Lesson Plan

Name : S. S. Lamba
Discipline : Common for all branches
Year : 1st
Subject : Applied Mathematics
Code : 180012
Session : 2021-2022
Work Load : 3 Lectures and 2 Tutorials per week

Theory	
Lecture No.	**Topics**
1	Law of Indices and basics
2	Formula of Factorisation and expansion with some solved problems
3	Partial fraction:- Definition of Polynomial fraction proper & improper fractions and definition of partial fractions with examples.
4	To resolve proper fraction into partial fraction with denominator containing non-repeated linear factors, only. **(L-1)**
5	To resolve proper fraction into partial fraction with denominator containing non-repeated linear factors, only. **(L-2)**
6	Complex numbers: definition of complex number, real and imaginary parts of a complex number.
7	Addition, subtraction and multiplication of complex numbers.
8	Division of complex numbers.
9	Conjugate of a complex number, modulus and amplitude of complex numbers.
10	Polar and Cartesian Form and their inter conversion.
11	Logarithms and its basic properties.
12	Definition of Matrix and its types with examples.
13	Addition and subtraction of Matrices.
14	Multiplication of Matrices(upto 2^{nd} order).
15	Determinants : Evaluation of determinants (up to 3 order) by Laplace method.
16	Solution of equations (upto 3 unknowns) by Cramer's Rule.
17	Permutation and value of ${}^{n}P_{r}$ with solved examples.
18	Combination and value of ${}^{n}C_{r}$ with solved examples.
19	Binomial theorem for positive integral index with simple problems.
20	General term from binomial expansion and related problems.
21	Some solved problems on Binomial theorem.
22	Some solved problems on Binomial theorem.
23	Concept of angle: measurement of angle in degrees, grades, radians.
24	Conversions of angles.
25	T-Ratios of standard angle (0°, 30°, 45° etc.) and fundamental Identities.
26	Allied angles (without proof) Sum, Difference formulae and their applications (without proof). **(L-1)**
27	Allied angles (without proof) Sum, Difference formulae and their applications (without proof). **(L-2)**
28	Product formulae (Transformation of product to sum, difference and vice versa). **(L-1)**
29	Product formulae (Transformation of product to sum, difference and vice versa). **(L-2)**
30	Applications of Trigonometric terms in engineering problems such as to find an angle of elevation, height, distance etc. **(L-1)**
31	Applications of Trigonometric terms in engineering problems **(L-2)**
32	Applications of Trigonometric terms in engineering problems **(L-3)**
33	Point: Distance Formula, Mid Point Formula.
34	Centroid of triangle and area of triangle.
35	Straight line: Slope of a line, equation of straight line in various standards forms (without proof).
36	Examples based on slope intercept form, intercept form and one-point form of straight line.
37	Examples based on two-point form, normal form and general form of straight line.
38	Angle between two straight lines.
39	Circle: General equation of a circle and identification of centre and radius of circle. (**L-1)**
40	Circle: General equation of a circle and identification of centre and radius of circle. (**L-2)**
41	To find the equation of a circle when centre and radius are given and when coordinates of end points of a diameter are given.
42	Definition of function and some solved problems.

43	Some solved problems on functions.
44	Concept of limits (Introduction only) and some simple problems.
45	Standard limits and related problems. **(L-1)**
46	Standard limits and related problems. **(L-2)**
47	Standard limits and related problems. **(L-3)**
48	Miscellaneous problems on Limits.
49	Differentiation of standard function (Only formulas).
50	Differentiation of sum and subtraction of functions and some simple problems.
51	Differentiation of product of functions and some simple problems.
52	Differentiation of quotient of functions and some simple problems.
53	Differentiation of Algebraic functions. **(L-1)**
54	Differentiation of Algebraic functions. **(L-2)**
55	Differentiation of Trigonometric functions. **(L-1)**
56	Differentiation of Trigonometric functions. **(L-2)**
57	Differentiation of Trigonometric functions. **(L-3)**
58	Differentiation of Exponential function. **(L-1)**
59	Differentiation of Exponential function. **(L-2)**
60	Differentiation of Logarithmic function. **(L-1)**
61	Differentiation of Logarithmic function. **(L-2)**
62	Successive differentiation (up to 2nd order). **(L-1)**
63	Successive differentiation (up to 2nd order). **(L-2)**
64	Successive differentiation (up to 2nd order). **(L-3)**
65	Application of differential calculus in: Rate measures. **(L-1)**
66	Application of differential calculus in: Rate measures. **(L-2)**
67	Application of differential calculus in: Maxima and minima. **(L-1)**
68	Application of differential calculus in: Maxima and minima. **(L-2)**
69	Integration as inverse operation of differentiation i.e. Indefinite Integral with simple examples. **(L-1)**
70	Indefinite Integral. **(L-2)**
71	Indefinite Integral. **(L-3)**
72	Indefinite Integral. **(L-4)**
73	Simple standard integrals and related Simple problems. **(L-1)**
74	Simple standard integrals and related Simple problems. **(L-2)**
75	Integrations by parts and related Simple problems. **(L-1)**
76	Integrations by parts and related Simple problems. **(L-2)**
77	Integrations by parts and related Simple problems. **(L-3)**
78	Evaluation of definite integrals with given limits. **(L-1)**
79	Evaluation of definite integrals with given limits. **(L-2)**
80	Evaluation of $\int_0^{\frac{\pi}{2}} sin^m x\, dx$ and $\int_0^{\frac{\pi}{2}} cos^m x\, dx$ and related problems.
81	Evaluation of $\int_0^{\frac{\pi}{2}} sin^m x\, cos^n x\, dx$ and related problems.
82	Applications of integration: for evaluation of area under a curve and axes. **(L-1)**
83	Applications of integration: for evaluation of area under a curve and axes. **(L-2)**
84	Applications of integration: for evaluation of area under a curve and axes. **(L-3)**
85	Numerical integration by Trapezoidal Rule existing mathematical models. **(L-1)**
86	Numerical integration by Trapezoidal Rule existing mathematical models. **(L-2)**
87	Numerical integration by Simpson's $1/3^{rd}$ existing mathematical models. **(L-1)**
88	Numerical integration by Simpson's $1/3^{rd}$ existing mathematical models. **(L-2)**
89	Definition, order, degree and linearity of an ordinary differential equation.
90	Solution of I^{st} order and I^{st} degree differential equation by variable separable method. **(L-1)**
91	Solution of I^{st} order and I^{st} degree differential equation by variable separable method. **(L-2)**
92	Measures of Central Tendency: Mean and related problems.
93	Measures of Central Tendency: Median and related problems.
94	Measures of Central Tendency: Mode and related problems.
95	Measures of Dispersion: Mean deviation from mean. **(L-1)**
96	Measures of Dispersion: Mean deviation from mean. **(L-2)**
97	Measures of Dispersion: Standard deviation. **(L-1)**
98	Measures of Dispersion: Standard deviation. **(L-2)**
99	Correlation coefficient and Coefficient of rank correlation. **(L-1)**
100	Correlation coefficient and Coefficient of rank correlation. **(L-2)**

Note: There will be 2 tutorial per week as per time table. Also Class Tests, Assessment Tests, Quizzes etc. will be given as per Academic Calendar.