

ENGINEERING MATHEMATICS - IV

Written by Administrator
Friday, 06 November 2009 06:30 -

Sub Code

:

06MAT41

IA Marks

:

25

Hrs/ Week

:

04

:

Exam Hours

:

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03

Total Hrs.

:

52

:

Exam Marks

:

100

PART – A

UNIT 1:

Numerical Methods

Numerical solutions of first order and first degree ordinary differential equations – Taylor’s series method, Modified Euler’s method, Runge – Kutta method of fourth order, Milne’s and Adams-Bashforth predictor and corrector methods (All formulae without Proof).

6 Hours

UNIT 2:

Complex Variables

Function of a complex variable, Limit, Continuity Differentiability – Definitions. Analytic functions, Cauchy – Riemann equations in cartesian and polar forms, Properties of analytic functions. Conf

Normal Transformation – Definition. Discussion of transformations: $W = z$

$$, W = e^z$$

$$, W = z$$

+

$$(1/z),$$

z

≠

0 Bilinear transformations.

7 Hours

UNIT 3:

Complex Integration

Complex line integrals, Cauchy's theorem, Cauchy's integral formula. Taylor's and Laurent's series (Statements only) Singularities, Poles, Residues, Cauchy's residue theorem (statement only).

6 Hours

UNIT 4:

Series solution of Ordinary Differential Equations and Special Functions

Series solution – Frobenius method, Series solution of Bessel's D.E. leading to Bessel function of first kind. Equations reducible to Bessel's D.E., Series solution of Legendre's D.E. leading to Legendre Polynomials. Rodrigue's formula.

7 Hours

PART – B

UNIT 5:

Statistical Methods

Curve fitting by the method of least squares: $y = a + bx$, $y = a + bx + cx^2$, $y = ax^b$ $y = ab^x$, $y = ae^{bx}$,
Correlation and Regression.

Probability: Addition rule, Conditional probability, Multiplication rule, Baye's theorem.

6 Hours

UNIT 6:

Random Variables (Discrete and Continuous) p.d.f., c.d.f. Binomial, Poisson, Normal and

Exponential distributions.

7 Hours

UNIT 7:

Sampling, Sampling distribution, Standard error. Testing of hypothesis for means. Confidence limits for means, Student's t distribution, Chi-square distribution as a test of goodness of fit.

7 Hours

UNIT 8:

Concept of joint probability – Joint probability distribution, Discrete and Independent random variables. Expectation, Covariance, Correlation coefficient.

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Probability vectors, Stochastic matrices, Fixed points, Regular stochastic matrices. Markov chains, Higher transition probabilities.

Stationary distribution of regular Markov chains and absorbing states.

6 Hours

Text Book: Higher Engineering Mathematics by Dr. B.S. Grewal (36th Edition – Khanna Publishers)

Unit No.

Chapter No.

Article Numbers

Page Nos.

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I □ □ □ □ □ □ □ □ □ □ □ □

27

27.1, 27.3, 27.5, 27.7, 27.8

914, 916 – 922

924, 933

II □ □ □ □ □ □ □ □ □ □ □ □

20

20.1 to 20.10

630 – 650

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III □ □ □ □ □ □ □ □

20

20.12 to 20.14, 20.16 to 20.19

652 – 658

661 – 671

IV □ □ □ □ □ □ □ □

16

16.1 to 16.6, 16.10, 16.13, 16.14

507 – 514,

521 – 523

526 – 529

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V

1

23

1.12 to 1.14

23.9, 23.10, 23.11, 23.14, 23.16 to 23.18

20 – 25

755 – 762, 765

768 – 776

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VII	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
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Unit – VIII: **Text book: Probability by Seymour Lipschutz** (Schaum's series) Chapters 5 & 7

Reference Books:

1. **Higher Engineering Mathematics** by B.V. Ramana (Tata-Macgraw Hill).
2. **Advanced Modern Engineering Mathematics** by Glyn James – Pearson Education.

Note:

1. One question is to be set from each unit.
2. To answer Five questions choosing atleast Two questions from each part.

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