

Nutanchati, Opposite Axis Bank, Bankura, West Bengal, Pin-722101

ACADEMIC AUDIT REPORT For the Academic year 2015- 2016

		the Academic year A				
	Academic	Audit of Department:	MATHEMATICS			
				Period of A	Audit: 2015-20	016
I.	COLLEGE PROFILE (To be filled in by the IQAC Co-or	dinator)				
1	Name of the Department, Website, email and Ph. No.	-	hematics, http://bzsmc	college.org/, E-n	nail id: <u>sarada</u>	a_6@yahoo.co.in;
_	N C1 HOD 3 O M 1 N	Ph. No.: 03242-2		0.157051.107		
2	Name of the HOD, email & Mob. No.		ey, <u>shrasub@yahoo.ca</u> ,			
3	Name of the IQAC Coordinator, email & Mob. No.	Mobile No.: 9474	Patra, <u>nityananda.patra1</u> 4144885	196 / @gmail.coi	<u>m</u>	
4	Year of Establishment/ Year of Affiliation	1973/1975				
5	NAAC Grade with Cycle, Accredited Year (if not Accredited Status of Preparations)	Grade A (3.04) Cycle 2, Year :2015				
6	UGC Recognition (2F & 12 B)	YES				
7	Departmental Working Hours (if shift system mention details of both shifts & give reasons for shift system)	10.00 a.m-5.00 p.m (Monday to Saturday)				
8	No. of Posts Sanctioned:				Teaching	Non Teaching
	Teaching -1	Govt. approved:			-	-
	Non Teaching- 0	ning- 0 Management approved :				-
	Supportive Staff -0	Govt. approved Contractual:			1	-
	Other if any - 0	Management app	roved Contractual:		-	-
		Guest Working:			3	-
9	Course wise & Year wise Students strength particulars	N. C				
		No of Students	Part-I	Part-l	I	Part-III
		Honours	40	36		30
		General	00	40		09



II -	CURRICULAR ASPECTS	Statement	Impression/Recommendati	Status	Grade
			Remark by Academic Advisors		
1	Departmental Annual Curricular Plans	Distribution of syllabus in modules and unitization of syllabus were prepared well before the commencement of classes and executed in a planned and systematic manner. PO, CO & PSO (Annexure-I) is also formulated.	Practical experience on theoretical knowledge be given importance through the introduction of Internship, if possible.	Good	A
2	Departmental Activities and Records of students' and Teachers' participation for the Academic Year 2015 to 2016	Every activity is recorded such as Departmental meetings, Departmental Seminar, Student-Seminar, Class Tests, Meetings of committees related to Parent-Student -Teacher formed by the department etc.	Database on the pass out students for making alumni association more dynamic and productive be made an integral part of the departmental activities every year.	Good	A
3	Add-on Courses completed during Academic Year 2015 to 2016	NIL	At least introduction of some vocational training courses be made compulsory every year to impart practical knowledge.	Poor	С
4	Plan for introduction of new Add-on Courses in Academic Year 2015 to 2016	NIL	Efforts be made for the introduction of some vocational training courses or at least hands on training be made compulsory every year to impart practical knowledge.	Poor	С
5	Coverage of Syllabus (Average Percentage)	More than 90% syllabus is covered for all courses of UG program. Records are kept in the individual Teacher's Diary.	100% coverage of the syllabus should be made mandatory because it will help the advanced students immensely.	Good	A
6	Maintenance of Student Attendance Registers	Day to day attendance is recorded in the Student Attendance Registers.	Poor attendance (i.e. less than 50%) of the students be compulsorily intimated to the	Good	A



			parents.		
7	Feedback forms on Curriculum from students	Yes (Annexure II) Feedback is taken and analyzed. Attempts are being made to submit the feedback offline by the students from the current session. Suggestions and proposals from students have been carefully analyzed. Some of the demands have been fulfilled by the department in the interest of the students	•	Satisfactory	В

^{**} Grade A (Good) / B (Satisfactory) / C (Poor)



