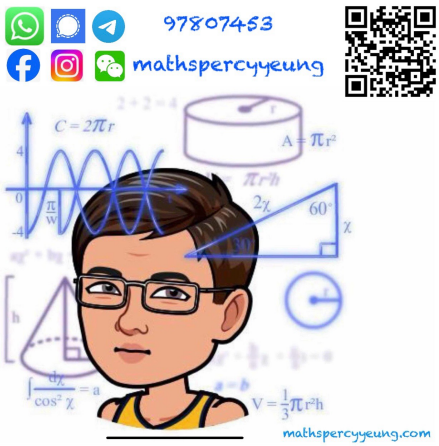
UCCKE F1 Uniform Test Ch1-Ch5

Autumn Session 2022 – 2023

S.1 Mathematics Uniform Test

Question and Answer Paper



25th November, 2022

This paper must be answered in English.
Time allowed: 1 hour

- This paper contains 4 sections:
  - Section A: Multiple-Choice Questions (20 marks)
  - Section B: Basic Questions (15 marks)
  - Section C: Intermediate Questions (14 marks)
  - Section D: Advanced Questions (11 marks)
- Answer **ALL** questions in this Question and Answer paper.
- Write the answers of Section A in the boxes provided.
- Unless otherwise specified, all working must be clearly shown.
- The diagrams in this paper are not necessarily drawn to scale.
- Unless otherwise specified, all numerical answers should either be exact or corrected to 3 significant figures.
- Calculators are not allowed in this test.

Section	Marks
A	/ 20
B	/ 15
C	/ 14
D	/ 11
Total:	/ 60

Section A: Multiple-Choice Questions (20 marks)

Each question carries 2 marks.

Choose the best answer and write the corresponding letter in the box below.

Answers:

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.

1. Which of the following numbers is divisible by 9?

   A. 42 588 B. 75 048

   C. 214 035 D. 542 085

2. 0.005 913 =

   A. 0.005, *cor. to 1 sig. fig.*

   B. 0.0059, *cor. to 2 sig. fig.*

   C. 0.006, *cor. to 3 sig. fig.*

   D. 0.06, *cor. to 2 d.p.*

3. The following table shows the changes in temperature last week as compared with the previous day. Assume that –0.5°C represents a drop of 0.5°C in the temperature.

Day	**Tue**	**Wed**	**Thu**	**Fri**
Change in temperature (°C)	–0.3	+0.8	+0.4	–1.5

   On which day of last week, the temperature is the highest?

   A. Monday B. Tuesday

   C. Wednesday D. Thursday

4. Which of the following is true?

   A. $+2 < 0 < +5 < +7$ B. $-6 < -10 < -12 < -13$

   C. $-5 < -2 < +2 < +8$ D. $-15 < -18 < +15 < +18$

5. Spencer is z years old now. The present age of Jim is 4 times that of Spencer. What will be the age of Jim 7 years later?

   A. $4(z - 7)$ B. $4z - 7$

   C. $4(z + 7)$ D. $4z + 7$

6. Which of the following word phrases can be used to represent the expression '$\frac{k^2}{h} + 8$'?

   A. Divide the square of h by k and then add 8 to the quotient.

   B. Multiply k by the square of h and then add 8 to the product.

   C. Divide the square of k by h and then add 8 to the quotient.

   D. Multiply h by the square of k and then add 8 to the product.

7. Consider the formula $N = a^2 - ab$. If $a = -1$ and $b = 3$, find N.

   A. -4 B. -2

   C. 2 D. 4

8. The solution of $\frac{3}{4} - \frac{t}{12} = -\frac{5}{6}$ is

   A. $t = -1$.

   B. $t = 1$.

   C. $t = 19$.

   D. $t = -19$.

9. Ada ran v km on Monday. On Tuesday, she ran 5 km less than she did on Monday. On Wednesday, she ran 8 km more than she did on Tuesday. If Ada ran a total of 85 km from Monday to Wednesday, which of the following equations can be used to find the value of v?

