MATHS

BOOKS - FULL MARKS MATHS (TAMIL ENGLISH)

SAMPLE PAPER -11 (UNSOLVED)

Part I

1. If $f: A \to B$ is a bijective function and if $n(B) = 7$, then n(A) is equal to

A. 7

B. 49

C. 1

D. 14

Answer:

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2. The least number that is divisible by all the numbers from 1 to 10 (both inclusive) is

A. 2025

B. 5220

C. 5025

D. 2520

Answer:

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3. If 6 times of 6th term of an A.P is equal to 7 times the 7th term , then the 13th term of the A.P. is ....

A. 0

B. 6

C. 7

D. 13

Answer: A

4. If the roots of the equation $q^2x^2 + p^2x + r^2 = 0$

are the squares of the roots of the equation

$qx^2 + px + r = 0$, then p,q,r are in ....

A. A.P

B. G.P

C. Both A.P and G.P

D. none of these

Answer:

5. If

$$A = \begin{bmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \end{bmatrix}, B = \begin{bmatrix} 1 & 0 \\ 2 & -1 \\ 0 & 2 \end{bmatrix} \text{ and } C = \begin{bmatrix} 0 & 1 \\ -2 & 5 \end{bmatrix}$$

which of the following statements are corrrect? (i)

$$AB + C = \begin{bmatrix} 5 & 5 \\ 5 & 5 \end{bmatrix} \quad \text{(ii)} BC = \begin{bmatrix} 0 & 1 \\ 2 & -3 \\ -4 & 10 \end{bmatrix} \quad \text{(iii)}$$

$$BA + C = \begin{bmatrix} 2 & 5 \\ 3 & 0 \end{bmatrix} \quad \text{(iv)} (AB)C = \begin{bmatrix} -8 & 20 \\ -8 & 13 \end{bmatrix}$$

A. (i) and (ii) only

B. (ii) and (iii) only

C. (iii) and (iv) only

D. all of these

Answer:

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6. The perimeters of two similar triangles ΔABC and ΔPQR are 36 cm and 24 cm respectively. IF PQ=10 cm, then the length of AB is

A. $6\dfrac{2}{3}$ cm

B. $\dfrac{10\sqrt{6}}{3}$ cm

C. $66\dfrac{2}{3}$ cm

D. 15 cm

Answer:

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7. The area of triangle formed by the points $(-5, 0)$, $(0, -5)$ and $(5, 0)$ is ....

A. 0 sq. units

B. 25 sq. units

C. 5 sq. units

D. none of these

Answer: B

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8.

$a \cot \theta + b \cos ec\theta = p$ and $b \cot \theta + a \cos ec\theta = q$

then $p^2 - q^2$ is equal to

A. $a^2 - b^2$

B. $b^2 - a^2$

C. $a^2 + b^2$

D. $b - a$

Answer:

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9. The height of a right circular cone whose radius is

5 cm and slant height is 13 cm will be

A. 12 c m

B. 10 cm

C. 13 cm

D. 5 cm

Answer:

10. The range of the data 8,8,8,8,8..8 is

A. 0

B. 1

C. 8

D. 3

Answer:

11. A purse contains 10 notes of ₹ 2000, 15 notes of ₹ 500 , and 25 notes of ₹ 200 . One note is drawn at random . What is the probability that the note is either a ₹ 500 note or ₹ 200 note ?

A. $\dfrac{1}{5}$

B. $\dfrac{3}{10}$

C. $\dfrac{2}{3}$

D. $\dfrac{4}{5}$

Answer: D

12. If (7, 9) (5 , a) represents a constant function then the value of "a" is ....

A. 5

B. 7

C. 9

D. 11

Answer:

13. The common root of the equation $x^2 - bx + c = 0$ and $x^2 + bx - a = 0$ is ....

A. $\dfrac{c - a}{2b}$

B. $\dfrac{c + b}{2a}$

C. $\dfrac{a + c}{2b}$

D. $\dfrac{a + b}{2c}$

Answer:

