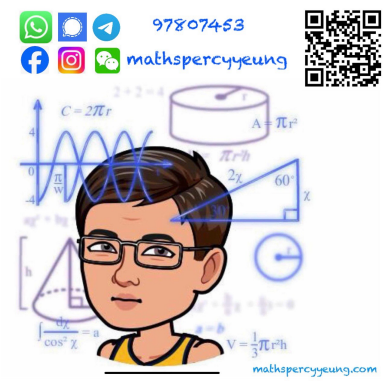
18-19 F.4
1st TERM EXAM
MATH CP
PAPER 2



2018 - 2019

F.4 First Term Examination

MATHEMATICS Compulsory Part

PAPER 2

4th January, 2019

9:30 am – 10:15 am

Time Allowed：45 minutes

INSTRUCTIONS

1. Read carefully the instructions on the Answer Sheet. Insert the information required in the spaces provided.

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

3. All questions carry equal marks.

4. **ANSWER ALL QUESTIONS**. You should use an HB pencil to mark all your 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.

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

6. No marks will be deducted for wrong answers.

The diagrams in this paper are not necessarily drawn to scale.
Choose the best answer for each question.
Section A

1. $2.0\dot{4}+3.\dot{0}\dot{5}=$

A. $5.\dot{0}\dot{9}$.
B. $5.0\dot{9}\dot{4}$.
C. $5.\dot{0}9\dot{4}$.
D. 5.1.

2. If n is a positive integer, then $2^{2n}\cdot 3^n=$

A. 6^{2n}.
B. 6^{3n}.
C. 12^n.
D. 12^{2n}.

3. If $S=ut+\frac{1}{2}at^2$, then $a=$

A. $\frac{2(S-ut)}{t^2}$.
B. $\frac{2(S+ut)}{t^2}$.
C. $\frac{S-ut}{2t^2}$.
D. $\frac{2(S-ut)}{t}$.

4. $m^2-4mn+4n^2-3m+6n=$

A. $(m-2n)(m-2n+3)$.
B. $(m-2n)(m-2n-3)$.
C. $(m+2n)(m+2n+3)$.
D. $(m+2n)(m+2n-3)$.

5. If h and k are constants such that $x^2+hx(x+2)\equiv kx(x+3)-5x$, then $k=$

A. 2.
B. 3.
C. 4.
D. 5.

6. Which of the following equations has/have roots 4 and $-\frac{1}{2}$?

I. $(x-4)(2x+1)=0$
II. $(x+4)(2x-1)=0$
III. $(12-3x)(2x+1)=0$

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

7. Solve the equation $x(x+1)=a(a+1)$.

A. $x=a$ only
B. $x=a+1$ only
C. $x=a$ or $-a-1$
D. $x=a$ or $a+1$

8. Let k be a constant. Find the range of values of k such that the equation $-x^2+8x+2(k-1)=0$ has no real roots.

A. $k<-7$
B. $k<7$
C. $k>9$
D. $k>-9$

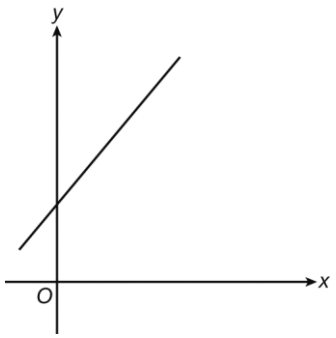
9. If $f(x-2)=x^2-2x$, then $f(1)=$

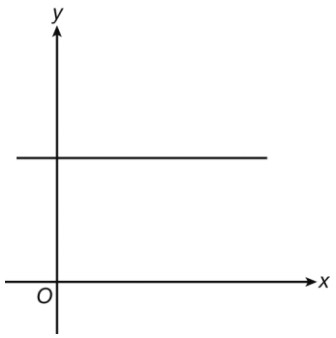
A. –1.
B. 0.
C. 1.
D. 3.