   A. $3v + 3 = 85$

   B. $3v - 2 = 85$

   C. $3v - 5 = 85$

   D. $3v + 8 = 85$

10. Find the H.C.F. and the L.C.M. of 225 and 735.

	H.C.F.	L.C.M.
A.	3×5	$3^2 \times 5^2 \times 7^2$
B.	$3^2 \times 5^2$	$3 \times 5 \times 7^2$
C.	3×5	$3 \times 5 \times 7^2$
D.	$3 \times 5 \times 7$	$3^2 \times 5^2 \times 7^2$

~ End of Section A ~

Section B: Basic Questions (15 marks)

11. Evaluate each of the following.
    (a) $(-21) - (-9)$
    (b) $(-14) \times (+5)$
    (c) $(+168) \div (-6)$

(3 marks)

12. Find the value of $\left(2\frac{1}{2}-\frac{2}{3}\right)\div\frac{5}{6}$.

(3 marks)

13. It is given that the general term of a sequence is $a_n=(-2)^n-n$.
Find the 4th term of the sequence.

(2 marks)

14. Estimate the value of 25.10 + 3.96 – 8.42 + 11.57 – 19.02 by rounding off each number to the nearest integer.

(2 marks)

15. Solve each of the following equations.

(a) $24 = -6(3 - n)$

(b) $3x - \frac{8+x}{5} = 1$

(5 marks)

~ End of Section B ~

Section C: Intermediate Questions (14 marks)

16. Simplify each of the following.
    (a) $-2m + 6 + m^2n - 4m + 8m^2n + 7$
    (b) $7r - (8r - 2r) \div 3 \cdot s + 4rs$

(3 marks)

17. Daisy only has five \$20 banknotes and seven \$2-coins. She buys 3 cans of orange juice which costs \$12.5 each. After that, she goes to a cinema and wants to buy a ticket for a movie. If the price of a ticket is \$80, does Daisy have enough money to buy one ticket? Explain your answer.

(3 marks)

18. There are two pieces of wire of the same length. One piece of wire is bent into a rectangle while the other piece is bent into a square. The length of the rectangle is y cm and its width is 4 cm shorter than its length.
    (a) Find the length of one piece of wire in terms of y.
    (b) Find the area of the square in terms of y.

(4 marks)

19. Only Martin and Dennis played a game. The following table shows their scores in four rounds. It is given that the total score of the four rounds of a player which is higher than that of the other player will win the game.

Round	**1st**	**2nd**	**3rd**	**4th**
Martin' s score	2129	1017	1168	2034
Dennis' s score	1860	2319	1827	842

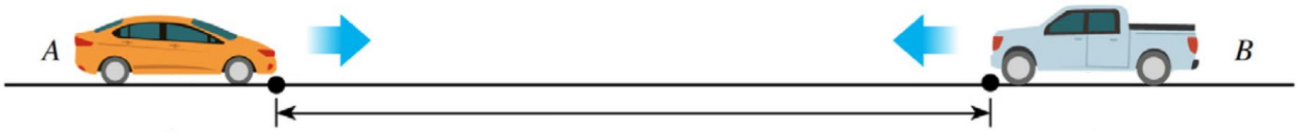
Someone claims that Dennis wins the game. Do you agree? Explain your answer with estimation strategies.

(4 marks)

~ End of Section C ~

Section D: Advanced Questions (11 marks)

20. In the figure, car A and car B are 45 km apart on the same straight road. Then, they move towards each other and the speed of car A is 8 km/h faster than that of car B.



(a) Let x km/h be the speed of car A. Express the speed of car B in terms of x.

(1 mark)

(b) If the two cars start together and meet 50 minutes later, find the speed of car A.

(4 marks)

21. Let a_n be the n^{th} term of a sequence.

Given that $a_1 = 3$, $a_2 = 5$ and $a_{n+2} = a_{n+1} + 2a_n$ for any positive integer n.

(a) Find a_4.

(2 marks)

Let b_n be the n^{th} term of another sequence.

Given that $b_n = \frac{1}{2}(a_n + a_{n+1})$ for any non-negative integer n.

(b) (i) Find b_1 and b_2.

(2 marks)

(ii) It is known that $a_5 = 43$. Robert claims that a_n must be greater than b_n for any positive integer n. Do you agree? Explain your answer by comparing the first 4 terms of the two sequences or by using other methods.

(2 marks)

~ End of Paper ~