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Written by Administrator

Sub Code 06MAT31 IA Marks 25 Hrs/ Week 04 **Exam Hours**

Unit 1:

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03			
Total Hrs.			
Total Firs.			
:			
52			
Exam Marks			
:			
100			
PART – A			
PARI – A			

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Fourier Series Periodic functions, Fourier expansions, Half range expansions, Complex form of Fourier series, Practical harmonic analysis. 7 Hours Unit 2: **Fourier Transforms** Finite and Infinite Fourier transforms, Fourier sine and consine transforms, properties. Inverse transforms. 6 Hours Unit 3: Partial Differential Equations (P.D.E) Formation of P.D.E Solution of non homogeneous P.D.E by direct integration, Solution of

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homogeneous P.D.E involving derivative with respect to one independent variable only (Both types with given set of conditions) Method of separation of variables. (First and second order equations)

Solution of

Lagrange's linear P.D.E. of the type P p + Q q = R.

6 Hours

Unit 4:

Applications of P.D.E

Derivation of one dimensional wave and heat equations. Various possible solutions of these by the method of separation of variables.

D'Alembert's solution of wave equation.

Two dimensional Laplace's equation – various possible solutions.

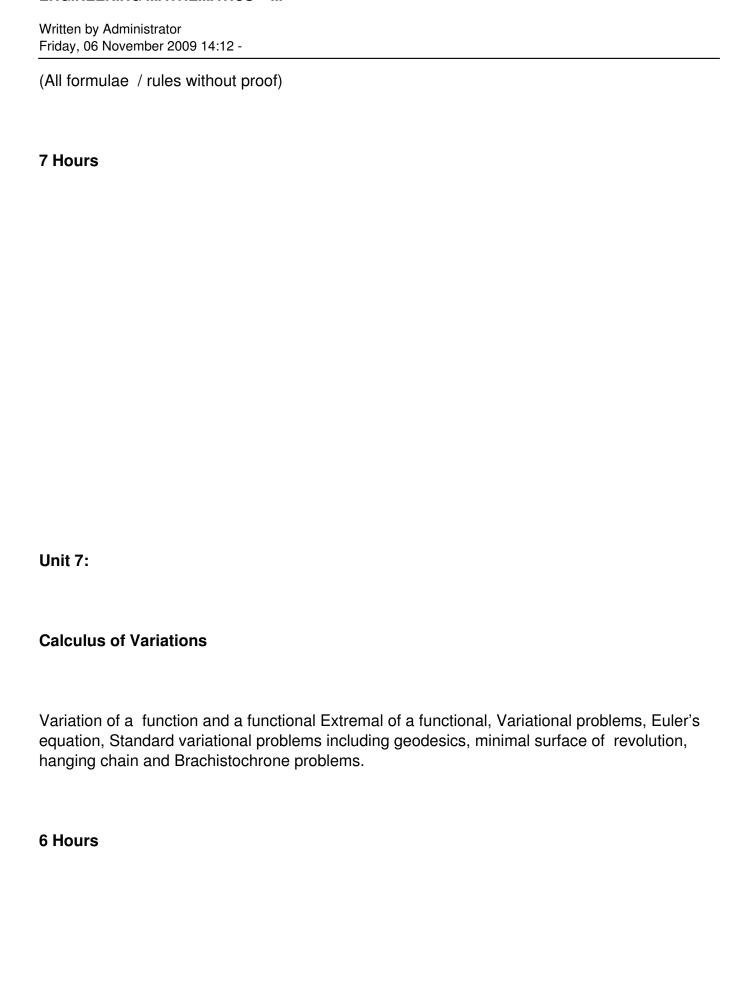
Solution of all these equations with specified boundary conditions.

(Boundary value problems).

