ENGINEERING MATHEMATICS – II

Sub Code	:	10MAT21	IA Marks	:	25
Hrs/ Week	:	04	Exam Hours	:	03
Total Hrs.	:	52	Exam Marks	:	100

PART-A

UNIT-1
Differential Equations - 1
Equations of first order and higher degree (p-y-x equations), Equations solvable for p-y-x. General and singular solutions, Clairauit's equation. Applications of differential equations of first order–illustrative examples*.

6 Hours

UNIT-2
Differential Equations – 2
Linear differential equations: Solution of second and higher order equations with constant coefficients by inverse differential operator method. Simultaneous differential equations of first order – Applications.

7 Hours

UNIT-3
Differential Equations – 3
Method of variation of parameters, Solutions of Cauchy's and Legendre's linear equations, Series solution of equations of second order, Frobenius method – simple problems.

6 Hours

UNIT-4
Partial Differential Equations (PDE)
Formation of Partial differential equations (PDE) by elimination of arbitrary constants/ functions. Solution of non-homogeneous PDE by direct integration. Solution homogeneous PDE involving derivative with respect to one independent variable only. Solution of Lagrange's linear PDE. Solution of PDE by the Method of separation of variables (first and second order equations)

7 Hours

PART-B

UNIT-5
Integral Calculus
Multiple Integrals – Evaluation of Double integrals and triple integrals. Evaluation of double integrals over a given region, by change of order of integration, by change of variables. Applications to area and volume – illustrative examples*.
Beta and Gamma Functions - Properties and problems

6 Hours

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UNIT-6
Vector Integration
Line integrals – definition and problems, Surface and volume integrals-definition. Green's theorem in a plane, Stoke's and Gauss divergence theorem (statements only).

6 Hours

UNIT-7
Laplace Transforms-1
Definition, transforms of elementary functions, properties, Periodic function, Unit step function and unit impulse function.

7 Hours

UNIT-8
Laplace Transorms-2
Inverse Laplace Transforms, Convolution theorem, solution of linear differential equations using Laplace transforms. Applications – illustrative examples*.
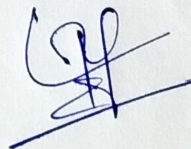
7 Hours

Note: * In the case of illustrative examples, questions are not to be set.

Text Books:
1) B.S. Grewal, Higher Engineering Mathematics, Latest edition, Khanna Publishers.
2) Erwin Kreyszig, Advanced Engineering Mathematics, Latest edition, Wiley Publications.

Reference Book:
1) B.V. Ramana, Higher Engineering Mathematics, Latest edition, Tata Mc. Graw Hill Publications.
2) Peter V. O'Neil, Engineering Mathematics, CENGAGE Learning India Pvt Ltd. Publishers.

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