HPCOC F1 Half Yearly Exam P1 2023-24

Half-Yearly Examination 2023/2024

S.1   Mathematics (Paper I)   Time: 75 minutes

<u>INSTRUCTIONS</u>

1. Write your Class, Name and Class Number in the spaces provided on the Answer Sheet.

2. The full mark of this paper is 64 marks.

3. Attempt ALL questions in this paper. Write your answers in the spaces provided in the Answer Sheet. 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. The diagrams in this paper are not necessarily drawn to scale.

6. When told to open this question paper, you should check that all the questions are there. Look for the words **'END OF PAPER'** after the last question.

7. You are **NOT ALLOWED** to use calculators.
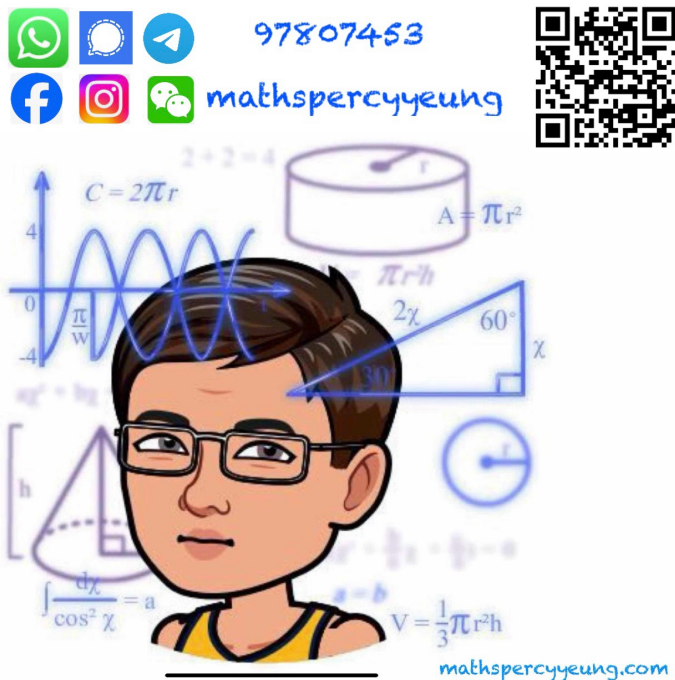
1. (a) Round off 93 456 to the nearest thousand.
   (b) Round off 246.995 to 2 decimal places.
   (c) Round off 0.07381 to 3 significant figures. (3 marks)

2. The population of an endangered species of animals is studied every 3 years and the changes in its population are recorded as follows:

Year	2005	2008	2011	2014
Change in population	+120	+70	–340	–420

   (a) Find the overall change in the population of the endangered species from 2005 to 2014.
   (b) It is predicted that the population of the species of animals would be 230 in 2014. Find the population of the species of animals in 2005. (4 marks)

3. Find the values of the following expressions.
   (a) $\left[\left(+\dfrac{1}{6}\right)-\left(+\dfrac{4}{5}\right)\times\dfrac{1}{2}\right]\times(-15)$
   (b) $-(-3)^2+(3^2)-(-3^2)$ (4 marks)

4. (a) Represent the following word phrase by an algebraic expression.
       "Multiply 4 by the square of x and then subtract the product from $2y$."
   (b) Hence, find the value of the polynomial in (a) when $x = 5$ and $y = -5$. (3 marks)

5. Simplify the following expressions.
   (a) $8m^2n + 6n^2m - nm^2 - 10mn^2$
   (b) $(3a + 2a)\times a \div 10$
   (c) $\dfrac{8a^8b^3c}{14a^7b^5}$
   (d) $9h^{13} \div (-9h^5)^2$
   (e) $(4^x)(8^{x+1})$ (13 marks)

6. Simplify the following expressions.
   (a) $(3c - 4d) + (15d - 20c)$
   (b) $x(4x + 3) - x(2x - 5)$
   (c) $(7x - 4)^2$ (7 marks)

7. Solve the following equations.
   (a) $5 - e = 2e - 4$
   (b) $x + 2 = -2(3 - x) + 5$
   (c) $\dfrac{a}{2} + a = 3$
   (d) $\dfrac{m}{5} - \dfrac{m+1}{3} = 2$ (10 marks)

8.	The prices of six furniture are $2483, $1966, $5702, $3895, $3020 and $6527 respectively.
	(a)	Estimate the total prices of the furniture by rounding off each amount to 2 significant figures.
	(b)	By using the result in (a), estimate the average price of the furniture correct to the nearest dollar.

(4 marks)

9.	Let a_n be the nth term of a sequence. If $a_2 = 3$, $a_3 = 13$ and $5a_{n+1} = a_{n+2} + a_n$ for any positive integer n, find a_4 and a_5.

(4 marks)

10.	Erica uses rods to make the following figures. The 1st figure has 7 rods. The 2nd figure has 12 rods. The 3rd figure has 17 and so on.
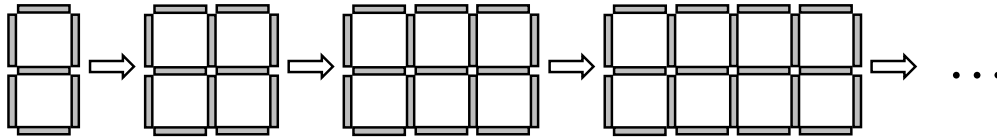
	(a)	Find the number of rods in the 7th figure.
	(b)	Can Erica use exactly 55 rods to form a figure with above pattern? Explain your answer.

(4 marks)

11.	Fanny takes one week to read n books. The number of books that Ken reads in one week is 3 times that of Fanny.
	(a)	Find the total number of books that Fanny and Ken read in one week in terms of n.
	(b)	If they take three weeks to read 36 books in total, how many weeks does Fanny alone take to read 36 books?

(4 marks)

12.	There are 18 students in a class, and 15 of them are girls. Miss Chau buys 2 boxes of candies, and these boxes have the same number of candies. She shares a box of candies evenly to all students in the class, and she shares another box of candies evenly to the girls in the class. If each girl gets 11 candies, find the number of candies in each box.

(4 marks)

END OF PAPER