Written by Administrator

Sunday, 01 November 2009 10:05 -Sub Code 06MAT31 IA Marks 25 Hrs/ Week 04 **Exam Hours**

Unit 1:

Written by Administrator Sunday, 01 November 2009 10:05 -		
03		
Total Hrs.		
Total ris.		
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[50]		
52		
Exam Marks		
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100		
PART – A		

Sunday, 01 November 2009 10:05 -

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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)

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).

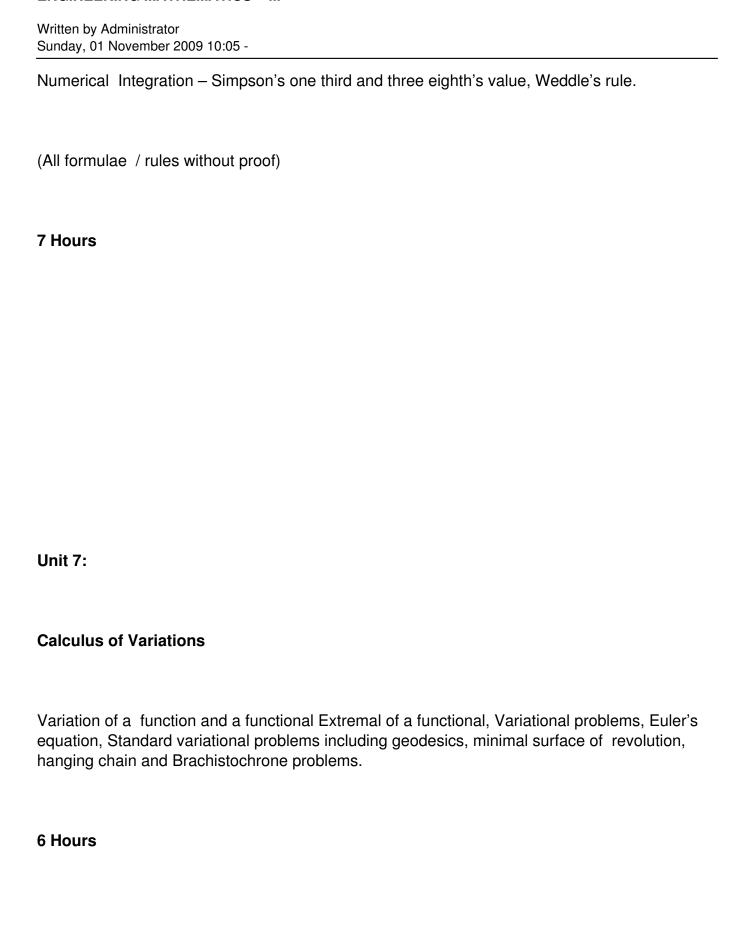
7 Hours

Sunday, 01 November 2009 10:05 -

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PART - B 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.



Written by Administrator Sunday, 01 November 2009 10:05 -

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

Written by Administrator Sunday, 01 November 2009 10:05 -	
<u>Text Book:</u> Higher Engineering Mathematics by Dr. B.S. Grewal (36 th Edition – Khanna Publishers)	
Unit No.	
Chapter No.	
Article Numbers	
Page Nos.	
10	
10.1 to 10.7, 10.10 and 10.11	
375 – 400	

Written by Administrator Sunday, 01 November 2009 10:05 -
22
22.4, 22.5
716 – 722
17, 18
17.1 to 17.5, 18.2
541 – 547
562 – 564



Sunday, 01 November 2009 10:05 -		
18		
18.4, 18.5, 18.7		
564 – 578		
580 – 582		
24		

24.4 to 24.6, 24.8

24.1, 24.2,

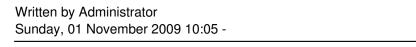
820 – 826

829 – 840

843 – 845

Written by Administrator Sunday, 01 November 2009 10:05 -
25
25.1, 25.5, 25.12 to 25.14, 25.16
846, 847
857 – 862
871 – 878
881 – 887
30

Written by Administrator Sunday, 01 November 2009 10:05 -
30.1 to 30.5
1018 – 1025
26
26.1, 26.2, 26.9 to 26.15, 26.20, 26.21
888, 889
899 – 913
Reference Books:



Higher Engineering Mathematics by B.V. Ramana (Tata-Macgraw Hill).

Advanced Modern Engineering Mathematics by Glyn James – Pearson Education.

Note:

- 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.