

ENGINEERING MATHEMATICS - IV

Written by Administrator
Friday, 06 November 2009 14:29 -

Sub Code

:

06MAT41

IA Marks

:

25

Hrs/ Week

:

04

:

Exam Hours

:

ENGINEERING MATHEMATICS - IV

Written by Administrator
Friday, 06 November 2009 14:29 -

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: $W = z^2$

, $W = e^z$

, $W = z$

+

$(1/z)$,

z

\neq

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.

ENGINEERING MATHEMATICS - IV

Written by Administrator

Friday, 06 November 2009 14:29 -

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

ENGINEERING MATHEMATICS - IV

Written by Administrator
Friday, 06 November 2009 14:29 -

Page Nos.

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

ENGINEERING MATHEMATICS - IV

Written by Administrator
Friday, 06 November 2009 14:29 -

III

IV

ENGINEERING MATHEMATICS - IV

Written by Administrator
Friday, 06 November 2009 14:29 -

521 – 523

526 – 529

V

1

23

1.12 to 1.14

23.9, 23.10, 23.11, 23.14, 23.16 to 23.18

20 – 25

ENGINEERING MATHEMATICS - IV

Written by Administrator
Friday, 06 November 2009 14:29 -

755 – 762, 765

768 – 776

VI

23

23.19 to 23.22, 23.26 to 23.30

776 – 780

783 – 798

VII

23

ENGINEERING MATHEMATICS - IV

Written by Administrator
Friday, 06 November 2009 14:29 -

23.31 to 23.37

791 – 816

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:

ENGINEERING MATHEMATICS - IV

Written by Administrator

Friday, 06 November 2009 14:29 -

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