HIMCHULI ACADEMY
Madhyapur Thimi - 07, Bhaktapur
Second Terminal Examination – 2081

Subject: Opt. Maths FM: 50
Class: VII Time: 2 hours

Note : Failure in writing proper language, reasoning and lack of diagrams, graphs and units will be strictly considered during the assessment.

Group A [7 x1 = 7]
1) State One difference between rational and irrational numbers.
2) What is Null Matrix with one example.
3) How many quadrants are there? mention them.
4) Write the formula to find distance between any two points.
5) If hypotenuse(h)=5, Perpendicular(p) = 4 and base(b)=3 then find $Sin\theta$ and $Cos\theta$.
6) Rotate P (x,y) through 90 in an anti-clockwise direction.
7) How many degrees is equal to π radian?

Group B[6 x 2 = 12]

8) Rationalize the denominator : $\dfrac{1}{\sqrt{5}+1}$
9) Find the values of x and y if (5x +1 , 3y – 2) = (11, -5) .

10) If P = $\begin{bmatrix} 1 & 8 \\ 2 & 5 \end{bmatrix}$ What type of matrix is P. Also write the Order of Matrix P.

11) O(0,0), A(1,1), B(-1,-1) are three points . Prove that OA = OB.

12) Prove using p,b,h relation : $sinA = \sqrt{1-cos^2 A}$

13) Find the value of p from the given data whose mean is 17.

x	5	10	15	20	25	30
f	2	5	P	7	4	2

Group C[4 x 4 = 16]

14) Prove that : $\dfrac{1}{1-\sin(A)}+\dfrac{1}{1+\sin(A)}=2sec^2 A$
15) P(4, 0), Q(5, 2), R(1, 5) are the vertices of ΔPQR. Find the coordinates of its image under the rotation through 180 about origin. Present the object and image in the same graph
16) 5, a-2, a+1 and 12 are in ascending order. If the median of the data is 9. find the value of a.
17) if $\begin{bmatrix} 4 & 2a \\ 3b & \frac{1}{8} \end{bmatrix} = \begin{bmatrix} 4c & 2 \\ \frac{1}{3} & 3d \end{bmatrix}$, find the values of a,b,c and d

Group D[3 x 5 = 15]
18) Find the pre-image of a function f(x) = 2x+1. If the images are the factors of 4. Also show the Function in Arrow and Table diagram.
19) Prove that (1, 1), (-1, -1) and $(-\sqrt{3},\sqrt{3})$ are the vertices of equilateral triangle.
20) Prove that : (1 + cotA + tanA)(sinA – cosA) = sinA . tanA – cotA . cosA