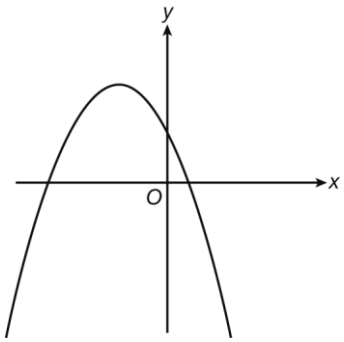
10. If $f(2x)=12x^2-8x+2$, then $f(x)=$

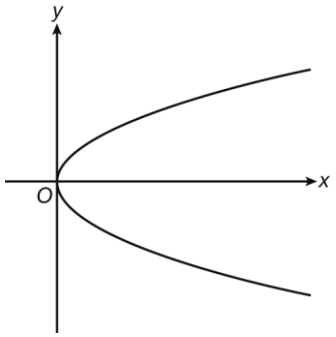
A. $3x^2-4x+2$.
B. $3x^2-4x+1$.
C. $6x^2-4x+1$.
D. $12x^2-8x+2$.

11. Which of the following CANNOT be graph of a function $y = f(x)$?

A. 

B. 

C. 

D. 

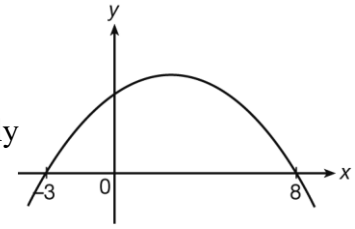
12. Which of the following may be the equation of the graph?

I. $y = -2(x+3)(x-8)$

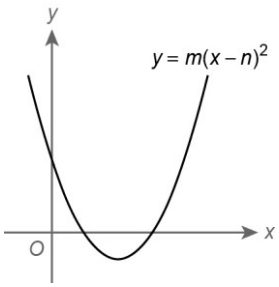
II. $y = -\frac{1}{2}x^2 + \frac{5}{2}x + 12$

III. $y = -15x - (72 - 3x^2)$

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



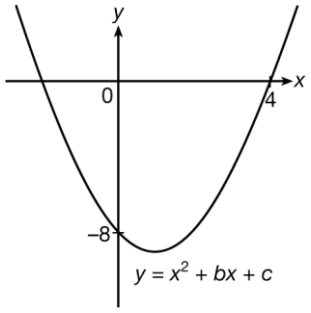
13. The figure shows the graph of $y = m(x-n)^2$, where m and n are constants. Which of the following is true?



A. $m < 0$ and $n < 0$
B. $m < 0$ and $n > 0$
C. $m > 0$ and $n < 0$
D. $m > 0$ and $n > 0$

14. The figure shows the graph of $y = x^2 + bx + c$, where b and c are constants. The equation of the axis of symmetry of the graph is

A. $x = 1$.
B. $x = 1.5$.
C. $x = 2$.
D. $x = 3$.



15. Let $P(x)$ be a polynomial. When $P(x)$ is divided by $x-2$, the quotient is x^2-x+3 and the remainder is 9. Find $P(x)$.

A. $x^3-3x^2+5x-15$
B. x^3-3x^2-5x+3
C. x^3-3x^2+5x+3
D. x^3+3x^2-5x+3

16. Let $f(x)=px^2+2x+q$, where p and q are constants. If $f(x)$ is divisible by $x+1$, find the remainder when $f(x)$ is divided by $x-1$.

A. 0
B. 4
C. $2-q$
D. $4-q$

17. When $f(x)$ is divided by $x-2$ and $x-7$, the remainders are both 2, which of the following is a factor of $g(x)=f(x-3)-f(2x-3)$?

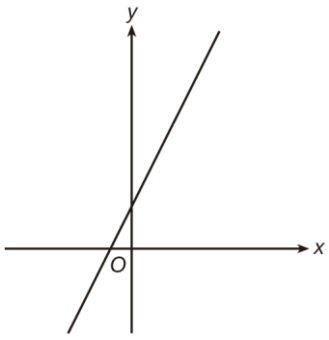
A. $x(x-5)$
B. $(x-12)(x-7)$
C. $(x-3)(x-5)$
D. $(x-10)(2x-5)$

18. The domain of the function $y=\sqrt{1-3x}$ is

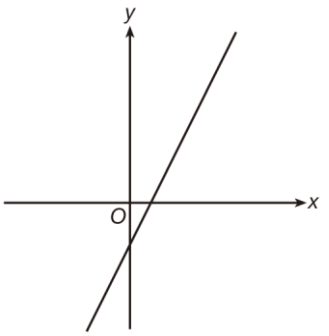
A. All real values of x.
B. $x\le\frac{1}{3}$.
C. $x>-\frac{1}{3}$.
D. $x>\frac{1}{3}$.

