IIPM SCHOOL OF ENGINEERIN AND TECHNOLOGY

LESSON PLAN: 2022-23

Sub: Th.3. ENGINEERING MATHEMATICS-II

Course : **Diploma** **Semester** : **2nd**

Duration : **75 hours**

Faculty name : **ASISH KUMAR DASH**

OBJECTIVE: Mathematics is the root of engineering. To understand the engineering subjects the knowledge of mathematics is required. This proposed syllabus of mathematics is essential for diploma students of every engineering branch. Calculus is the most important mathematical tool in forming engineering application into mathematical models. Wide application of calculus makes it imperative to develop methods of solving differential equations. The knowledge of limit, derivative and derivative needs to be exhaustively practiced. To help a systematic growth of skill in solving equation by calculus method will be the endeavor of this course content.

Learning Outcome:

Analytical and systematic approach towards any problem is developed through learningof this subject.

Mathematics being a versatile subject can be used at every stage of human life.

Sl.n o	UNIT	Propose d Week for Teaching	Lecture No	Sub Topic	Important Teaching Points	Content Source
1.	**1) VECTOR ALGEBRA**	1st	1	Introduction	Fundamental concepts	Elements of Mathematics Vol. 2
2.			2	Representation of vectors	Geometrical representation	Elements of Mathematics Vol. 2
3.			3	Types of vectors	Null vector, parallel vector, like vector etc..	Elements of Mathematics Vol. 2
4.			4	Magnitude and direction of vectors	problems	Elements of Mathematics Vol. 2
5.			5	Operation on vectors	Addition, subtraction, constant multiplication	Elements of Mathematics Vol. 2
6.			6	Operation on vectors	problems	Elements of Mathematics Vol. 2
7.		2nd	1	Position vector	Representation of postion vector	Elements of Mathematics Vol. 2
8.			2	Position vector	Problem	Elements of Mathematics Vol. 2
9.			3	Scalar product of two vectors	Concepts and formula	Elements of Mathematics Vol. 2
10.			4	Geometrical meaning of dot product	Concepts and formula	Elements of Mathematics Vol. 2
11.			5	Angle between two vectors	Formula only	Elements of Mathematics Vol. 2
12.			6	Scalar and vector projection of two vectors	Formula	Elements of Mathematics Vol. 2
13.		3rd	1	Vector product and geometrical meaning	Formula	Elements of Mathematics Vol. 2

14.			2	REVISION	problems	Elements of Mathematics Vol. 2
15.			3	PREVIOUS YEAR QUESTIONS WITH ANSWERS	problems	Elements of Mathematics Vol. 2
16.	**2) LIMITS AND CONTINUITY**		4	Definition of function	Mapping concepts	Elements of Mathematics Vol. 2
17.			5	Types of functions	Constant, algebraic,logarithmic etc…	Elements of Mathematics Vol. 2
18.			6	Introduction of limit	Concepts of LHL and RHL	Elements of Mathematics Vol. 2
19.		4th	1	Existence of limit	PROBLEMS	Elements of Mathematics Vol. 2
20.			2	Methods of evaluation of limit	Direct method, Factorization method, Rationalization method	Elements of Mathematics Vol. 2
21.			3	Trigonometric limit	Problems	Elements of Mathematics Vol. 2
22.			4	Logarithmic limit And Exponential limit	Problems	Elements of Mathematics Vol. 2
23.			5	Concepts on continuity	introduction	Elements of Mathematics Vol. 2
24.			6	Problems on continuity	Problems	Elements of Mathematics Vol. 2
25.		5th	1	Problems on continuity	Problems	Elements of Mathematics Vol. 2
26.			2	REVISION	problems	Elements of Mathematics Vol. 2
27.			3	PREVIOUS YEAR QUESTIONS WITH ANSWERS	problems	

