Class 9 (Optional Mathematics)						
Annual Lesson Plan -2082						
Area	Topics	1st term	2nd term	3rd term	4th term	
Algebra	Order Pair	All				
	Cartesian Product	All				
	Relation	All				
	Function		All			
	Polynomials		All			
	Equation and inequality			All		
	Number system				all	
Limit	Limit			All		
Matrix	Types of matrices	All				
	Operations of matrices	All				
Coordinate Geometry	Locus	All				
	Section Formula	All				
	Slope of a straight line		**ALL**			
	Slope intercept form		All			
	Double intercept form		All			
	Perpendicular form			all		
	Reduction of the given equation in the standard form				all	
Trigonometry	Measurement of angles					
	➢ Angular measurement in D and G	All				
	➢ System of circular measure		all			
	Identities of T-ratio					
	➢ Introduction of T-Ratio	all				
	➢ Conversion of T-Ratio		all			
	➢ T-ratio of standard angles			all		
	➢ Complementary Angles			all		
	➢ T-Ratio of any Angles				all	
Vector	Introduction to vectors			All		
	Representation of vectors in co-ordinate and graph			All		
	Operation on vectors			All		
	Magnitude and direction of vectors				All	
Transformation	Translation		All			
	Reflection			All		
	Rotation				All	
	Enlargement or Reduction				All	
Statistics	Partition Values	All				
	Q.D. and its coefficient	All				
	M.D. and its coefficient			All		
	S.D. and its coefficient				All	
	Whisker Box plot				all	

First Terminal Examination

S.N.	Contents	Working Hours	Knowledge 1marks	Understanding 2marks	Application 3marks	Higher Ability 4marks	Total No. of Questions	Total Marks

1.	Algebra	10	1	1	1	1	4	10
2.	Matrix	6	1	1	1		3	6
3.	Coordinate Geometry	9	2	1	1	1	5	11
4.	Trigonometry	13	2	2	3		7	15
5.	Statistics	4		1	2		3	8
	Total No. of Question		6	6	8	2	22	
	Weightage	42	6	12	24	8		50

Second Terminal Examination

S.N.	**Contents**	**Working Hours**	**Knowledge 1marks**	**Understanding 2marks**	**Application 3marks**	**Higher Ability 4marks**	**Total No. of Questions**	**Total Marks**
1.	Algebra	10+12	1	1	1	1	4	10
2.	Matrix	6+8	1	1	1		3	6
3.	Coordinate Geometry	9+10	2	1	1	1	5	11
4.	Trigonometry	13+10	1	2	3		6	14
5.	Transformation	5	1		1		2	4
6.	Statistics	4		1	1		2	5
	Total No. of Question		6	6	8	2	22	
	Weightage	87	6	12	24	8		50

Third Terminal Examination

S.N.	Contents	Working Hours	Knowledge 1marks	Understanding 2marks	Application 3marks	Higher Ability 4marks	Total No. of Questions	Total Marks
1.	Algebra	22+6	2	2	2	1	7	16
2.	Limit	8	1		1		2	4
3.	Matrix	14	1	1	1		3	6
4.	Coordinate Geometry	19+6	2	1	1	1	5	11
5.	Trigonometry	23+5	2	2	3		7	15
6.	Vectors	6	1	1		1	3	7
7.	Transformation	5+6	1		1	1	3	8
8.	Statistics	4+4		1	2		3	8
	Total No. of Question		6	6	8	2	33	
	Weightage	128	6	12	24	8		75

Annual Examination

S.N.	Contents	Knowledge 1marks	Understanding 2marks	Application 3marks	Higher ability 4marks	Total No. of Question	Total marks
1.	Algebra	2	2	2	1	7	16

2.	Limit	1	-	1	-	2	4
3.	Matrix	1	1	1	-	3	6
4.	Coordinate Geometry	2	1	1	1	5	11
5.	Trigonometry	2	2	3	-	7	15
6.	Vectors	1	1	-	1	3	7
7.	Transformations	1	-	1	1	3	8
8.	Statistics	-	1	2	-	3	8
	Total No. of Questions	10	8	11	4	33	-
	Total Marks	10	16	33	16		75

Internal Evaluation Scheme

S.N.	Criteria of internal Evaluation	Marks
1.	Participation (Attendance, Active Participation in Learning Activities)	3
2.	Practical and Project Works	16
3.	Terminal Examinations	6
	Total Marks	25

Note: The method of internal evaluation is same as in Compulsory Mathematics.

Model Question

First Terminal Examination-2082

Class-9 Time:2hrs F.M.:50

Sub: Optional Mathematics

Group-A [6x1=6]

1. Define relation.

2. Write down the order of $\begin{bmatrix} 2 \\ \\ 5 \end{bmatrix}$ matrix $\begin{matrix} 1 & 2 \\ 3 & 2 \\ 6 & 3 \end{matrix}$ 4.
3. Write down the coordinates of midpoint of line segment having end points of line segment $(_1, _1)$ and $_2, _2$! $(\quad)$
4. Define locus of moving point.
5. Express ta in terms of sa.
6. How many grades equal to one right angles?

Group-B [6x2=12]

7. For what values of p and q, $(+ 5, \ + 2)$ and $(7,5)$ are equal to each other?
8. Construct a 2x2 matrix whose elements is in the form of $_i = 3 - 2$.
9. Find the coordinates of a point which divides the line joining the points $(1,2)$ and $(3,4)$ in the ratio 4:5 externally.
10. Find the ratio of an angles 48 and 80.
11. Prove that: $\frac{1+o}{1-o} = (so + o)^2$
12. 12,17,2x+3,3x+5,36,43 are in ascending order. If its 50th percentile is 29, find the value of x.

Group-C [8x3=24]

13. Let $= \{1,2,3\}$, express the relation $= \{ , \ : \ = ^2\}$ on A by
    i. Set of ordered pairs ii. Tabulation method iii. Arrow diagram
14. If A = B where A $\begin{pmatrix} 1 & - \\ + & 3 \end{pmatrix}$ =and B=$\begin{pmatrix} (1 & 5) \\ 3 & 3 \end{pmatrix}$. Find the value of X and Y
15. Find the locus of a point which moves so that it is equidistant from the points $(4,3)$ and $(5,4)$.
16. Three angles of a triangle are $\left(\frac{20}{9}\right)$, 3 and $\left(\frac{\quad}{75}\right)$. Find all angles in degrees.
17. Prove that: $\left(= \frac{ta+sa-1}{ta-sa+1}\right)\left(\frac{1+a}{a}\right)$
18. Prove that: $3 - 2^2 \quad 2^2 - 3 \ = (1 + 3^2)(2 - 5^2)$
19. Find the 50th percentiles from the following data:

Wages (Rs)	35	45	55	65	75
No. of workers	50	54	85	45	30

20. Find quartile deviation and its coefficient from the following data:

Age (in years)	10	12	14	16	18
No. of people	6	10	16	23	5

Group-D [2x4=8]

21. If $= 1,2,3$, $= \{4,5\}$ and $= \{6,7,8\}$, then prove that the cartesian products $\times \cup = (\times) \cup (\times)$
22. Find the coordinates of the points of trisection of the line segment joining the points $(1,2)$ and $(4,2)$.