M.Sc (MATHS) IV Sem. (ATET)

PAPER - I

FUNCTIONAL ANALYSIS

Note :- Attempt all questions -

1. Write the statement of Hahn-Banach Theorem for real linear spaces.

2. Define open mapping and closed linear operator.

3. Show that
$$\|x+y\| \leq \|x\| + \|y\|$$

4. Do write the statement of Riesz Representation Theorem.

5. Define the following.
   a) Self-adjoint operators
   b) positive operators

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M.Sc (MATHS) IV sem. (IV)

PAPER - II

MECHANICS

1. Define holonomic and non-holonomic systems.

2. Prove that the shortest distance between two points in space is a straight line.

3. Give the statement of Lee Hwa Chung's theorem.

4. Prove that
$$[u, v, w] = [u, v] w + v [u, w]$$

5. Find the attraction of a thin uniform rod at an external point.

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1. If E is a
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   is a comp

   $\int (\alpha f) dE$

2. Prove that
   spectral

3. Prove th
   linear op
   space H i

4. Define s

5. If E is
6. spectral
   an

PAPER-III

THEORY OF LINEAR OPERATOR

1. If E is a spectral measure if f and g are in B and if α is a complex number, then prove that

$$\int (\alpha f)\, dE = \alpha \int f\, dE$$

2. Prove that every complex spectral measure is regular.

3. Prove that a densely defined linear operator T in complex Hilbert space H is symmetric iff $T \subset T^*$

4. Define closed linear operator

5. If E is a compact complex

6. spectral measure and if B is an operator such that

$$\int \lambda\, dE(\lambda): B \longrightarrow B \text{ then } E \longleftrightarrow B$$

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MSc (MATHS) IV sem (ATK)

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PAPER - IV

OPERATIONS RESEARCH - II

Note:- Attempt all questions –

1. write the rules for drawing the network.

2. write the algorithm for gomory all I.P.P. method.

3. Explain dominance method.

4. Write the statement of Kuhn-Tucker Necessary conditions.

5. Define separable programming problem and convex programming

M.Sc (MATHS) IV Sem. (ATKT)

PAPER - V

FUNDAMENTAL OF COMPUTER SCIENCE-II

Note: Attempt all questions

1. What is inheritance? Write the types of inheritance with neat and clean diagram. Write single inheritance program in C++

2. What is database? Write its advantages and disadvantages.

3. What is Normalization and its Normal forms.

4. What is OOPS in C++? Write its benefits.

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