	TEACHING, LEARNING EVALUATION	Statement	Impression/Recommendation/Remark by Academic Advisors	Status	Grade
1	Teaching Diaries & Plans in the Prescribed Formats	the Prescribed Formats the teachers of the department and those are verified and signed by the Principal.		Good	A
2	N/19thematics 11117 Ontest Oncent Lest In		Arrangement of Exhibition at least once a year is recommended.	Good	A
3	Degrees offered Job-oriented programmes be introduced, UG programs run by the department. if possible.		Good	A	
4	Conduct of Internal Examinations-continuous assessment & Mid-Term Test	Continuous assessment is carried out by the department in the form of Class Test, Mid-term test, Concept Test, Surprise Test, Practical Test and Internal Assessment.	Well maintained and documented.	Good	A
5	Remedial Classes	Remedial classes are conducted for each year as and when required subject to the availability of time and convenience of student and teachers. Sometimes in the remedial classes, evaluated and assessed answer scripts are shown to the students for their self-assessment and better understanding of the subject.	Assessed answer scripts reflecting the academic improvement of the students be given to the students to show their parents.	Good	A
6	Record of Mentoring of students by teachers	Record of mentoring of students by teachers is maintained by the department. However, mentoring is also provided outside the class.	Performances of the students in all respects be intimated to the parents periodically, if possible.	Good	A
7	Result Analysis for the years 2015 & 2016	Result analysis is done according to result sheet provided by the University (Annexure-III). After critical analysis of the results; the students are advised about how to improve both the theoretical and practical marks.	Final result sheet should be well-circulated through college prospectus, website etc.	Good	A



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** Grade A (Good) / B (Satisfactory) / C(Poor)



IV -]	RESEARCH AND CONSULTANCY	Statement	Impression/Recommendation/Remark by Academic Advisors	Status	Grade
1	No. of Research Guides in the Department	Nil	All Departmental teachers be encouraged to complete their Ph.D.	Poor	С
2	No. of Faculty registered for Ph. D (attach details)	Nil	All Departmental teachers be encouraged to complete their Ph.D.	Poor	С
3	Number of Major/Minor/Other Research Projects (attach details)	Major: Nil Minor: Nil Others: Nil	Other funding agencies may be explored.	Poor	С
4	Number of Research Papers Published in Academic year (Internationals/Nationals Journals) (attach details)	National : Nil International: Nil	Inadequate.	Satisfact ory	В
5	Number of Papers Presented in Academic year 2015 to 2016 (International/National/State Level Conference) (attach details)	International: Nil National: Nil State Level Conference: Nil	Inadequate.	Satisfact ory	В
6	Number of Books Published in Academic year 2015 to 2016 (Single Author/Co Author) (attach details)	As a Single Author – Nil As a Co-Author – Nil	Inadequate.	Satisfact ory	В
7	Number of Seminars / Workshops / Training Program Conducted in the Academic year (International / National / State) (attach details)	Nil	Efforts to be made to conduct National/International Seminars	Satisfact ory	В
8	Student Seminars/ Workshop/ Exhibition/ Project in the Academic Year (other than University)	Nil	Arrangement of Exhibition at least once a year is recommended.	Satisfact ory	В
9	Record of Consultancy in Academic year 2015 to 2016 (attach details)	Nil	Initiative should be taken by the college to invite various companies for placement, if possible.	Poor	С
10	Record of MOUs in Academic year 2015 to 2016 (attach details)	Nil	Initiative should be taken by the college, if possible.	Poor	С



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V - EXTENSION ACTIVITIES		Statement	Impression/Recommendation/ Remark by Academic Advisors	Status	Grade
1	Record of Subject/Department Related Extension Activities (attach details)	Nil	Initiative may be taken by the Department.	Poor	С
2	Field Visit (attach records)	Nil	Initiative may be taken by the Department.	Poor	С
3	Industry Visit (attach records)	Nil	Initiative may be taken by the Department.	Poor	С
4	Any Other Club (attach records)	Nil	Initiative may be taken by the Department.	Poor	С
5	Any other social service activity undertaken by the students and teachers/students/teachers of the department (attach records)	Nil	Initiative may be taken by the Department.	Poor	С

^{**} Grade A (Good) / B (Satisfactory) / C (Poor)



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Recommendation/Suggestions by Academic Advisors

Suggestions for improvement/progress of the department	Sheet attached			
Declaration by the Department	Signatures of Academic Advisor with designation (9 mech of Gliggs)	Scal Inspector of College (Addl. Charge)		
	2	Bankura University		
	3			
Signature of the HOD with date				
Signature of the Principal with date				

Declaration by the Principal

On behalf of the College Governing Body and as Institutional Head, I will forward the observations by the Academic Advisors to IQAC and also to the Governing Body of the Institution for further necessary action regarding Academic development of the department.