19. If $m>0$ and $c<0$, then which of the following may represent the graph of $y+mx=c$?

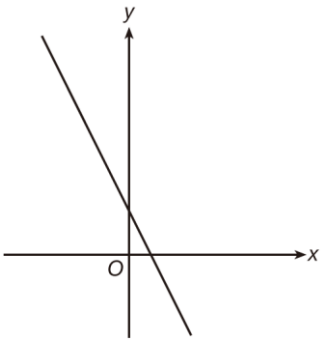
A.



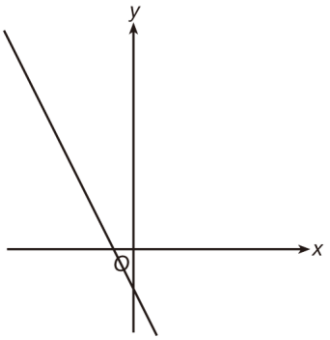
B.



C.



D.



Section B

20. If $a > 0$, then $\dfrac{a}{4\sqrt{a}} + \dfrac{\sqrt{9a}}{6} =$

A. $\dfrac{\sqrt{a}}{4}$.

B. $\dfrac{3\sqrt{a}}{4}$.

C. $\sqrt{a}$.

D. $\dfrac{7\sqrt{a}}{2}$.

21. The H.C.F. of $30x^4y^3$, $12x^2y^2$ and $8xy^2$ is

A. $2xy^2$.

B. $6xy$.

C. $120x^4y^3$.

D. $2\,880x^7y^6$.

22. The L.C.M. of $3x-6$, x^2-4 and x^3-8 is

A. $x-2$.

B. $(x-2)(x+2)(x^2+2x+4)$.

C. $3(x-2)(x+2)(x^2-2x+4)$.

D. $3(x-2)(x+2)(x^2+2x+4)$.

23. $\dfrac{x^2+x-6}{x^2-4} \times \dfrac{x^2+2x}{x+3} =$

A. x.

B. $\dfrac{x}{x+3}$.

C. $\dfrac{x}{x+2}$.

D. $\dfrac{x-2}{x+3}$.

24. If $\alpha \neq \beta$ and $\begin{cases} 2\alpha^2 + 9 = 4\alpha \\ 2\beta^2 + 9 = 4\beta \end{cases}$, then $\alpha + \beta =$

A. –2.

B. 2.

C. –4.5.

D. 4.5.

25. Let $f(x) = -2x^2 + 12x + k$. Find the coordinates of the vertex of the graph of $y = f(x)$.

A. $(-3, k+9)$

B. $(-3, k+18)$

C. $(3, k+9)$

D. $(3, k+18)$

26. Consider the graph of $y = 2x^2 - 6x + (k-1)$. If the y-intercept of the graph is positive, which of the following must be true?

I. The graph cuts the x-axis at two distinct points.

II. The axis of symmetry is $x + 1.5 = 0$.

III. The minimum value of the graph is $k - 5.5$.

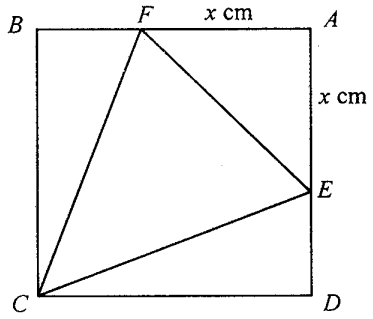
A. I only

B. II only

C. III only

D. I and III only

27. In the figure, $ABCD$ is a square of side 10 cm. If $AE = AF$ and the area of $\triangle CEF$ is 20 cm^2, which of the following equations can be used to find AF?



A. $x^2 + 10(10 - x) + 20 = 100$

B. $x^2 + 20(10 - x) + 20 = 100$

C. $\frac{1}{2}x^2 + 10x + 20 = 100$

D. $\frac{1}{2}x^2 + 10(10 - x) + 20 = 100$

END OF PAPER

Ans

1. B	2. C	3. A	4. B	5. B	6. C	7. C	8. A	9. D	10. A
11. D	12. B	13. D	14. A	15. C	16. B	17. A	18. B	19. D	20. B
21. A	22. D	23. A	24. B	25. D	26. C	27. D			

A7
B8
C5
D7