

Smt Sindhutai Jadhao Arts and Science Mahavidyalaya, Mehkar

B.Sc. I SEMESTAR I

MATHS

Topic	Link for Material
Paper 1	
Unit 1	
De Moivre's theorem	https://youtu.be/y0Qj7c4j82w
Roots of complex number	https://youtu.be/auRKfPROWXA
Circular function	https://youtu.be/BByp3lWWwHM
Hyperbolic function	https://youtu.be/ydScRhKR-Y
Inverse hyperbolic function	https://youtu.be/Q2JZrqHXjUI
Relation between circular function and hyperbolic function	https://youtu.be/XVM24Zonfzs
Separation of real and imaginary parts of the circular and hyperbolic function of complex variable	https://youtu.be/PiukTWDmclg
Unit 2	
Trigonometric series :	
Gregory series	https://youtu.be/_pjUElCaM3w
Euler's series	https://youtu.be/LTKYiWuBuxU
Machin's series	https://youtu.be/Bfr0f-yumpY
Rutherford's series	https://youtu.be/08ChE_ClBY4
Summation of series	https://youtu.be/cOKxWJ91_mE
Exponential series	https://youtu.be/MAXL12V2DI4
Series based upon Gregory series	https://youtu.be/4qIkURE9y3U
Unit 3	
Elements of quaternion :	
Equality and addition	https://youtu.be/lwwX2emHgio
Multiplication	https://youtu.be/YzVjHA0mG1Q
Complex conjugate of quaternion	https://youtu.be/BZxz_eEuJBM
norm , inverse	https://youtu.be/6RmQ8jx-n_o
quaternion as rotation operator	https://youtu.be/rJqll1FyrdM
geometric interpretation	https://youtu.be/OMel258ra5s
special quaternion product	https://youtu.be/ln3vl4JEArc
operator algorithm	https://youtu.be/7SbZKSD3hN4
quaternion to matrices	https://youtu.be/3Ki14CsP_9k
Unit 4	
Theory of equations:	
Relation between the roots & coefficients	https://youtu.be/5YmYCXd6OI8
transformation of equations	https://youtu.be/EPSTw_dYqUM
cubic equation	https://youtu.be/mxtCRZeJLCw
Descartes rule of signs,	https://youtu.be/OHaaA2uq5JI
biquadratic equations	https://youtu.be/4tXrBALMZml
Unit 5	
Matrices:	
Rank of matrix	https://youtu.be/ccahV-ukK2o
Eigen values and Eigen vectors	https://youtu.be/ZX5YnDMzwbs

The charecteristic equation of a matrix	https://youtu.be/QfF_whXs_CA
Cayley-Hamilton theorem & its application	https://youtu.be/H53VgxdohRM
Paper 2	
Unit 1	
defination of the limit of a function	https://youtu.be/wzT403sa5oE
Basic properties of limits	https://youtu.be/eKvHpkZmsrs
Continuous function	https://youtu.be/aR0gXFo1a-s
Classification of discontinuities	https://youtu.be/C9CNcxMuaWI
Unit 2	
Differentiability	https://youtu.be/DpZ71SFGcVI
successive differentiation	https://youtu.be/KijGLjxKlsY
Leibnitz theorem	https://youtu.be/EGnI8WyYb3o
indeterminate forms & L Hospital rule	https://youtu.be/oysAwABcsFo
Unit 3	
Rolle's theorem	https://youtu.be/5xif7SUyiz4
Lagrange's mean value theorem	https://youtu.be/w7P0IFVf-NY
Cauchy's mean value theorem	https://youtu.be/z2dr6sJreB8
Maclaurin series expansions	https://youtu.be/Ac1mr2WrO-g
Tayler's series expansion	https://youtu.be/LEspaisjDFE
Unit 4	
Partial derivatives	https://youtu.be/pAb1autRHGA
Differentiation of real valued function of two variables	https://youtu.be/JP2KnIj1yXU
Homogeneous functions	https://youtu.be/mRTVpi78kkE
Euler's theorem on homogeneous function	https://youtu.be/HeKB72M2Puw
Unit 5	
Reduction formulae for $\int \sin^n x \, dx$, $\int \cos^n x \, dx$	https://youtu.be/SXXy0nB0c98
Reduction formulae for $\int \cos^n x \, dx$	https://youtu.be/O08BHL03wI0
Walli's Formula,	https://youtu.be/XUItPuGfV9M
$\int \tan^n x \, dx$, $\int \cot^n x \, dx$, $\int \sec^n x \, dx$, $\int \operatorname{cosec}^n x \, dx$, $\int \sin^n x \, dx$	https://youtu.be/IV2U3miZY0A
Quadrature	https://youtu.be/BD8L3qj5Jtl
Rectification	https://youtu.be/n4JJ3fNKHUc