

THE GURUKUL NILOKHERI

HOLIDAYS HOMEWORK

PRACTICE PAPER - II

SUBJECT - MATHS

CLASS - IX

MM : 90

SECTION-A

Question numbers 1 to 4 carry one mark each.

1 Simplify: $\left[\frac{7^{-4}}{4^{-2}} \right]^{1/4}$

2 Factorise : $x^2 - 4x + 4$.

3 Simplify : $\sqrt[4]{3\sqrt{2^2}}$

4 Factorise : $125x^3 + y^3$.

SECTION-B

Question numbers 5 to 10 carry two marks each.

5 Express the rational number $0.\bar{9}$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

6 Find the value of k, so that polynomial $x^3 + 3x^2 - kx - 3$ has one factor as $x + 3$.

7 Write reflections of the point (1, 2) in x - axis and y - axis.

8 Insert three rational numbers between $\frac{-1}{3}$ and $\frac{-2}{3}$.

9 If $y = 2$ and $y = 0$ are the zeroes of the polynomial $f(y) = 2y^3 - 5y^2 + ay + b$, find the values of a and b.

10 Find distances of following points from the y - axis :
(4, 5), (5, -4), (-4, -5) and (-5, 4)

SECTION-C

Question numbers 11 to 20 carry three marks each.

11 Locate $5\sqrt{2}$ on the number line.

12 If $\frac{30}{4\sqrt{3} + 3\sqrt{2}} = 4\sqrt{3} - a\sqrt{2}$, find the value of a.

13 Evaluate 111^3 , using a suitable identity.

14 If $p = 5 - 2\sqrt{6}$, find $p^2 - \frac{1}{p^2}$

15 Simplify : $\left(x - \frac{2}{5}y\right)^3 - \left(x + \frac{2}{5}y\right)^3$

16 Plot the points (x, y) given in the following table on the cartesian plane, choosing suitable units of distances on the axes :

x	3.5	1.5	4	-2	-6	5
y	0	-3.5	5	-7	7	-1

17 If $3x + 2y = 12$ and $xy = 6$, find the value of $9x^2 + 4y^2$.

18 If $\sqrt{5} = 2.236$ and $\sqrt{3} = 1.732$, find the value of $\frac{2}{\sqrt{5} + \sqrt{3}} + \frac{7}{\sqrt{5} - \sqrt{3}}$

19 Plot three points A(-2, 2), B(2, 2) and C(2, -2) on the graph paper. Now, plot point D so that ABCD is a square. Give coordinates of point of intersection of diagonals.

20	If $x - \frac{1}{x} = 3$, then find the value of $x^3 - \frac{1}{x^3}$.	
SECTION-D		
Question numbers 21 to 31 carry four marks each.		
21	If $\frac{9^n \times 3^2 \times \left(3^{-n/2}\right)^{-2} - 27^n}{3^{3m} \times 2^3} = \frac{1}{27}$, prove that $m - n = 1$.	
22	Show that $x - \sqrt{2}$ is a factor of the polynomial $x^3 - 2\sqrt{2}x^2 - 10x + 12\sqrt{2}$. Hence factorise the polynomial.	
23	Find the quotient and remainder obtained on dividing $p(x) = 4x^4 + 11x^3 + 2x^2 - 11x - 6$ by $x^2 + 2x + 2$ and verify remainder by using remainder theorem.	
24	Factorise : $r^3(s-t)^3 + s^3(t-r)^3 + t^3(r-s)^3$.	
25	Show that $a^3 + b^3 + c^3 - 3abc = \frac{1}{2}(a+b+c)[(a-b)^2 + (b-c)^2 + (c-a)^2]$	
26	If $a + b + c = 0$, then prove that $\frac{(b+c)^2}{3bc} + \frac{(c+a)^2}{3ac} + \frac{(a+b)^2}{3ab} = 1$	
27	Factorise : $x^3 + 13x^2 + 32x + 20$	
28	Divide polynomial $p(x) = 2x^4 + 3x^3 - 2x^2 - 9x - 2$ by $q(x) = x^2 - 3$ and find what should be subtracted from $p(x)$ so that it is divisible by $q(x)$.	
29	Show that $(p-1)$ is a factor of both the polynomials $p^{10} - 1$ and $p^{11} - 1$.	
30	If $\frac{\sqrt{a+2b} + \sqrt{a-2b}}{\sqrt{a+2b} - \sqrt{a-2b}}$, prove that $bx^2 - ax + b = 0$	
31	If $x = 9 - 4\sqrt{5}$, find $x^2 - \frac{1}{x^2}$ and $x^3 + \frac{1}{x^3}$.	