Specification Grid for Second Terminal Examination (2081)
Optional Math Class – 7

Chapters	Areas	Knowledgeable (1)	Understanding (2)	Application (4)	Higher Ability (5)	Total Questions	Total Marks
Algebra	Surds Cartesian Product Relation and Function Domain and Range	1	2	------------	1	4	10
Matrices	Operation on Matrices Matrix Formation	1	1	1	--------------	3	7
Coordinates	Quadrants Distance Formula and its applications	2	1	------------	1	4	9
Trigonometry	Measures of angles Proving Trigonometric identities	2	1	1	1	5	13
Transformation	Reflection Rotation	1	-------------	1	--------------	2	5
Statistics	Mean Median	--------------------	1	1	--------------	2	6
No of Questions		7	6	4	3	20	50

Group A [7 x1 = 7]

1) State One difference between rational and irrational number.
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 point.
5) If hypotenuse(h)=5, Perpendicular(p) = 4 and base(b)=3 then find Sinθ and Cosθ.
6) Rotate P (x,y) through 90 in anti-clockwise direction.
7) How many degree 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 = $\begin{pmatrix} 1 & 2 \\ 5 & 8 \\ 10 & 12 \end{pmatrix}$,What type of matrix is P. Also write the Order of Matrix P.

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

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

13) Find the value of p from the given data whoose 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 : $\dfrac{1}{1-\sin(A)}+\dfrac{1}{1+\sin(A)}=2\,sec^2 A$

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 $\begin{vmatrix} 4 & 2a \\ 3b & \dfrac{1}{8} \end{vmatrix}=\begin{vmatrix} 4c & 2 \\ \dfrac{1}{3} & 3d \end{vmatrix}$ 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