7 Hours

PART - B

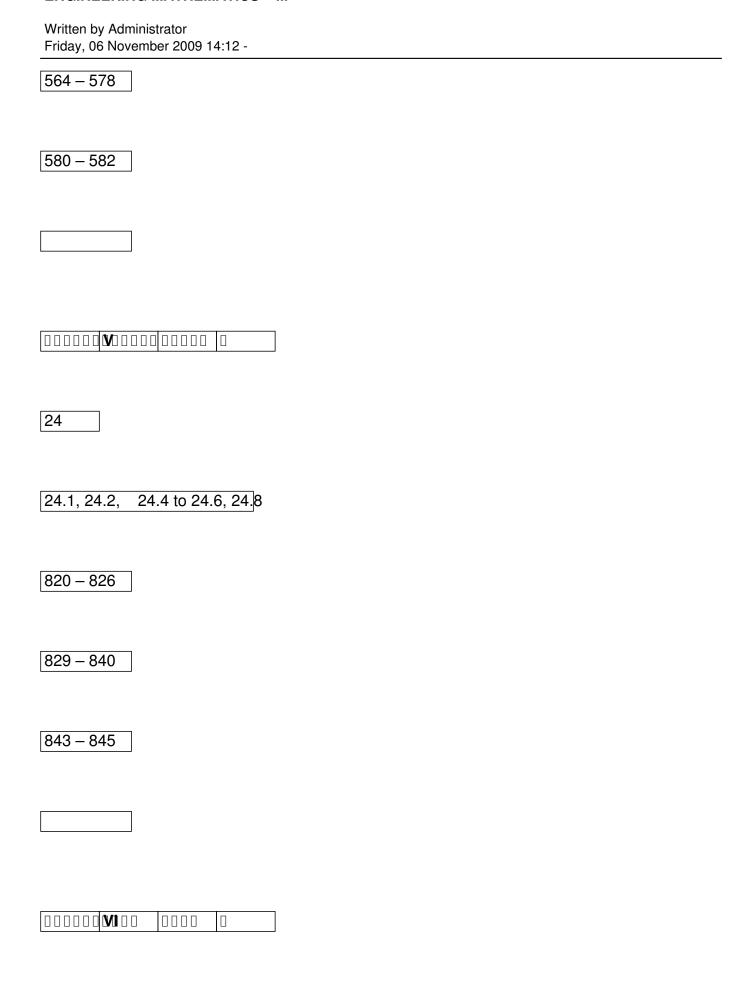
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Unit 5:
Numerical Methods
Introduction, Numerical solutions of algebraic and transcendental equations:- Newton-Raphson and Regula-Falsi methods. Solution of linear simultaneous equations: - Gauss elimination and Gauss Jordon methods. Gauss - Seidel iterative method. D efinition of eigen values and eigen vectors of a square matrix.
Computation of largest eigen value and the corresponding eigen vector by Rayleigh's power method.
6 Hours
Unit 6:
Finite differences (Forward and Backward differences) Interpolation, Newton's forward and backward interpolation formulae. Divided differences – Newton's divided difference formula. Lagrange's interpolation and inverse interpolation formulae.
Numerical differentiation using Newton's forward and backward interpolation formulae.
Numerical Integration – Simpson's one third and three eighth's value, Weddle's rule.

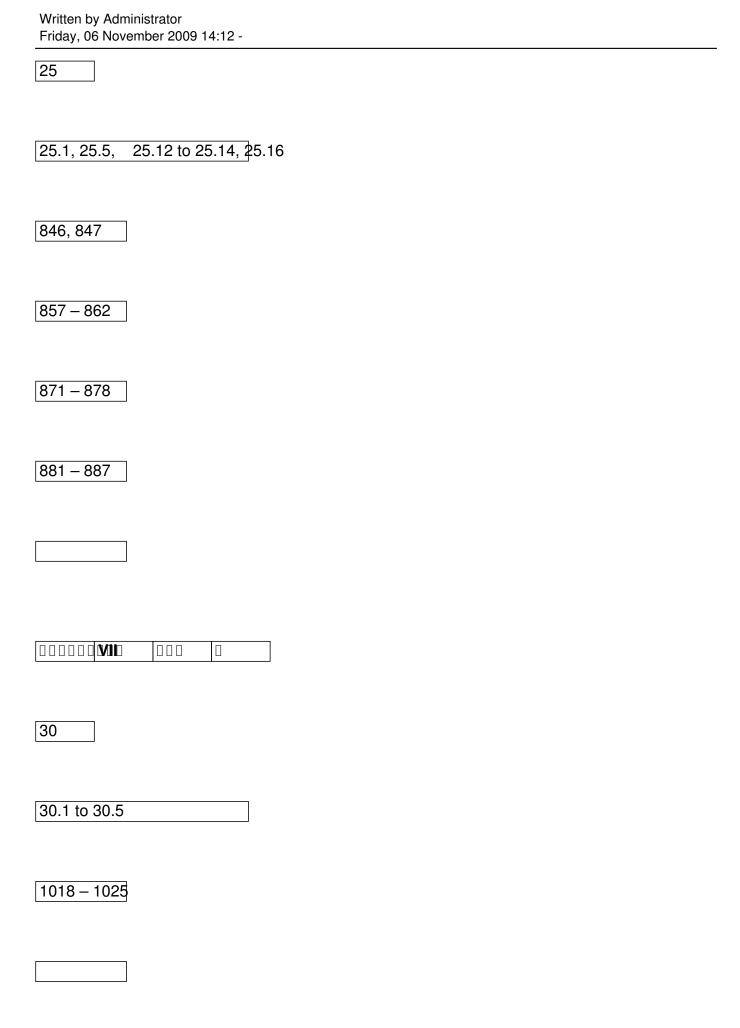


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Unit 8:
Difference Equations and Z-transforms
Difference equations – Basic definitions. Z-transforms – Definition, Standard Z-transforms, Linearity property, Damping rule, Shifting rule, Initial value theorem, Final value theorem, Inverse Z-transforms. Application of Z-transforms to solve difference equations.
7 Hours
<u>Text Book:</u> Higher Engineering Mathematics by Dr. B.S. Grewal (36 th Edition – Khanna Publishers)
Unit No.

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Chapter No.
Article Numbers
Page Nos.
10
10.1 to 10.7, 10.10 and 10.11
375 – 400
22
22.4, 22.5

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716 – 722
17, 18
17.1 to 17.5, 18.2
541 – 547
562 – 564
18
18.4, 18.5, 18.7





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26

26.1, 26.2, 26.9 to 26.15, 26.20, 26.21

888, 889

899 – 913

Reference Books:

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

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IV	()10	

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