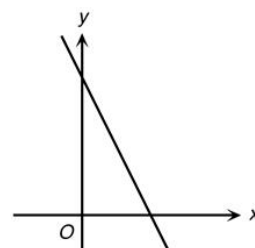
B.



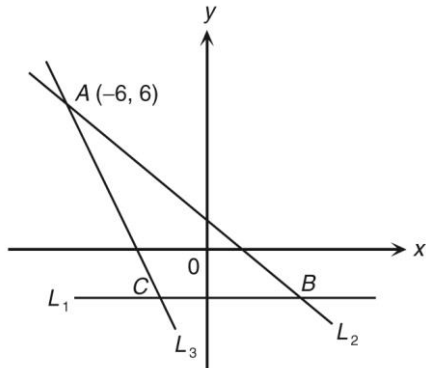
C.



D.



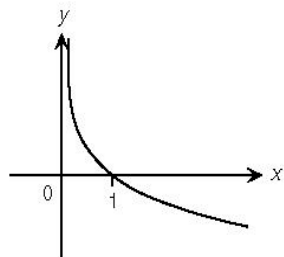
7. In the figure,  $A(-6, 6)$ ,  $B$  and  $C$  are the intersections of the straight lines  $L_1: y = -2$ ,  $L_2$  and  $L_3: 2x + y + 6 = 0$ . If the area of  $\triangle ABC$  is 24 sq. units, find the equation of  $L_2$ .



- A.  $4x + 5y - 6 = 0$   
 B.  $4x + 5y + 6 = 0$   
 C.  $5x - 4y - 6 = 0$   
 D.  $5x - 4y + 6 = 0$

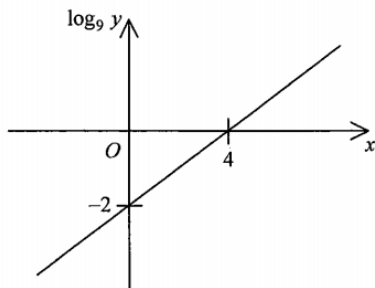
8. Which of the following functions can be represented by the graph shown below?

- A.  $y = 2^x$   
 B.  $y = \frac{1}{2^x}$   
 C.  $y = \log_2 x$   
 D.  $y = \log_{0.5} x$

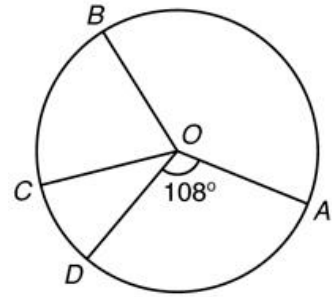


9. The graph in the figure shows the linear relation between  $x$  and  $\log_9 y$ . If  $y = ab^x$ , then  $b =$

- A.  $-2$ .  
 B.  $\frac{1}{81}$ .  
 C.  $\frac{1}{2}$ .  
 D.  $3$ .

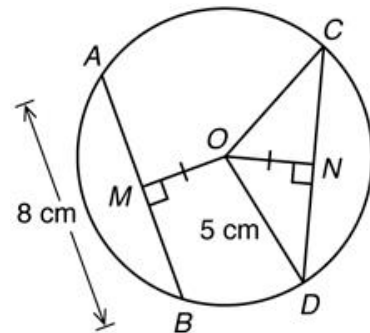


10. If  $AB:BC:CD = 4:2:1$  and  $\angle DOA = 108^\circ$ . Find  $\angle AOB$ .



- A.  $36^\circ$   
 B.  $72^\circ$   
 C.  $108^\circ$   
 D.  $144^\circ$

11. In the figure,  $OM = ON$ ,  $AMB$  and  $CND$  are straight lines.  $OM \perp AB$ ,  $ON \perp CD$ ,  $OD = 5$  cm and  $AB = 8$  cm. Find the area of  $\triangle ODC$ .



- A.  $12 \text{ cm}^2$   
 B.  $20 \text{ cm}^2$   
 C.  $24 \text{ cm}^2$   
 D.  $40 \text{ cm}^2$



16. Simplify  $\frac{\sqrt[3]{a^9b^3}}{a^{-2}b^4}$  and express your answer with positive indices. (3 marks)

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17. Find the equation of the straight line  $L$  with slope  $-2$  passes through the point  $A(3, -4)$ . (2 marks)

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18. Simplify  $\frac{\log x^2 - \log \sqrt[4]{x}}{2 \log \left(\frac{1}{x}\right)}$ , where  $x > 0$  and  $x \neq 1$ . (3 marks)

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