ANNEXURE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECNOLOGY - SYLLABUS
M-SCHEME
(Implements from the Academic Year 2015-2016 on wards)

Course Name :All branches of Diploma in Engineering and Technology and Special Programmes except DMOP, HMCT and film & TV.

Subject Code : 30023

Semester : II Semester

Subject Title : **APPLIED MATHEMATICS**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instructions		Examination			
Applied Mathematics	Hours / Week	Hours / Semester	Marks			Duration
	5 Hrs.	75 Hrs.	Internal Assessment	Semester Examination	Total	
			25	75	100	3 Hrs

TOPICS AND ALLOCATION OF HOURS:

Sl. No.	Topics	Time (Hrs.)
1	Probability Distribution – I	14
2	Probability Distribution – II	14
3	Application of Differentiation	14
4	Application of Integration – I	14
5	Application of Integration – II	14
Test and Tutorial		5
TOTAL		75

Rationale:

Many of Physical Engineering Problems like vibration of two side tied strings, Heat flow, decaying of radioactive material comes only in the form of differential equation, solution of differential equation gives solution of Physical Problems.

Objectives:

This subject helps the students to acquire knowledge of finding areas and volumes using Integration and various methods of solving first and second order differential equations. This subject also helps the students to become aware of Binomial, Poisson and Normal distributions which can be used in Quality control.

30023 APPLIED MATHEMATICS

DETAILED SYLLABUS

Contents: Theory

UNIT	NAME OF TOPICS	Hours
I	**PROBABILITY DISTRIBUTION – I**	5
	Chapter - 1.1 RANDOM VARIABLE Definition of Random variable – Types – Probability mass function – Probability density function. Simple Problems.	
	Chapter - 1.2 MATHEMATICAL EXPECTATION Mathematical Expectation of discrete random variable, mean and variance. Simple Problems.	4
	Chapter - 1.3 BINOMIAL DISTRIBUTION Definition of Binomial distribution $P(X = x) = \ nC_x \ p^x \, q^{n-x}$ where $x = 0,1,2,.....$ Statement only. Expression for mean and variance. Simple Problems.	5
II	**PROBABILITY DISTRIBUTION – II**	5
	Chapter - 2.1 POISSION DISTRIBUTION Definition of Poission distribution $P(X = x) = \frac{e^{-\lambda} \, . \lambda^x}{x!}$ where $x = 0,1,2,.....$ (statement only). Expressions of mean and variance. Simple Problems.	
	Chapter - 2.2 NORMAL DISTRIBUTION Definition of normal and standard normal distribution – statement only. Constants of normal distribution (Results only). Properties of normal distribution - Simple problems using the table of standard normal distribution.	5
	Chapter - 2.3 CURVE FITTING Fitting of straight line using least square method (Results only). Simple problems.	4
III	**APPLICATION OF DIFFERENTIATION**	5
	Chapter – 3.1 VELOCITY AND ACCELERATION Velocity and Acceleration – Simple Problems.	
	Chapter - 3.2 TANGENT AND NORMAL Tangent and Normal – Simple Problems.	4
	Chapter - 3.3 MAXIMA AND MINIMA Definition of increasing and decreasing functions and turning points. Maxima and Minima of single variable only – Simple Problems.	5

UNIT	NAME OF TOPICS	Hours
IV	**APPLICATION OF INTEGRATION – I**	5
	Chapter - 4.1 AREA AND VOLUME Area and Volume – Area of Circle. Volume of Sphere and Cone – Simple Problems.	
	Chapter - 4.2 FIRST ORDER DIFFERENTIAL EQUATION Solution of first order variable separable type differential equation .Simple Problems.	5
	Chapter - 4.3 LINEAR TYPE DIFFERENTIAL EQUATION Solution of linear differential equation. Simple problems.	4
V	**APPLICATION OF INTEGRATION – II**	4
	Chapter – 5.1 SECOND ORDER DIFFERENTIAL EQUATION – I Solution of second order differential equation with constant co-efficients in the form $a\frac{d^2y}{dx^2} + b\frac{dy}{dx} + cy = 0$ where a, b and c are constants. Simple Problems.	
	Chapter - 5.2 SECOND ORDER DIFFERENTIAL EQUATION – II Solution of second order differential equations with constant co-efficients in the form $a\frac{d^2y}{dx^2} + b\frac{dy}{dx} + cy = f(x)$ where a, b and c are constants and $f(x) = ke^{mx}$. Simple Problems.	5
	Chapter - 5.3 SECOND ORDER DIFFERENTIAL EQUATION – III Solution of second order differential equation with constant co-efficients in the form $a\frac{d^2y}{dx^2} + b\frac{dy}{dx} + cy = f(x)$ where a, b and c are constants and $f(x) = k\sin mx$ or $k\cos mx$. Simple Problems.	5

Text Book:

1. Mathematics for Higher Secondary – I year and II year (Tamil Nadu Text Book Corporation)

Reference Book:

1. Engineering Mathematics - Dr.M.K.Venkatraman, National Publishing Co, Chennai
2. Engineering Mathematics – Dr.P.Kandasamy & Others, S.Chand & Co Ltd, New Delhi.

Board Examination - Question paper pattern

Time: 3 Hrs. **Max.Marks: 75**

PART A - 5 Questions to be answered out of **8** for 2 marks each.

PART B - 5 Questions to be answered out of **8** for 3 marks each.

PART C - All the **5** Questions to be answered

Each question in PART C will contain **3** Sub questions, out of these **3** Sub questions **2** Sub questions is to be answered for 5 marks each.

PART A	**5** x 2 marks	**10** Marks
PART B Short answer type questions	**5** x 3 marks	**15** Marks
PART C Descriptive answer type questions Each question in PART C will contain **3** Sub questions, out of these **3** Sub questions **2** Sub questions is to be answered for 5 marks each.	**5 x 2** x 5 marks	**50** Marks
Total		**75** Marks

Out of the **3 Sub questions** in **PART C, one sub question** must be on problem based to test the analytical ability/logical ability /diagnostic ability/conceptual ability relevant to that subject content. Equal weightage is to be given to whole syllabus.

Clarks table will not be permitted for the Board Examinations.