Half Yearly Exam - 2017

HOLY MISSION HIGH SCHOOL

[Affiliated to C.B.S.E, Delhi] upto +2 Level

SAMASTIPUR - 848101

Std.- IX

Subject:- Maths

F.M. - 80

Time : 3 hrs.

General Instruction:-   Attempt all the questions

Q. No. 1 and 8 carry 1 mark each

Q. No. 9 to 13 carry 2 marks each

Q. No. 14 to 23 carry 3 marks each

Q. No. 24 to 31 carry 4 marks each

1. Which of the following is irrational?

   (i) $\sqrt{4/9}$ (ii) 4/5   (iii) $\sqrt{7}$ (iv) $\sqrt{81}$

2. Which of the following is ratioual?

   (i) $\sqrt{3}$ (ii) π (iii) 4/0   (iv) 0/4

3. The number $1.\overline{27}$ in the form p/q, where p and q are integers and $q \neq 0$ is

   (i) 14/9   (ii) 14/11   (iii) 14/13   (iv) 14/15

4. The rationalisation factor of $2 + \sqrt{3}$ is

   (i) $2 - \sqrt{3}$ (ii) $\sqrt{2} + 3$ (iii) $\sqrt{2} - 3$ (iv) $\sqrt{3} - 2$

5. If x-2 is a factor of $x^2 + 3ax - 2a$ then a =

   (i) 2   (ii) - 2   (iii) 1   (iv) - 1

6. Co-efficient of x^2 in $3x^2 - 4x + 15$ is.

   (i) 3   (ii) - 3   (iii) - 4   (iv) 15

7. Complement of 45° is.

   (i) 0°   (ii) 30°   (iii) 90°   (iv) 45°

8. Supplement of 80° is.

   (i) 0°   (ii) 90°   (iii) 180°   (iv) None

9. Find the value of the polynomial. $5x - 4x^2 + 3$ at   (a) x = 0 (b) x = 2

10. Find the remainder when $x^3 - ax^2 + 6x - 9$ is divided by x - a.

11. Write the quadrant of point (- 2, 4) and (- 3, - 5).

12. How many least number of distinct points determine a unique line?

13. Find the measure of an angle which is complement of itself.

14. Write four solutions of the equation. $2x + y = 7$

15. If x = 1 , y = 2 is a solution of the equation $a^2x + ay = 3$, then find the values of a. 1

16. The supplement of an angle is one third of itself. Determine the angle and its supplement.

17. Insert three rational numbers between -3/13 and 9/13.

18. Evaluate:- $(2/11)^4 \times \left(\frac{11}{3}\right) \times \left(\frac{3}{2}\right)$

19. If $X + \frac{1}{X} = 7$, find the value of $X^3 + \frac{1}{X^3}$

P.T.O

20. Factorise the followings:-

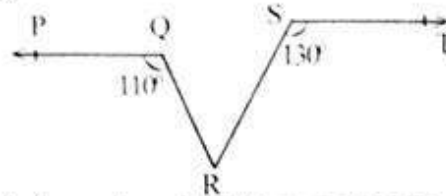　　(a) $X^2 + 3\sqrt{3}\, X + 6$ 　　(b) $X^2 - X - 12$

21. AD is an altitude of an isoscelar triangle ABC in Which AB = AC. Show that

　　(a) AD bisects BC 　　(b) AD bisects $\angle$A.

22. In Figure if PQ I I ST

　　$\angle$PQR = 110° and

　　$\angle$RST = 130° find $\angle$QRS

23. If the diagonals of a parallelograms are equal, then show that it is a rectangle.

24. If $\dfrac{3+\sqrt{2}}{3-\sqrt{2}} = a + b\sqrt{2}$, find 'a' and 'b'.

25. Prove that $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x+y+z)[(x-y)^2 + (y-z)^2 + (z-x)^2]$

26. In a parallelogram ABCD, E and F are the mid-points of sides AB and CD respectively show that the line segment AF and EC trisect the diagonal BD.

27. ABC is an isosceles triangle in which altitudes BE and CF are drawn to equal sides AC and AB respectively. Show that these attitudes are equal.

28. THe sides AB and AC of a triangle ABC are produced to P and Q respectively. If the bisectors of $\angle$PBC and $\angle$QCB intersect at 0 then prove that.

　　$\angle$BOC = $90° - \frac{1}{2}\angle$A.

29. Factorise each of the following expressions.

　　(a) $x^{12} - y^{12}$ 　　(b) $x^6 - 7x^3 - 8$

30. Divide: $x^3 + 3x^2 + 3x + 1$ by $x + 2$.

31. Show that the angles of an equilateral triangle are 60°.