Date:	Partie
Duty.	Signature of Principal
	Principal
	Benkurs Zille Baradami
	Minia Maharidyapiti

PROGRAM OUTCOMES (POS), PROGRAM SPECIFIC OUTCOMES (PSOS) AND COURSE OUTCOMES (COS) OF MATHEMATICS HONOURS (B. SC.)

FOR THE ACADEMIC SESSION 2015-16.

Vision:

To become a premier center, promoting Mathematics locally and globally

Mission:

To materialize the vision, the Department of Mathematics focuses on the following:

- > To provide necessary background
- > For producing a meaningful career in Mathematics and related fields
- > For acquiring, Mathematical skills and employability skills

Program Outcomes (POs):

Program Name	Program Outcomes			
	PO.1.	Acquires the ability to understand and analyze the problems.		
Mathematics Honours (B. Sc.)	PO.2.	Develops the skill to think critically on abstract concepts of Mathematics.		
	PO.3.	Acquires the ability to apply independently paving way for life long learning		
	PO.4.	Analyses the situation, make a mathematical problem and find its solution.		
fathematics	PO.5.	Enhances Logical reasoning skills, arithmetic skills, aptitude skills computational skills, computer skill, programming, self confidence for better employability.		
Ž	PO.6.	Formulates and develops mathematical arguments in logical manner.		
	PO.7.	Provides a systematic understanding of the concepts and theories of mathematical and computing their application in the real world.		

Program Specific Outcomes (PSOs):

Program Name	Program Specific Outcomes				
	PSO.1.	Understands the basic concepts of advanced Mathematics.			
	PSO.2.	Develops the problem solving skill.			
onours	PSO.3.	Develop various computational techniques.			
Mathematics Honours (B. Sc.)	PSO.4.	Realize the idea of modern mathematics through mathematical structures and problems			
Mather	PSO.5.	Creates Mathematical Models (along with solution) for various physical needs.			
	PSO.6.	Idea of application of mathematics in inter disciplinary matters			
	PSO.7.	Develop the computer programming skill for solving various physical problems.			

Course Outcomes (COs):

Paper Subject Area Out		Outcomes	
		CO.1.	Understands the concept of inequality, various well known inequalities and their applications.
	Classical algebra	CO.2.	Study the concept of complex numbers, various complex functions, their geometric representation and their properties.
		CO.3.	Learn the idea of polynomials, algebraic equations along with different kind of solving techniques as well as application of root-coefficient relation.
		CO.4.	Revisit the ideas of set, relation and mapping along with their algebraic properties and classifications.
		CO.5.	Understand the partition of a set, countability and uncountability.
	Abstract algebra-I	CO.6.	Introduction to group theory along its basic properties.
		CO.7.	Study permutation group, cyclic group and their properties and application to various field of sciences
Paper-I		CO.8.	Introduction to ring and field and their basic understanding
	Geometry of two dimensions	CO.9.	Transformation of coordinates and classification of general second degree equation
		CO.10.	Study the geometry of pair of straight line and their properties
		CO.11.	Study the geometry of conics and their properties
		CO.12.	Understand the geometry of transformations of rectangular coordinate axes, invariants and their various application to geometric problems
	Geometry of three	CO.13.	Study with geometric realization of straight lines and planes
	dimensions	CO.14.	Understand the geometry of general second degree equation and their classifications.
		CO.15.	Study the geometry of some special geometric objects, such as ellipsoids, surface of revolution etc.