14. The value of $\left(1 - \cos^2 \theta\right)\left(1 + \cot^2 \theta\right)$ is ....

A. $\sin^2 \theta$

B. 0

C. $\tan^2 \theta$

D. 1

Answer: D

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Part Ii

1. Let $f(x) = 2x + 5$. If $x \neq 0$ then find $\dfrac{f(x+2) - f(2)}{x}$

2. Find k, if $f(k) = 2k - 1$ and $fof(k) = 5$.

3. Prove that the product of two consecutive positive integers is divisible by 2.

4. Find the rational form of the number $\overline{0.123}$.

5. Find the excluded values of the expression

$$\frac{7p + 2}{8p^2 + 13p + 5}$$

6. The roots of the equation $2x^2 - 7x + 5 = 0$ are

α and β. Without solving the root find

$$\frac{\alpha}{\beta} + \frac{\beta}{\alpha}$$

7. Solve $\begin{pmatrix} 2 & 1 \\ 1 & 2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$

8. A man goes 18 m due east and then 24 m due north. Find the distance of his current position from the starting point ?

9. The line through the points $(-2, a)$ and $(9, 3)$ has slope $\dfrac{-1}{2}$. Find the value of a.

10. Prove that following identities

$$\sec^4 \theta (1 - \sin^4 \theta) - 2\tan^2 \theta = 1$$

11. A die is rolled and a coin is tossed simultaneously . Find the propability that the die

shows an odd number and the coin shows a head .

12. Find the sum of

$$1 + 0.1 + 0.01 + 0.001 + \ldots(0.1)^9$$

13. Find the value of p if lines $3y - 2x = 4$ and $4y - px = 2$ are perpendicular to each other .

14. Prove that $\sin^4 \theta + \cos^4 \theta = 1 - 2\sin^2 \theta \cos^2 \theta$

1. The function f and g are defined by $f(x) = 6x + 8, g(x) = \dfrac{x - 2}{3}$.

Calculate the value of $g\dfrac{g(1)}{2}$

2. Kumar writes a letter to four of his friends. He asks each one of them to copy the letter and mail to four different persons with the instruction that they continue the process similarly. Assuming that the process is unaltered and it costs ₹2 to mail one letter, find the amount spent on postage when 8th set of letters is mailed.

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3. Find the least positive integer n such that

$$1 + 6 + 6^2 + \ldots + 6^n > 5000$$

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4. From a group of black bees $2x^2$, square root of half of the group went to a tree. Again eightninth of th ebess went to the same tree. The remaining two got caught up in a fragrant lotus. How many bees were there in total?

5. If A = $\begin{pmatrix} 1 & 1 \\ -1 & 3 \end{pmatrix}$, $B = \begin{pmatrix} 1 & 2 \\ -4 & 2 \end{pmatrix}$, $C = \begin{pmatrix} -7 & 6 \\ 3 & 2 \end{pmatrix}$ verify that A (B + C) = AB + AC

6. ABCD is a trapezium in which $AB \mid \mid DC$ and P,Q are points on AD and BC respectively, such that $PQ \mid \mid DC$ if PD=18 cm , BQ= 35 cm and QC= 15 cm, find AD.

7. Find the area of the quadrilateral whose vertices are at

$(-9, \ -2), (-8, \ -4), (2, 2) \ \text{and} \ (1, \ -3)$

8. Find the equation of the straight line through the intersection of 5x-6y=1 and 3x+2y+5=0 and perpendicular to the straight line 3x-5y+11=0

9. As observed from the top of a 60 m high light house from the sea level , the angles of depression of two ships are $28°$ and $45°$. If one ship is exactly behind the other on the same side of the lighthouse , find the distance between the two ships . $(\tan 28° = 0.5317)$.

10. A solid sphere of radius 6 cm is melted into a hollow cylinder of uniform thickness. If the external radius of the base of the cylinder is 5 cm and its height is 32 cm, then find the thickness of the cylinder.

11. The time taken (in minutes) to complete a homework by 8 students in a day are given by

38,40,47,44,46,43,49,53. Find the coefficient of variation.

12. Given

$$f(x) = x^2 - 3, \ g(x) = 3x + 2, \ h(x) = x - 7 \quad .$$

Show that the composition of function is associative .

13. A box contains 90 discs which are numbered from 1 to 90 . If one disc is drawn at random from the box , find the probability that it bears (i) a two digit number (ii) a perfect square number (iii) a number divisible by 5 .

14. Solve $\left(\dfrac{x-1}{x+1}\right)^4 - 13\left(\dfrac{x-1}{x+1}\right)^2 + 36 = 0$

Part Iv

1. Draw the graph of $y = 2x^2 - 3x - 5$ and hence solve $2x^2 - 4x - 6 = 0$.

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