



BASIRHAT COLLEGE

(ESTD-1947)

BASIRHAT • NORTH 24 PARGANAS • PIN-743412

Phone: 03217-228505 ■ e-mail: info@basirhatcollege.org ■ website: www.basirhatcollege.org

Departmental Email: mathematics@basirhatcollege.org

From: H.O.D.

Department of Mathematics

Ref. No. 02/01/2021

Date: 24.02.2021


Notice

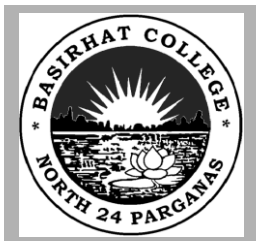
This is to inform to all of my colleagues of our department that a job sheet regarding 2nd Internal Assessment of Sem-I, III & V (H&G) and SEC of Sem-III (H&G) & V(G) has been prepared according to the meeting of Ref. No.02/2021 dated 23.02.2021, as follows:

Class	Code	BS	PD	SM	Last Date	
					QPP	ASE
Semester-I	MTMA Core-1	QPP (U-1,4) ASE		QPP (U-3)	27.02.2021	08.03.2021
	MTMA Core-2		QPP (U-3, 4) ASE		27.02.2021	08.03.2021
	MTMG Core-1	QPP (U-1.2)	QPP (U-1.1)	QPP (U-1.3) ASE	27.02.2021	08.03.2021
Semester-III	MTMA Core-5		QPP (U-3) ASE		27.02.2021	08.03.2021
	MTMA Core-6	QPP (U-4) ASE	QPP (U-3,5)		27.02.2021	08.03.2021
	MTMA Core-7T			QPP (U-5,6) ASE	27.02.2021	08.03.2021
	MTMG Core-3	QPP (U-2)	QPP (U-3)	QPP (U-4) ASE	27.02.2021	08.03.2021
	SEC-1			QPP (U 1-6) ASE	27.02.2021	15.03.2021
Semester-V	MTMA Core-11		QPP (U-3, 4) ASE		27.02.2021	08.03.2021
	MTMA Core-12		QPP (U-2, 4) ASE		27.02.2021	08.03.2021
	MTMA DSE-1	QPP (U-2, 3) ASE			27.02.2021	08.03.2021
	MTMA DSE-3	QPP (U-4)		QPP (U-3) ASE	27.02.2021	08.03.2021
	MTMG DSE-1	QPP (U-2, 4) ASE			27.02.2021	08.03.2021
	SEC-1			QPP (U 4-6) ASE	27.02.2021	15.03.2021

QPP: Question Paper Preparation ; U: Unit ; ASE: Answer Script Evaluation

All of my colleagues are requested to finish your assigned jobs within due date, positively. For setting the question papers, please follow the syllabi attached in the next pages.


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From: Department of Mathematics

Date: 01.02.2021

Syllabus for 2nd Internal Assessment for Sem-I, III & V, 2021

Semester	Course Code	Details
Sem-I (H)	MTMACOR01T	<p>Unit-1: envelopes, asymptotes, curve tracing in Cartesian coordinates, tracing in polar coordinates of standard curves.</p> <p>Unit-3: Reflection properties of conics, translation and rotation of axes and second degree equations, classification of conics using the discriminant, polar equations of conics. Spheres. Cylindrical surfaces. Central conicoids, paraboloids, plane sections of conicoids, Generating lines, classification of quadrics, Illustrations of graphing standard quadric surfaces like cone, ellipsoid.</p> <p>Unit-4: Differential equations and mathematical models. General, particular, explicit, implicit and singular solutions of a differential equation. Exact differential equations and integrating factors, separable equations and equations reducible to this form, linear equation and Bernoulli equations, special integrating factors and transformations.</p>
	MTMACOR02T	<p>Unit-3: Systems of linear equations, row reduction and echelon forms, vector equations, the matrix equation $Ax = b$, solution sets of linear systems, applications of linear systems, linear independence</p> <p>Unit-4: Matrix, inverse of a matrix, characterizations of invertible matrices. Rank of a matrix, Eigen values, Eigen Vectors and Characteristic Equation of a matrix. Cayley-Hamilton theorem and its use in finding the inverse of a matrix.</p>
Sem-I (G)	MTMGCOR01T & MTMHGEC01T	<p>Unit-1: Partial differentiation, Euler's theorem on homogeneous functions.</p> <p>Unit-2: Asymptote, Singular points, Tracing of curves. Parametric representation of curves and tracing of parametric curves, Polar coordinates and tracing of curves in polar coordinates.</p> <p>Unit-3: Maxima and Minima, Indeterminate forms.</p>