Paper	Subject Area		Outcomes
		CO.16.	Enlighten on the topological aspects of real number system
		CO.17.	Understand the concept of sequence of real numbers, its convergence and various properties
		CO.18.	Study limit, continuity, differentiability and their basic properties along with their analytical and geometric conceptions
	Analysis-I	CO.19.	Study various important theorems of real valued function on their continuity and differentiability along with applications
		CO.20.	Understand the mean value theorems, their geometric interpretation, applications and solve related problems
		CO.21.	Learn the various applications of differential calculus to many branches of mathematics as well as the concept of various mathematical and physical objects, such as curvature, envelopes etc.
		CO.22.	Study the calculus of functions of several variables from both algebraic and geometric understanding
	Integral calculus	CO.23.	Revisit the idea of integration (both definite and indefinite) and its properties and geometric understanding
Ħ		CO.24.	Study the concept of multiple integration and related problems
Paper-II		CO.25.	Learn the various applications of integral calculus to measurements of various geometrics objects and physical quantities.
, ,	O.D.E	CO.26.	Introduction to differential equations from theoretical perspectives, geometric understanding and formation from various physical problems.
		CO.27.	Study the classification of differential equation and idea of order, degree (from both theoretical and geometry of solution)
		CO.28.	Understand the integrability of an ODE and Picard's existence theorem.
		CO.29.	Study the Linear and exact differential equation and various solution techniques of such differential equations.
		CO.30.	Study the various solution techniques of first order differential equations and the concept of singular solution along with its finding procedures and geometric understanding.
		CO.31.	Learn various solution techniques of higher order differential equations and their classifications.
		CO.32.	Study the various solution techniques of system of linear differential equations along with the geometry of their solutions.
	P.D.E	CO.33.	Introduction to partial differential equation and understand the geometry of its solutions as well as formation of PDE.
		CO.34.	Study the classification of PDE and some techniques of solving PDEs.

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Paper	Subject Area		Outcomes					
		CO.35.	Understand the concept of normal subgroup, group homomorphism from various algebraic aspects and their applications					
	Abstract Algebra- II	CO.36.	Study Partial order relation, Poset, Lattices and their algebraic as well as geometric realizations and representations along with various applications					
		CO.37.	Developed the concept of Boolean algebra and its application to mathematical logic, computer science and other fields.					
		CO.38.	Study the concept of matrices, determinants and their physical, geometrical interpretation along with their properties and various applications (e.g., system of linear equation, classification of quadratics etc.)					
	Linear Algebra	CO.39.	Study the concept of rank, invertibilty, congruence and similarity of matrices.					
		CO.40.	Grow the idea of vectors, vector spaces (both physical and abstract), subspaces, linear dependency, dimension etc.					
Paper-III		CO.41.	Developed the concept (algebraic and geometric) of linear transformations, their representations, various properties and applications					
		CO.42.	Study the concept various properties of the set of integers and naturals. Revisit the idea of prime numbers, composite numbers, greatest common divisor etc.					
	Number Theory	CO.43.	Understand the properties and algebra of congruence relation, various well known theorems, along with applications.					
		CO.44.	Study various functions, such as Eulers ϕ function, Möbius μ – function etc. along with related problems and applications					
		CO.45.	Understand the concept of Riemann integrations (through Riemann sum, Darboux sum) related theorems					
	Analysis-II	CO.46.	Techniques of checking integrality of various types of functions					
		CO.47.	Study improper integral and their convergence, especially the gamma and beta function and related problems.					

Paper	Subject Area		Outcomes
		CO.48.	Revisit vector algebra and its property along with the applications
	Vector Analysis	CO.49.	Geometrical meaning of continuity and differentiability of a vector-valued function of one variable
		CO.50.	Concept of gradient, divergence and cure of function
		CO.51.	Application of Green's, Gauss & Stokes theorem
		CO.52.	Revisit the concept of velocity, acceleration, force, Newton's law of motion etc.
		CO.53.	In real life importance of conservative and non-conservative force
	Dynamics of a	CO.54.	Some useful application of work, power and energy
VI.		CO.55.	Understanding the concept of impulse, impulsive forces, impact (direct/oblique) and principle of conservation of linear momentum
Paper-IV		CO.56.	Study the motion of a particle along a line under various force conditions
	Particle	CO.57.	Study the concept of SHM and Forced vibrations, Damped harmonic oscillations, Damped forced oscillations.
		CO.58.	Understanding the concept of angular velocity, angular acceleration
		CO.59.	Study of motion of a particle in a plane using the components of velocity and acceleration in various directions (e.g., radial and cross radial, tangential and normal)
		CO.60.	Study the motion of central orbit, planetary motions and constrained motion along with various related problem
		CO.61.	Developed the skill of physical realization of dynamics and problem solving techniques.
		CO.62.	Study the basic idea of tensor algebra and generalized coordinates
	Tensor Calculus	CO.63.	Understand and realize the Calculus of tensor and application to Riemannian space

