GOVT. POST GRADUATE NEHRU COLLEGE, JHAJJAR

Lesson Plan Session- 202

Name of Assistant Professor: Jinam

Class: M.sc.(Math)   Semester:1st Subject: Discrete mathematics

Month	Topic
August	Recurrence Relations and Generating Functions, Some number sequences, Linear homogeneous recurrence relations, Non-homogeneous recurrence relations, Generating functions, Recurrences and generating functions, Exponential generating functions.
September	Statements Symbolic Representation and Tautologies, Quantifiers, Predicates and validity, Prepositional Logic. Lattices as partially ordered sets, their properties, Lattices as Algebraic systems. Sub lattices, Direct products and Homomorphism, Some special lattices e.g. complete, Complemented and Distributive Lattices
October	Boolean Algebras as Lattices, Various Boolean Identities, The switching Algebra. Example, Subalgebras, Direct Products and Homomorphism, Joint-irreducible elements, Atoms and Minterms, Boolean forms and their equivalence, Minterm Boolean forms, Sum of Products, Cononical forms, Minimization of Boolean functions, Applications of Boolean Algebra to Switching Theory (using AND, OR and NOT gates.) The Karnaugh method
November	Finite state Machines and their Transition table diagrams, Equivalence of Finite State, Machines, Reduced Machines, Homomorphism. Finite automata, Acceptors, Non-deterministic, Finite Automata and equivalence of its power to that of deterministic Finite automata, Moore and Mealy Machines. Grammars and Language: Phrase-Structure Grammars, Requiting rules, Derivation, Sentential forms, Language generated by a Grammar, Regular, Context -Free and context sensitive grammars and Languages, Regular sets, Regular Expressions and the pumping Lemma.

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LESSON PLAN

CLASS: - B.Sc. (Major of Mathematics) **SEMESTER:- 1st** Sem

Name : - **Jinam**

Subject/Paper: - Vector Calculus

Time Period	Syllabus to be covered
July August	Scalar and vector product of three vectors. product of four vectors. Reciprocal vectors. Vector differentiation. Scalar Valued point functions. vector valued point functions. derivative along a curve. directional derivatives, Gradient of a scalar point function, geometrical interpretation of gradient as a point function.
September, 2024	Divergence and curl of vector point function, characters of Div f and Curl f as point function, examples. Gradient, divergence and curl of sums and product and their related vector identities. Laplacian operator. Orthogonal curvilinear coordinates Conditions for orthogonality fundamental triad of mutually orthogonal unit vectors. Double integral, triple integral, Double and triple integral in terms of orthogonal curvilinear coordinates. Cylindrical co-ordinates and Spherical co-ordinates.
October, 2024	Line integral, independent of path. Greens theorem and problems based on Greens theorem.
November, 2024	Surface integral. Stokes theorem and problems based on Stokes theorem. Gauss theorem and problems based on Gauss theorem.

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LESSON PLAN

CLASS – B Sc. – IInd 3rd Sem   SEMESTER – 3rd

Name of Assistant / Associate – Jinam

Subject / Paper   Ordinary Differential equation

Unit	Month	Subject Matter / Syllabus
1	July	Geometrical meaning of Diff. eqn. Exact Differential eqn. integrating factor.
	August	First order higher equation Solvable for x, y, P. lagrange's equation. Clairut's eqn. Singular Solution
2	September	Orthogonal trajectories: Cartesian Co-ordinates and polar Co-ordinates. Self orthogonal family of Curves. linear ordinary. Diff eqn Homogeneous linear ordinary diff eqn. Equation reducible to homogeneous
3	October	linear differential eqn of second order Reduction to normal form. Transformation of the eqn by changing the dependent Variable. Soln by operation of non-homogeneous linear diff eqn. Reduction of order of a differential eqn. Method of Variations of parameters. Method and
4	November	ordinary simultaneous diff eqn. Soln of simultaneous diff eqn involving. operators x (d/dx) or + (d/dt) simultaneous equation of the form $dx/P = dy/a = dz/R$ Total differential equation condition for $Pdx + Qdy + Rdz = 0$ to be exact. Method of auxiliary equations.

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LESSON PLAN

CLASS – M. Sc. Math   SEMESTER – 3rd

Name of Assistant / Associate – Jinam

Subject / Paper   Matlab –

Unit	Month	Subject Matter / Syllabus
1	August	Introduction to MATLAB Programming. Basics of Matlab Prg. Anatomy of a Program. Data type opraction. Arithmetic operator. Display formats. Start some Practical work. Script files Complex Number.
2	September	Introduction to Array : Creating one and two-dim array. Array addressing. strings. string function Cell Array. Creating Cell Array using manging data Input/ output Commands Save and load commands. Importing and Exporting Data. Executing files subroutines.
3	October	Two -Dimensional plots specialized 2-D plots formatting a plot. Multiple Plot on same plot plots with logarithmic Axes, Error Bar plots Histograms. polar plots. Using subplots for multiple graphs 3-D plots mesh and surface plots Saving and printing graph Mesh. Cotour
4	November	Polynomial : Finding value and Roots of Polynomials. Arithmetic oprations with polynom Curve Fitting curve fitting with polynomial Numerical Analysis : solving an equation find minimum and maximum of function Nucmerical integration ordinary Diff function

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