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Semester	Course Code	Details
Sem-III (H)	MTMACOR05T	Unit-3: Cauchy's mean value theorem. Taylor's theorem with Lagrange's form of remainder, Taylor's theorem with Cauchy's form of remainder, application of Taylor's theorem to convex functions, relative extrema. Taylor's series and Maclaurin's series expansions of exponential and trigonometric functions, $\ln(1+x)$, $1/ax+b$ and $(1+x)^n$. Application of Taylor's theorem to inequalities..
	MTMACOR06T	Unit-3: Properties of cyclic groups, classification of subgroups of cyclic groups, Cycle notation for permutations, properties of permutations, even and odd permutations, alternating group, properties of cosets, Lagrange's theorem and consequences including Fermat's Little theorem. Unit-4: Factor groups, Cauchy's theorem for finite abelian groups. Unit-5: Group homomorphisms, properties of homomorphisms, Cayley's theorem, properties of isomorphisms, First, Second and Third isomorphism theorems.
	MTMACOR07T	Unit-5: Numerical Integration: Newton Cotes formula, Trapezoidal rule, Simpson's 1/3rd rule, Simpsons 3/8 th rule, Weddle's rule, Boole's rule. Midpoint rule, Composite Trapezoidal rule, Composite Simpson's 1/3rd rule, Gauss quadrature formula. The algebraic eigenvalue problem: Power method. Unit-6: Ordinary Differential Equations: The method of successive approximations, Euler's method, the modified Euler method, Runge-Kutta methods of orders two and four.
Sem-III (G)	MTMGCOR03T & MTMHGEC03T	Unit-2: Real Sequence, Bounded sequence, Cauchy convergence criterion for sequences. Cauchy's theorem on limits, order preservation and squeeze theorem, monotone sequences and their convergence (monotone convergence theorem without proof).. Unit-3: Infinite series. Comparison test, convergence of p-series, Root test, Ratio test, alternating series, Leibnitz's test (Tests of Convergence without proof). Definition and examples of absolute and conditional convergence. Unit-4: <ul style="list-style-type: none"> • Sequences of functions and M-test. • Series of functions, Pointwise and uniform convergence. M_n-test and M-test for uniform convergence. • Statements of the results about uniform convergence and integrability and differentiability of functions. • Power series and radius of convergence.

Banerjee

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Semester	Course Code	Details
Sem-V(H)	MTMACOR11T	<p>Unit-3: The Cauchy problem, Cauchy-Kowalewskaya theorem, Cauchy problem of an infinite string, Initial Boundary Value Problems. Semi-Infinite String with a fixed end, Semi-Infinite String with a Free end. Equations with non-homogeneous boundary conditions. Non-Homogeneous Wave Equation. Method of separation of variables, Solving the Vibrating String Problem. Solving the Heat Conduction problem.</p> <p>Unit-4: Central force. Constrained motion, varying mass, tangent and normal components of acceleration, modelling ballistics and planetary motion, Kepler's second law.</p>
	MTMACOR12T	<p>Unit-2: Properties of external direct products, the group of units modulo n as an external direct product, internal direct products, Fundamental Theorem of finite abelian groups.</p> <p>Unit-4: Groups acting on themselves by conjugation, class equation and consequences, conjugacy in S_n, p-groups, Sylow's theorems and consequences, Cauchy's theorem, Simplicity of A_n for $n \geq 5$, non-simplicity tests.</p>
	MTMADSE01T	<p>Unit-2: Transportation problem and its mathematical formulation, northwest-corner method, least cost method and Vogel approximation method for determination of starting basic solution, algorithm for solving transportation problem, assignment problem and its mathematical formulation, Hungarian method for solving assignment problem..</p> <p>Unit-3: Game theory: Formulation of two person zero sum games, solving two person zero sum games, games with mixed strategies, graphical solution procedure, linear programming solution of games.</p>
	MTMADSE03T	<p>Unit-3: Chebyshev's inequality, statement and interpretation of (weak) law of large numbers and strong law of large numbers. Central Limit theorem for independent and identically distributed random variables with finite variance, Markov Chains, Chapman-Kolmogorov equations, classification of states.</p> <p>Unit-4: Random Samples, Sampling Distributions, Estimation of parameters, Testing of hypothesis.</p>
Sem-V(G)	MTMGDSE01T	<p>Unit-2: Translation, Dilation, Rotation, Reflection in a point, line and plane. Matrix form of basic geometric transformations. Interpretation of eigen values and eigen vectors for such transformations and eigen spaces as invariant subspaces.</p> <p>Unit-4: Matrices in diagonal form. Reduction to diagonal form upto matrices of order 3. Computation of matrix inverses using elementary row operations. Rank of matrix. Solutions of a system of linear equations using matrices. Illustrative examples of above concepts from Geometry, Physics, Chemistry, Combinatorics and Statistics.</p>

Barker
H.O.D.

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