B. Sc. SEM IV (Mathematics)

M-8: Mathematical Methods

Unit I

Power Series Solution Introduction, A review of Power series

https://www.youtube.com/watch?v=nWqeWe79o0w&list=PLU6SqdYcYsfKqd8ua31Xptu18dpyX5ExY

Series solution of first order equations, Second order linear equations

https://www.youtube.com/watch?v=nWqeWe79o0w&list=PLU6SqdYcYsfKqd8ua31Xptu18dpyX5ExY

Ordinary point, Singular point, Regular singular point, Irregular singular point

https://www.youtube.com/watch?v=nWqeWe79o0w&list=PLU6SqdYcYsfKqd8ua31Xptu18dpyX5ExY

Legendre's and Bessel's equations.

https://www.youtube.com/watch?v=nWqeWe79o0w&list=PLU6SqdYcYsfKqd8ua31Xptu18dpyX5ExY

Unit II

Special Functions Legendre's and Bessel's functions with their properties

https://www.youtube.com/watch?v=nWqeWe79o0w&list=PLU6SqdYcYsfKqd8ua31Xptu18dpyX5ExY

Generating functions

https://www.youtube.com/watch?v=nWqeWe79o0w&list=PLU6SqdYcYsfKqd8ua31Xptu18dpyX5ExY

Recurrence relations

https://www.youtube.com/watch?v=nWqeWe79o0w&list=PLU6SqdYcYsfKqd8ua31Xptu18dpyX5ExY

Orthogonality of functions.

https://www.youtube.com/watch?v=nWqeWe79o0w&list=PLU6SqdYcYsfKqd8ua31Xptu18dpyX5ExY

Unit-III

Laplace Transforms Laplace transform of some elementary functions

https://www.youtube.com/watch?v=OA1OJrfpP20&list=PLU6SqdYcYsfIWugLkTq1nMoU3rDDx7xpG

Properties of Laplace transforms

https://www.youtube.com/watch?v=OA1OJrfpP20&list=PLU6SqdYcYsfIWugLkTq1nMoU3rDDx7xpG&index2

Inverse Laplace transforms

https://www.youtube.com/watch?v=OA1OJrfpP20&list=PLU6SqdYcYsfIWugLkTq1nMoU3rDDx7xpG&index3

Laplace transforms of derivatives and integrals

https://www.youtube.com/watch?v=OA1OJrfpP20&list=PLU6SqdYcYsfIWugLkTq1nMoU3rDDx7xpG&index4

Laplace transform of t.f(t), Laplace transform of f(t)/t

https://www.youtube.com/watch?v=OA1OJrfpP20&list=PLU6SqdYcYsfIWugLkTq1nMoU3rDDx7xpG&index5

Convolution theorem

https://www.youtube.com/watch?v=OA1OJrfpP20&list=PLU6SqdYcYsfIWugLkTq1nMoU3rDDx7xpG&index6

Solution of Ordinary differential equations with constant coefficients

https://www.youtube.com/watch?v=OA1OJrfpP20&list=PLU6SqdYcYsfIWugLkTq1nMoU3rDDx7xpG&index9

Solution of simultaneous ordinary differential equations.

https://www.youtube.com/watch?v=OA1OJrfpP20&list=PLU6SqdYcYsfIWugLkTq1nMoU3rDDx7xpG&index10

Unit IV

Fourier Series The Fourier coefficients, The problem of convergence, Even & Odd functions, Half range cosine and sine series, Extension to arbitrary intervals.

https://www.youtube.com/watch?v=CDeT2yV_CbM&list=PLU6SqdYcYsfJfRHH0K1CgNkheUKk2fBb6