Paper – I

Advanced Abstract Algebra – II

MM: 85 (Reg)

100 (Pvt)

Note : Attempt in all five questions. Each question carry equal marks.

1. Prove that the kernel of Module Homomorphism is Submodule .

2. Let M be an R- Module , then the following statement are equivalent:
    (a) M is sum of simple R- submodules.
    (b) M is semi – simple.
    (c) Every R- Submodules of M is a direct summand of M.

3. State and Prove Hilbert Basis Theorem.

4. Let R be a noetherian ring then show that Polynomial ring R [x] is also noetherian.

5. State and Prove Primary Decomposition Theorem.

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M. Sc. II Semester Mathematics (ATKT)

Paper – II

LEBESGUE MEASURE AND INTEGRATION

MM: 85 (Reg)

100 (Pvt)

Note : Attempt in all five questions. Each question carry equal marks.

1. Define
   (a) Regular Measure
   (b) Measurable Functions

2. State and Prove Fatou's Lemma.

3. State and Prove Lebesgue Differentiation Theorem.

4. State and Prove Minkowaski's Inequality.

5. Define almost Uniform Convergence with in examples.

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M. Sc. II Semester Mathematics (ATKT)

Paper – III

TOPOLOGY- II

MM: 85 (Reg)

100 (Pvt)

Note : Attempt in all five questions. Each question carry equal marks.

1. Show that Every subspace of Hausdorff space is Hausdorff space and hence property is hereditary.

2. Prove that the Product of Completely Regular Spaces is Completely Regular.

3. Define
   (a) Nets
   (b) Fileters

4. State and Prove the Fundamental Theorem of Algebra.

5. State and Prove Nagata – Smirnov Metrization Theorem.

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M. Sc. II Semester Mathematics (ATKT)

Paper – IV

COMPLEX ANALYSIS – II

MM: 85 (Reg)

100 (Pvt)

Note : Attempt in all five questions. Each question carry equal marks.

1. State and Prove Weierstrass Factorization Theorem.

2. State and Prove Mittag Leffler's Theorem.

3. State and Prove Monodormy Theorem.

4. State and Prove Jensen's Theorem.

5. State and Prove Great Picard's Theorem.

M. Sc. II Semester MATHEMATICS (ATKT)

Paper – V(Opt)

Programming in C

MM: 60 (Reg)

Note: Attempt all the questions each carry equal marks.

Q1. What is Algorithm? Explain it with example.

Q2. Explain different types of Data Type in C.

Q3. Explain following Decision control statement:

      a) 'If' statement
      b) 'if-else' statement
      c) Nested - if statement

Q4. Demonstrate the usage of switch statement with an example.

Q5. Write a program to average of 10 numbers.

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M. Sc. II Semester Mathematics (ATKT)

Paper – V

DISCRETE MATHEMATICS- II

MM: 85 (Reg)

100 (Pvt)

Note : Attempt in all five questions. Each question carry equal marks.

1. Define the following with a suitable example
    (a) Path Matrix
    (b) Directed Graph
    (c) Binary Search Tree

2. What are Generating Functions and write the utilities of them.

3. Give some examples of Context – Free and Context Sensitive Grammars with suitable examples.

4. Explain the following
    (a) Finite State Machines
    (b) Equivalent Machines

5. Write a short note on the following,
    (a) Moore and Mealy Machines