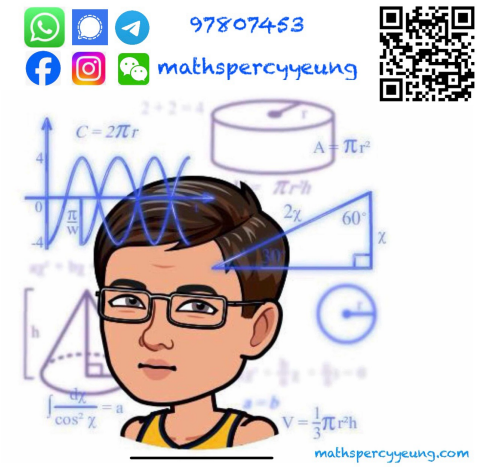
2024-2025 First/Second Term Examination (Revision)

F. 3 Mathematics

Paper 2



Time allowed : 50 minutes

Full mark : 30

This question book consists of 8 printed pages.

Instructions to candidates:

1. Write your name, class and class number in the space provided on this cover.

2. This paper consists of 30 multiple-choice questions. All questions carry equal marks.

3. Answer ALL questions. Mark your answers on the MC Answer Sheet provided with an HB pencil.

4. Choose the best answer for each question.

5. Read carefully the instructions on the MC Answer Sheet and insert the information required in the spaces provided.

6. When told to check the question paper, you should check that all the questions are there. Look for the words 'End of Paper' after the last question.

7. You should mark only ONE answer for each question. If you mark more than one answer, you will receive NO MARKS for that question.

8. No marks will be deducted for wrong answers.

9. The diagrams in this paper are not necessarily drawn to scale.

10. Calculator pad printed with the "HKEA Approved" / "HKEAA Approved" label is allowed. Remove the calculator cover / jacket.

2024-25 E1

1. If $4x^2 - px - 3$ can be factorized into linear factors, which of the following are possible values of p ?

   I. 4

   II. -11

   III. -3

   A. I and II only

   B. I and III only

   C. II and III only

   D. I, II and III

2. Which of the following expressions is/are factor(s) of $-8u^3 + 34u^2v - 8uv^2$?

   I. $4u - 1$

   II. $-2u$

   III. $4v - u$

   A. I only

   B. III only

   C. I and II only

   D. II and III only

3. $2a^{2024} - 5a^{2023}b^2 + 2a^{2022}b^4 - 6b^2 + 3a =$

   A. $(2a^{2023} - a^{2022}b^2 + 3)(a - 2b^2)$.

   B. $(a^{2023} - 2a^{2022}b^2 + 3)(2a - b^2)$.

   C. $a^{2022}(2a - b^2 + 3)(a - 2b^2)$.

   D. $a^{2022}(2a - b^2)(a - 2b^2 + 3)$.

4. $4(x^2 - 3)^2 - x^2 =$

   A. $(4x - 1)(4x + 1)(x + 3)(x - 3)$.

   B. $(4x - 1)^2(x - 3)^2$.

   C. $(2x - 3)(2x + 3)(x - 2)(x + 2)$.

   D. 24.

5. Factorize $(x - 1)^2 + 5(x^2 + x - 2) + 6(x + 2)^2$.

   A. $7x + 11$

   B. $(4x + 5)(3x - 5)$

   C. $(x^2 + 3)(x^2 + 2)$

   D. $3(x + 1)(4x + 5)$

6. $\dfrac{(-x^3y^{-2})^3}{(4x^{-5}y^{-3})^{-2}} =$

A. $-\dfrac{16}{xy^{12}}$.

B. $\dfrac{1}{16xy^2}$.

C. $-\dfrac{4}{xy^{12}}$.

D. $-\dfrac{1}{8xy^2}$.

7. $2^n + 2^n + 2^n + 2^n =$

A. 8^n.

B. 16^n.

C. 2^{n+2}.

D. 2^{n+4}.

8. $(-8)^{123} \times \dfrac{1}{2^{345}} =$

A. 2^{24}.

B. -2^{24}.

C. $\dfrac{1}{2^{24}}$.

D. $-\dfrac{1}{2^{24}}$.

9. $1001101101012 =$

A. $2^{11} + 437$.

B. $2^{11} + 874$.

C. $2^{12} + 437$.

D. $2^{12} + 874$.

10. $2^{12} + 2^9 - 2^8 + 3 \times 2^6 + 2^5 + 7 =$

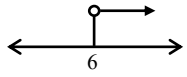
A. 1001111001112.