Paper	Subject Area		Outcomes				
		CO.64.	Understanding the concept of convergence sequence ,limit superior, limit inferior and application of Bolzano-Weierstrass theorem, Heine-Borel theorem				
		CO.65.	Some useful application of Comparison test, Ratio test, Cauchy's root test and Leibnitz's test				
	Analysis-III	CO.66.	Study the concept of sequence and series of functions and their convergence along with their geometrical interpretation.				
		CO.67.	Understand the convergence, interpretation and application of Fourier series and power series.				
		CO.68.	Study the calculus of function of several variables from both analytic and geometric point of view along with applications.				
		CO.69.	Understand the concept of differentiation under integral sign and their application.				
	Complex Analysis	CO.70.	Make the basic understanding on complex numbers, various complex functions along with their geometric and topological aspects				
Paper-V		CO.71.	Understand the concept of limit, continuity, differentiability and analyticity of complex function				
Pape		CO.72.	Study power series and its properties				
		CO.73.	Understand the concept of Möbius transformations and related problems				
		CO.74.	Understand the concept of metric metric space through various examples and their geometric realization and conception.				
		CO.75.	concept of some elementary object of a metric space charges open ball closed ball open set set limit point along with their properties and examples				
	Metric spaces	CO.76.	Concept of sequence Cauchy sequence and convergence on metric space and study the concept of completeness of a metric space along with some example and their geometric realization.				
		CO.77.	Understand the concept of continuity on a metric space along with some examples and various applications				
		CO.78.	Study the concept of compactness and its analytical importance along with various examples				
		CO.79.	Understand various type of compactness and their interrelations and equivalence on a metric space.				

Paper	Subject Area		Outcomes
	Elements of Continuum Mechanics	CO.80.	Study the idea of continuum mechanics, idea of strain and stress, viscosity along with their physical realizations
	Classical Dynamics	CO.81.	Enlighten on various ideas and concepts of classical dynamics, such as inertial frame, absolute time, Galilean transformation etc.
	Dynamics of a system of particles	CO.82.	Understand the basic concept of system of particle and various related terms, such as linear momentum kinetic energy etc.
	Dynamics of a rigid body	CO.83.	Understand the concept of moment of inertia and product of inertia radius of gyration etc. along with some techniques of finding such quantities for various well known objects.
Paper-VI		CO.84.	Study the two dimensional motion of various rigid bodies under various restrictions and constraints.
Pape	Statics	CO.85.	Revisit on concept of physical quantities, such as concurrent forces parallel forces moment of force etc.
		CO.86.	Study the equilibrium of a system, stability of equilibrium and various test regarding stability
		CO.87.	Understand the basic concept of fluid and fluid pressure and its elementary properties.
	Hydrostatics	CO.88.	Analyze the stability and equilibrium of a fluid under various conditions
		CO.89.	Study the various properties and related problem of gases.

Paper	Subject Area		Outcomes
		CO.90.	Introduction to probability theory along with the classical notion as well as modern notion. Idea of probability space and random variable.
		CO.91.	Notion of probability distribution (from geometric view point also) along with examples especially discrete or continuous as well as mixed distribution. Study the idea of distribution function probability mass function probability density function along with their various properties
	Probability	CO.92.	Study some important probability distributions Grow the concept of multidimensional probability distribution along with examples and related distribution function density function and mass functions Concept of marginal distribution and conditional distribution from physical and geometrical point of view.
11/		CO.93.	Introduction to probability expectation variance and various other characteristic related to a probability distribution. Study the concept of probability expectation of a multidimensional distribution and related characteristics
Paper-VII		CO.94.	Study Chebyshev's inequality large number of central limit theorem.
Paj	Statistics	CO.95.	Study the basic concept of statistics and various characteristics of a statistical sample. Study sample population parameter estimation and testing a hypothesis of a statistical data.
		CO.96.	Study the basic concept of linear programming problem along with its solution using graphical method.
	Operation Research	CO.97.	Study the concept of simplex method and its various applications to solve a LPP. Study other techniques of solving LPP such as two phase method, Big-M method.
		CO.98.	Concept of dual problem of an LPP along with its economic interpretation and relation with the primal problem.
		CO.99.	Study the transportation problem and assignment problem along with their mathematical formation and various technique of solving
	Game theory	CO.100.	Study the concept of game theory along with various technique of solving.