28.	**3) DERIVATIVES**		4	Introduction	Derivative of a function at a point	Elements of Mathematics Vol. 2
29.			5	Algebra of derivative	Formulas	Elements of Mathematics Vol. 2
30.			6	Derivative of standard functions	Derivative of standard functions	Elements of Mathematics Vol. 2
31.		6th	1	Derivative by First principle of Derivative	Method of derivative	Elements of Mathematics Vol. 2
32.			2	Derivative of composite function (Chain Rule)	Formulas	Elements of Mathematics Vol. 2
33.			3	differentiation of Parametric function	Problems	Elements of Mathematics Vol. 2
34.			4	differentiation of Implicit function	Problems	Elements of Mathematics Vol. 2
35.			5	differentiation of Logarithmic function	Problems	Elements of Mathematics Vol. 2
36.			6	differentiation of a function with respect to another function	Problems	Elements of Mathematics Vol. 2
37.		7th	1	Successive Differentiation (up to second order)	Concepts and problems	Elements of Mathematics Vol. 2
38.			2	Successive Differentiation (up to second order)	Problems	Elements of Mathematics Vol. 2
39.			3	Successive Differentiation (up to second order)	Problems	Elements of Mathematics Vol. 2
40.			4	Partial Differentiation (function of two variables up to second order)	Problems	Elements of Mathematics Vol. 2
41.			5	Partial Differentiation (function of two variables up to second	Problems	Elements of Mathematics Vol. 2

				order)		
42.			6	Partial Differentiation (function of two variables up to second order)	Euler function and problems	Elements of Mathematics Vol. 2
43.		8th	1	Application of derivative	problems	Elements of Mathematics Vol. 2
44.			2	Application of derivative	problems	Elements of Mathematics Vol. 2
45.			3	REVISION	problems	Elements of Mathematics Vol. 2
46.			4	REVISION	problems	Elements of Mathematics Vol. 2
47.			5	REVISION	problems	Elements of Mathematics Vol. 2
48.			6	PREVIOUS YEAR QUESTIONS WITH ANSWERS	problems	
49.	**4) INTEGRATION**	9th	1	Definition	Integration as inverse of differentiation	Elements of Mathematics Vol. 2
50.			2	Integrals of standard functions	Formulas	Elements of Mathematics Vol. 2
51.			3	Methods of integration	Integration by substitution	Elements of Mathematics Vol. 2
52.			4	Methods of integration	Integration by substitution	Elements of Mathematics Vol. 2
53.			5	Integration by substitution	Integration by parts	Elements of Mathematics Vol. 2
54.			6	Integration by substitution	Integration by parts	Elements of Mathematics Vol. 2

55.		10th	1	Integration by parts	problems	Elements of Mathematics Vol. 2
56.			2	Integration of special Types	problems	Elements of Mathematics Vol. 2
57.			3	Definite integral	Properties	Elements of Mathematics Vol. 2
58.			4	Definite integral	Problems	Elements of Mathematics Vol. 2
59.			5	Area under the curve	Problems	Elements of Mathematics Vol. 2
60.			6	Area under the curve	Problems	Elements of Mathematics Vol. 2
61.		11th	1	REVISION	Problems	Elements of Mathematics Vol. 2
62.			2	REVISION	Problems	Elements of Mathematics Vol. 2
63.			3	PREVIOUS YEAR QUESTIONS WITH ANSWERS	Problems	
64.	**5) DIFFERENTIAL EQUATION**		4	Introduction	Definition and examples	Elements of Mathematics Vol. 2
65.			5	Order and degree of a differential equation	Problems	Elements of Mathematics Vol. 2
66.			6	Formation of diff. equation	Problems	Elements of Mathematics Vol. 2
67.		12th	1	Differential equation of First order	Problems	Elements of Mathematics Vol. 2
68.			2	Variable and separable method	Problems	Elements of Mathematics Vol. 2

69.			3	Variable and separable method	Problems	Elements of Mathematics Vol. 2
70.			4	Linear differential equation of First order	Definition and rule	Elements of Mathematics Vol. 2
71.			5	Linear differential equation of First order	Problems	Elements of Mathematics Vol. 2
72.			6	Application of differential equation	Problems	Elements of Mathematics Vol. 2
73.		13th	1	REVISION	Problems	Elements of Mathematics Vol. 2
74.			2	REVISION	Problems	Elements of Mathematics Vol. 2
75.			3	PREVIOUS YEAR QUESTIONS WITH ANSWERS	Problems	

Text book suggested

1. Elements of Mathematics _ Vol. _ 1 & 2

Reference Books:

1. Mathematics Part- I & Part- II- Textbook for Class XII, NCERT Publication

ASISH KUMAR DASH

Signature of

Faculty Member Principal