B. Sc. SEM IV (Mathematics)

M-7: Real Analysis

Unit I

Bounded sets, Completeness, Archimedean property of R, Absolute value of Real Number, Neighborhoods

https://www.youtube.com/watch?v=6qpxS7EW_Cw&list=PLU6SqdYcYsfKvYZhiXPoaR5fBYDYXENSn

Open Sets, Interior point of a set, Limit point of a set

https://www.youtube.com/watch?v=6qpxS7EW_Cw&list=PLU6SqdYcYsfKvYZhiXPoaR5fBYDYXENSn&index3

Bolzano-Weierstrass theorem, Close sets, Closure sets.

https://www.youtube.com/watch?v=6qpxS7EW_Cw&list=PLU6SqdYcYsfKvYZhiXPoaR5fBYDYXENSn&index5

Unit II

Sequences: Definition and examples, Bounded sequences, Convergent sequence

shttps://www.youtube.com/watch?v=6qpxS7EW_Cw&list=PLU6SqdYcYsfKvYZhiXPoaR5fBYDYXENSn&index9

Monotone sequences, Subsequences, Cauchy sequences

https://www.youtube.com/watch?v=6qpxS7EW_Cw&list=PLU6SqdYcYsfKvYZhiXPoaR5fBYDYXENSn&index10

Divergent sequences

https://www.youtube.com/watch?v=6qpxS7EW_Cw&list=PLU6SqdYcYsfKvYZhiXPoaR5fBYDYXENSn&index11

Limit superior and limit inferior of sequences.

https://www.youtube.com/watch?v=6qpxS7EW_Cw&list=PLU6SqdYcYsfKvYZhiXPoaR5fBYDYXENSn&index12

Unit-III

Infinite series: Convergent series, Cauchy criterion of convergence of a series Positive term series

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1

Geometric series test

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1&index2

Comparison test

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1&index3

 Limit comparison test

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1&index4

Ratio comparison test

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1&index5

pTest

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1&index6

Cauchy's root test

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1&index7

D'Alembert ratio test

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1&index8

Integral test

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1&index9

Alternating series, Leibnitz's test

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1

Absolute and conditional convergence.

https://www.youtube.com/watch?v=dGP80DTkiVI&list=PLU6SqdYcYsfJx0FZBQHO3oc3h9-pPh4k1

Unit IV

Riemann Integration: Riemann integral, Criterion for Integrability, Properties of integrable functions, Certain classes of integrable function

https://www.youtube.com/watch?v=6qpxS7EW_Cw&list=PLU6SqdYcYsfKvYZhiXPoaR5fBYDYXENSn

The Fundamental theorem of calculus

https://www.youtube.com/watch?v=6qpxS7EW_Cw&list=PLU6SqdYcYsfKvYZhiXPoaR5fBYDYXENSn&index2

Mean value theorem.

https://www.youtube.com/watch?v=6qpxS7EW_Cw&list=PLU6SqdYcYsfKvYZhiXPoaR5fBYDYXENSn&index9