

DRAVIDIAN  **UNIVERSITY**

Directorate of Distance Education (DDE)

KUPPAM – 517 426:: A.P.

Course: I year MSC (Maths)

Paper – I ALGEBRA

Question Paper for Assignment

Answer any **THREE** of the following **FIVE** Questions.

3x10=30

1. State and prove the Fundamental Theorem of Galois Theory.
2. State and prove Gauss Lemma.
3. State and prove Second Sylow Theorem.
4. Show that every permutation is the product of its cyclic.
5. Prove the “**L**” satisfies the descending chain condition if and only if every ideal of “**L**” is principal.

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Paper – II ANALYSIS

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Answer any THREE of the following FIVE Questions.

3x10=30

1. Show that every infinite subset of a countable set \mathbf{A} is countable .
2. Show that every **K-Cell** is compact.
3. Let \mathbf{f} be a monotonic on (a,b) . Then show that the set of points of (a,b) at which \mathbf{f} is discontinuous is at most countable .
4. State and prove the fundamental theorem of Calculus.
5. If f is measurable, then prove that (f) is measurable.



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Paper – III DIFFERENTIAL EQUATIONS AND NUMERICAL METHODS

Question Paper for Assignment

Answer any THREE of the following FIVE Questions.

3x10=30

1. Using Runge- Kutta method of fourth orders solve $\frac{dy}{dx} = \frac{y^2 - y^2}{y^2 + y^2}$ with $y(0)=1$ at $x = 0, 2, 0, 4$.
2. Solve $\frac{dy}{dx} = (4x + y + 1)2$.
3. Solve $\frac{dy}{dx} - x \tan(y-x) = 1$
4. Find a root of the Equation $x^2 - 4x + 9 = 0$ using the bisection method in four stages.
5. Use trapezoidal rule to evaluate $\int 0x^3 dx$ considering five sub intervals.

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Paper – IV OPERATIONS RESEARCH

Question Paper for Assignment

Answer any THREE of the following FIVE Questions.

3x10=30

1. Explain two phase method for solving Linear Programming Problem.
2. Explain Vogel's approximation method to find the basic feasible solution to transportation problem.
3. Define a queue give a brief description of the types of queue descriptive commonly found.
4. Define Primal Problem and Dual Problem and Explain all integer cutting plane algorithm.
5. What assumptions are made in the theory of games?

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Paper – V

COMPLEX ANALYSIS AND SPECIAL FUNCTIONS

Question Paper for Assignment

Answer any THREE of the following FIVE Questions.

3x10=30

1. State and prove Cauchy's residue theorem and
2. Show that the mobius transformation is invariant and
3. Find the bilinear transformation which maps the points $a, 1, 0$, in the Z plane $-1, -i, 1$ in W -plane.
4. Find the Poles and Residues at each Pole $\frac{ze^z}{(z-1)^3}$
5. Find the image of the infinite strip $0 < y < \frac{1}{2}$ under the transformation $W = \frac{1}{z}$.