

SECTION : B

7. Using Euclid's division algorithm find the H.C.F of 570 and 1425
8. Find the value of k for which the system of equations $x - ky = 2$ and $3x + 2y = 5$ have unique solution.
9. If n^{th} term of an A.P is $4 + 3n$, find first two terms of A.P
10. Find the value of k for which $2x^2 + kx + 3 = 0$ have real and equal roots
11. Three consecutive vertices of a parallelogram ABCD are A (1,2), B (1,0), C (4,0). Find the fourth vertex.
12. If $\tan 2A = \cot (A - 18)^\circ$, where A is acute. Find the value of 'A'

SECTION : C

13. Prove that $\sqrt{3}$ is an irrational number.
14. If α and β are zeroes of the polynomial $x^2 - x - 2$, find the value of $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$.

OR

If α and β are zeroes of the polynomial $x^2 - 5x + k$ such that $\alpha - \beta = 1$ find the value of k .

15. Solve for x and y :
 $ax + by = a - b$
 $bx - ay = a + b$

OR

Solve for x and y : $6x + 3y = 6xy$ and $2x + 4y = 5xy$

16. The sum the ages of two friends is 20 years .Four years ago the product of their ages in years was 48. Is the following situation possible? Give reason. If so, find their present ages.

OR

The side of a square exceeds the side of another square by 4 cms and the sum of the areas of two squares is 400 cms^2 . Find the dimension of the squares.

17. Find the sum of first 22 terms of an A.P. in which the common difference is 7 and the 22^{nd} term is 149.

18. Show that any positive integer is of the form $6q+1$ or $6q+3$ or $6q+5$ where q is some integer.

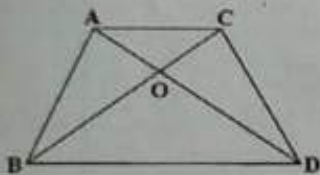
19. In triangle ABC, right angled at B, if $\tan A = \frac{1}{\sqrt{3}}$, find the value of $\sin A \cos C + \cos A \sin C$

20. Find the ratio in which 'y' axis divides the line segment joining the points A(5, -6) and B(-1, -4). Also find the coordinates of point of division.

OR

Find the coordinates of points of trisection of line segment joining (4, -1) and (-2, -3)

21. ABC and DBC are two triangles on same base BC. If AD intersects BC at O then show that $\frac{\text{ar}(ABC)}{\text{ar}(DBC)} = \frac{AO}{DO}$



22. Show that the points P(2, -2), Q(8, 4), R(5, 7) and S(-1, 1) taken in order forms a rectangle.

SECTION : D

23. State and prove Pythagoras theorem.

OR

Prove that in a triangle if the square of one side is equal to sum of the squares of other two sides, then the angle opposite to the side is a right angle.

24. Find the area of the quadrilateral formed by the vertices taken in order (-4, -2), (-3, -5), (3, -2) and (2, 3)

25. Solve for x: $\frac{1}{x-2} + \frac{2}{x-1} = \frac{6}{x}$, $x \neq 0, 1, 2$

26. Find all zeroes of polynomial $2x^4 - 3x^3 - 3x^2 + 6x - 2$ given two of its zeroes are $\sqrt{2}$ and $-\sqrt{2}$

27. If sum of first 7 terms of an A.P is 49 and sum of its first 17 terms is 289, find the sum of the first 'n' terms.

OR

How many numbers lie between 10 and 300 which when divided by 4 leave a remainder 3?

28. A boat goes 24 kms upstream and 28kms downstream in 6 hours. It goes 30 km upstream and 21 km downstream in 6hrs 30 mins. Find the speed of the boat in still water.

29. Find the value of the expression

$$\frac{2 \cos 70^\circ}{\sin 20^\circ} + \frac{\cos 55^\circ \operatorname{cosec} 35^\circ}{\tan 5^\circ \tan 25^\circ \tan 45^\circ \tan 65^\circ \tan 85^\circ}$$

30. D and E are points on the sides CA and CB respectively of a triangle ABC right angled at C. Prove that $AE^2 + BD^2 = AB^2 + DE^2$

OR

In an equilateral triangle ABC, D is a point on side BC such that

$$BD = \frac{1}{3} BC. \text{ Prove that } 9 AD^2 = 7 AB^2$$

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PERIODIC TEST 2 – OCTOBER 2018

Subject: MATHEMATICS
Class : X

Max.Marks:80
Time: 3 Hrs

General Instructions

- i. *All questions are compulsory.*
- ii. *The question paper consists of 30 questions divided into four sections A, B, C and D.*
- iii. *Section A contains 6 questions of 1 mark each. Section B contains 6 questions of 2 marks each. Section C contains 10 questions of 3 marks each. Section D Contains 8 questions of 4 marks each.*
- iv. *There is no overall choice. However, an internal choice has been provided in four questions of 3 marks each and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.*
- v. *Use of calculators is not permitted.*

SECTION : A

1. Find the common difference of A.P $-2, -5, -8, \dots$
2. If in $\triangle ABC$, $AB = 6\text{cms}$ and $DE \parallel BC$ such that $AE = \frac{1}{4} AC$, then find the length of AD.
3. Check whether 6^n can end with 0.
4. Find the value of θ for which $\sin\theta = \cos\theta$, $0 \leq \theta \leq 90^\circ$.
5. Find the quadratic polynomial whose sum of the roots is -2 and product of the roots is 10
6. Are the following pair of linear equations inconsistent?
 $2x - y = 3$ and $4x - 2y = 11$? State the reason.