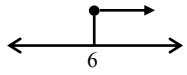
B. 10001111001102.

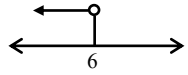
C. 10001111001112.

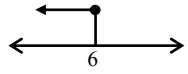
D. 100011110011102.

11. Solve the inequality $\frac{6-2x}{-2} \geq \frac{x+3}{3}$ graphically.

A. 

B. 

C. 

D. 

12. How many non-negative integers satisfy the inequality $3\left(\frac{x-2}{4}-\frac{x+2}{6}\right) \geq \frac{x-5}{2}$?

A. 0
B. 1
C. 8
D. 9

13. If $a<0<b$ and $k<0$, which of the following must be true?

I. $a+k<b+k$
II. $ka^2>kb^2$
III. $\frac{ab}{k^2}>0$

A. I only
B. I and II only
C. II and III only
D. I, II and III

14. If $a<b$, which of the following must be true?

I. $3a<5b$
II. $a-2<b-1$
III. $\frac{1}{a}<\frac{2}{b}$

A. I only
B. II only
C. I and II only
D. I, II and III

15. If the sum of three consecutive odd numbers is not less than 24, find the smallest possible value of the largest number.

A. 6

B. 7

C. 10

D. 11

16. The population of city A is 5 832 000. Two years ago, the population of city A was 5 000 000. Suppose the population increases at a constant rate per year. Find the growth factor in one year.

A. 8%

B. 16.64%

C. 1.08

D. 1.1664

17. Mr. Wong deposits $\$4000$ in a bank at an interest rate of 5% p.a. Find the simple interest if the money is deposited for 5 years.

A. \$200

B. \$1000

C. \$4200

D. \$5000

18. A sum of money is deposited in a bank. If the annual interest rate is increased from 5% p.a compounded yearly to 7.5% p.a compounded yearly, find the overall percentage change of the compound interest obtained after 10 years.

A. 2.5%

B. 25%

C. 50%

D. 68.7%

19. Ms. Fung borrowed \$$P$ at r% p.a. compounded monthly for n years. At the end of each year, Ms Fung repays the loan by $\$R$. Which of the following expressions could be used to find the amount at the end of the first year?

A. $\$P(1+r\%)^n - R$

B. $\$P\left(1+\frac{r\%}{12}\right)^{12} - R$

C. $\$P\left(1+\frac{r\%}{12}\right)^{n} - 12R$

D. $\$P\left(1+\frac{r\%}{12}\right)^{12n} - 12R$

20. The table below shows the salaries tax rate:

Net chargeable income	Tax rate
On the first \$40 000	2%
On the next \$40 000	7%
On the next \$40 000	12%
Remainder	17%

If Mr. Wong paid \$10 100 as salaries tax, find his net chargeable income.

A. \$10 000

B. \$100 000

C. \$130 000

D. \$150 000

2024-25 E2

20. If $\sin\theta = \sqrt{k}$, where $0° < \theta < 90°$ and k is a positive constant, then $\tan(90° - \theta) =$

A. $\sqrt{\dfrac{1-k}{k}}$.

B. $\sqrt{\dfrac{1+k}{k}}$.

C. $\sqrt{\dfrac{k}{1-k}}$.

D. $\sqrt{\dfrac{k}{1+k}}$.

22. It is given that $A + B = 90°$, where A and B are acute angles. Which of the following must be true?

I. $\sin^2 A + \cos^2 B = 1$

II. $\tan A = \dfrac{\sin A}{\sin B}$

III. $\tan A + \tan B = \dfrac{1}{\cos A \cos B}$

A. I only

B. I and II only

C. II and III only

D. I, II and III

23. The true bearing of B and C from A are 070° and 160° respectively. The distance between A and B is 39 km while the distance between B and C is 65 km. If P is the mid-point of AC, find the compass bearing of B from Pcorrect to the nearest degree.

A. N 36° E

B. N 56° E

C. S 36° W

D. S 56° W

End of Paper