TECHNICAL EXAMINATIONS BOARD, GUJARAT STATE, GANDHINAGAR.

ENGINEERING DIPLOMA PROGRAMME

CURRICULUM

FOR

MATHEMATICS - II

SEPTEMBER 2000

DEVELOPED BY

CURRICULUM DEVELOPMENT CENTRE, AHMEDABAD.

In collaboration with TTTI, Bhopal.

COURSE CODE : 156
COURSE NAME : MATHEMATICS - I

CONTENT

1. Rationale

2. Scheme of Studies and examination

3. Scheme of Teaching

4. Topics and sub-topics

5. References

6. Assessment scheme

7. Resource group

COURSE CODE : 156
COURSE NAME : MATHEMATICS-III

1. **RATIONALE :** The entrance qualifications for a Diploma technician is 10th pass. They have gained sufficient knowledge of the course Mathematics in the standard 10th to qualify for further studies in diploma programmes. A technician engineer needs to study relevent theories and principles of Mathematics to enable them to understand & grasp the concepts of the advance courses of diploma programme and their various engg. applications.

   With this view, the necessary content for the course Mathematics is designed and developed in consultations with the senior technical teachers to make students capable to understand the technology related courses at higher levels. It is presumed that this course-content will provide a suitable foundation for all the engineering applications which technician is supposed to come across in his field and will be able to use it in understanding them during his diploma study.

2. **SCHEME OF STUDIES AND EXAMINATION :**

SR. NO.	COURSE CODE	COURSE NAME	L	P	C	Exam scheme (Marks)			
						Th.	Pr.	T.W.	Total.
1.	156	Mathematics - II	2	--	2	50	--	--	50

3. **SCHEME OF TEACHING :**

SN.	Topics	Theory Hours
	Part-I CO-ORDINATE GEOMETRY	
1.	Point	2
2.	Straight line	2
3.	Circle	2
	TOTAL	**6**
	Part-II CALCULUS	
1.	Functions & Limit	3
2.	Differentiation	9
3.	Integration	10
	TOTAL	**22**
		Grand Total 28 hrs.

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COURSE CODE : 156
COURSE NAME : MATHEMATICS-II
4. TOPICS AND SUB-TOPICS

Part-I CO-ORDINATE GEOMETRY:

TOPIC-1 : Point   2 hrs

1.1 Distance formula for R2.

1.2 Circum-centre of a triangle.

1.3 Area of a triangle.

1.4 Division of a line segment.

1.5 Locus of point.

TOPIC-2 : Straight line   2 hrs

2.1 Cartesion equation of a straight line.

2.2 Equation of a straight line in R2: ax+by+c=0.

2.3 Slope of a straight line.

2.4 Intercepts on axis.

2.5 Equation of a straight line passes through two points (x_1, y_1) and (x_2, y_2)

2.6 Equation of straight line having slope m and passing through the point (x_1, y_1).

2.7 Equation of st. line having intercepts on y-axis and slope m

2.8 Parallel and perpendicular straight line relation between their slope.

2.9 Angle between two straight lines.

TOPIC-3: CIRCLE   2 hrs

3.1 Definition of a circle

3.2 General equation

3.3 Standard equation

3.4 Formation of equation of a circle

3.5 Tangent & Normal.

PART-II CALCULUS

TOPIC-1: Functions & Limit   3 hrs

1.1 Definition of function

1.2 Examples

1.3 Concept & rules of limit

1.4 Evaluation of Standard limit of algebraic &

trignomatric function.

ᴵTOPIC-2 :   Differentiation: 9 hrs.

2.1 Definition.

2.2 Derivation of constant function.

2.3 Formula: X^n, a^x, Sinx, e^x, etc.

2.4 Formula for sum, product and quotient of functions.

2.5 Chain rule.

2.6 Derivation of parametric and Implicit functions.

2.7 Second oreder differentiation.

2.8 Application of derivatives.

    (i)   Velocity

    (ii)   Acceleration

    (iii)   Maxima and minima, radius of curvature

TOPIC-3.   Integration   10 hrs.

3.1 Introduction of Integration

3.2 Formula for standard function as mentioned in 2-3.

3.3 Simple basic rules of Indefinite Integration.

3.4 Evaluation of simlpe Indefinite Integrals.

3.5 Integration by Substitution.

3.6 Definite Integral

    3.6.1 Lower limit

    3.6.2 Upper limit

    3.6.3 Properties of definite integral

3.7 Solution of simple problems of definite Integral.

3.8 Application of Integration.

    (1)   Area & volume of circle, parabolla & ellipse only.

Grand Total   28 hrs.

Grand Total 50   Marks

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COURSE NAME : MATHEMATICS-II
I

5. REFERENCES :

(1)	Engg. Mathematics	P.N. Wartikar
(2)	Engg. Mathematics	B.S. Greval.
(3)	Engg. Mathematics	I. B. Prasad
(4)	Polytechnic Mathematics (Vol. I & II)	TTTI Bhopal
(5)	College Algebra	Shah and Desai
(6)	Mathematics for Polytechnic	S.P.Deshpande
(7)	Co-Ordinate Geometry	Bansilal
(8)	Technical Ganitshashtra(Part I,II in Gujarati)	R.D.Desai
(9)	---do---	Anant Shashtri

6. ASSESSMENT SCHEME :

Sr.No.	Name of Topics	% weightage
	Part-I CO-ORDINATE GEOMETRY	
1.	Point	5
2.	Straight line	5
3.	Circle	5
	TOTAL (Marks)	**15**
	Part-II CALCULUS	
1.	Functions & Limit	5
2.	Differentiation	15
3.	Integration	15
	Total (Marks)	**35**
	Grand Total	**50 Marks**

7. RESOURCE GROUP :

(A) POLYTECHNIC FACULTY : (B) CDC FACULTY :   (C) EXPERT/EDITOR

1.	Kum. Ashaben Sharma,	1. Prof. A. M. Patel	1. Prof. B.C.Bhatt
2.	Shri. R.M. Bhavsar	2. " R. M. Thakkar	
3.	Shri H. C.Suthar	3. " H. B. Darji	