AFFILIATION NO :-330043 SCHOOL NO.:- 08227

HOLY MISSION HIGH SCHOOL, SAMASTIPUR

Affiliated to CBSE. DELHI, +2 level

SUBJECT- MATHS **CLASS-X**

HALF YEARLY EXAMINATION-2019

General instructions

1-All questions are compulsory

2-The paper consists of 30 questions divided into four sections A, B, C, D

3-Sectins A comprises of 6 questions of 1 marks.Section B comprises of 6 questions of 2 marks. Section C comprises of 10 questions of 3 marks. Section D comprises of 8 questions of 4 marks.

4.Use of calculator is not permitted

SECTION-A

1. Two different dice are tossed together. Find the probability that the product of the two numbers on the top of the dice is 6.
2. If the sum of the zeroes of the polynomial $f(x) = 2x^3 - 3kx^2 + 4x - 5$ is 6, then find the value value of k
3. State Euclid's division lemma
4. If $\Delta ABC \sim \Delta PQR$, BC = 8 cm and QR = 6 cm, find the ratio of the areas of ΔABC and ΔPQR
5. Find the nature of roots of the quadratic equation $2x^2 - 4x + 3 = 0$.
6. Find the value of $(\sec^2 2A - 1).\cot^2 2A$

SECTION

7. Using Euclid's division algorithm, find the HCF of 2160 and 3520.
8. Find the zeroes of the quadratic polynomial $5t^2 + 12t + 7$ and verify the relationship between the zeroes and the coefficients.
9. Take A = 60 and B = 30. Write the value of cosA , cosB and cos(A+B) . Is cos(A+B) = cosA + cosB
10. Find the value of k if the points A(2, 3), B(4, k) and C(6, –3) are collinear.
11. Write down the decimal expansion of 76/6250 , without actual divistarly.
12. If secA + tanA = m and secA – tanA = n, find the value of mn .

SECTION-C

13. Find all the zeroes of the polynomial $x^4 - 3x^3 + 6x - 4$, If two of zeroes are $\sqrt{2}$ and $-\sqrt{2}$
14. Solve 2x + 3y = 11 and 2x – 4y = – 24 and hence find the value of 'm' for which y = mx + 3.
15. Prove that $\sqrt{5}$ is an irrational number.
16. If (1, 2), (4, y), (x, 6) and (3, 5) are the vertices of a parallelogram taken in order, find x and y.
17. Find the roots of the equation $5x^2 - 6x - 2 = 0$, by method of competing the square.

$\frac{1}{\quad} + \frac{1}{\quad} = 2\text{cosec}\,A\cot A$

18. $\frac{\sec A - 1}{\sec A + 1}$
19. Find the relation between x and y if points (2, 1), (x, y) and (7, 5) are collinear.
20. ABC is a right triangle, right angled at A, and D is the mid-point of AB. Prove that $BC^2 = CD^2 + 3BD^2$.
21. ABCD is a trapezium in which AB || DC and its diagonals intersect each other at the point O. Show $\frac{AO}{BO} = \frac{CO}{DO}$.
22. Solve for x:

$$\frac{1}{a+b+x} = \frac{1}{a} + \frac{1}{b} + \frac{1}{x}; a \neq 0, b \neq 0, x \neq 0$$

SECTION-D

23. Prove that "The ratio of the areas of two similar triangles is equal to the square of the ratio of their corresponding sides."
24. The sum of the reciprocals of Rehman's ages, (in years) 3 years ago and 5 years from now is $\frac{1}{3}$. Find his present age.
25. ABC is a triangle in which AB = AC and D is any point in BC. Prove that : $(AB)^2 - (AD)^2 = BD \cdot CD$.

26. A student noted the number of cars passing through a spot on a road for 100 periods each of 3 minutes and summarised it in the table given below. Find the mode of the data:

Number of cars	0–10	10–20	20–30	30–40	40–50	50–60	60–70	70–80
Frequency	7	14	13	12	20	11	15	8

27. A number is a two digit number which is three times more than 4 times the sum of the digits. If 18 is added to the number, the digits gets opposite. Represent geometrically

28. If the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial $x^2 - 2x + k$, the remainder comes out to be $(x + \alpha)$, find k and α.

29. A bag contains tickets, numbered 11, 12, 13, ..., 30. A ticket is taken out from the bag at random. Find the probability that the number on the drawn ticket

(i) is a multiple of 7 (ii) is greater than 15 and a multiple of 5

30. If A(-4, 8), B(-3, -4), C(0, -5) and D(5, 6) are the vertices of a quadrilateral ABCD, find its area

ALL THE BEST