Paper	Subject Area		Outcomes
		CO.101.	Idea of errors occurs in numerical calculation, grow the technique of solving a problem, i.e., algorithms and convergence problems in this methods.
		CO.102.	Developed the concept various technical methods of finding roots of a transcendental or polynomial equations (also from geometric viewpoint). Understand these methods from analytic point of view (along with rate of convergence and error estimation).
		CO.103.	Idea and mechanical technique (along with their convergence) of solving system of linear algebraic equations
	Numerical Analysis	CO.104.	Developed the idea and the application of finite differences. Understand the concept of interpolation (equi-spaced and unequi-spaced). Learn about various interpolation method form analytic and application viewpoint.
		CO.105.	Learn some techniques of differentiation based on interpolation.
Paper-VIII		CO.106.	Learn various techniques of numerical Integration: development of the techniques from various directions, geometric representation, error estimation and applications.
		CO.107.	Idea of numerical method for finding eigenvalues and eigenvectors (Power method). Idea of least square polynomial approximation of various data.
		CO.108.	Make the concept of numerical solution technique of Ordinary Differential Equations: mechanical idea, geometry and application.
		CO.109.	Concept of positional number systems and related problems
		CO.110.	Developed the concept of programming languages.
	Computer programming	CO.111.	Grow the idea and understanding of C-language and systematic study of the c-language
		CO.112.	Solve many mathematical problems using computer (by writing programs in C-language)

Paper	Subject Area		Outcomes
X		CO.113.	Developed the computer programming skill.
Paper-IX	Computer added numerical methods: practical	CO.114.	Better understanding of solving various numerical methods from their algorithms, flowcharts and programs.
		CO.115.	Developed the writing capacity of various programs in c

	PO.1.	PO.2.	PO.3.	PO.4.	PO.5.	PO.6.	PO.7.
CO.1.					✓		
CO.2.	✓						
CO.3.	✓						
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CO.42.							✓
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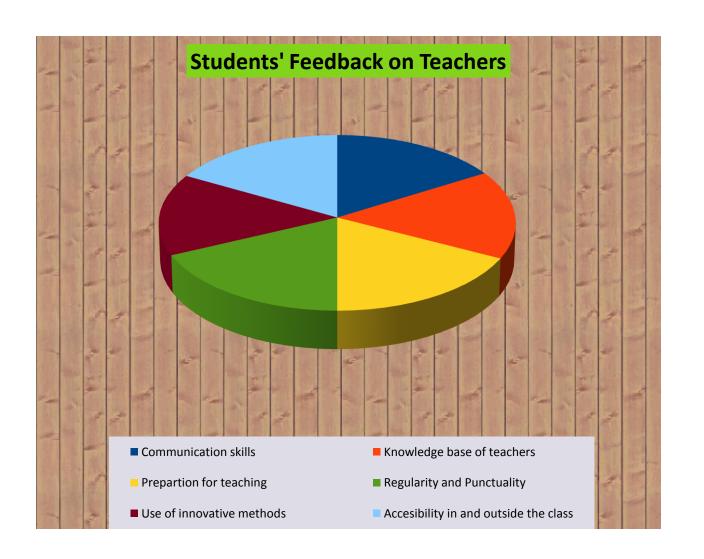
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Annexure II

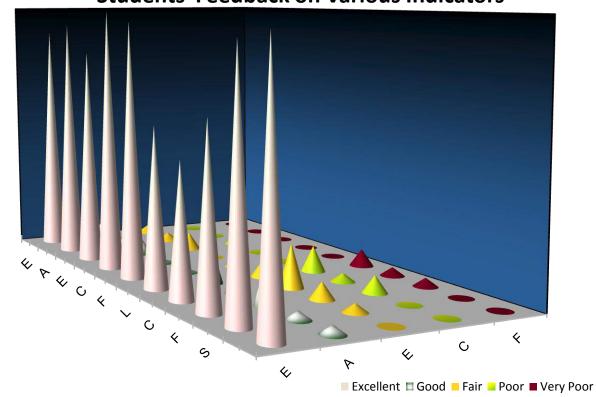
Students' Feedback (2015-186) No. of Responses

Questions	Excellent	Good	Fair	Poor	Very Poor	
Effectiveness of the syllabus	27	2	1	0	0	30
Applicability of the syllabus	28	1	1	0	0	30
Ease of comprehension of the subject thought	25	2	2	1	0	30
Completion of the syllabus	30	0	0	0	0	30
Fairness of Evaluation	29	0	1	0	0	30
Llibrary facility	18	5	2	3	2	30
Computer and internet facilities	15	8	5	1	1	30
Frequency of extra and co-curricular activities	20	5	2	2	1	30
Student-Teacher interaction	28	1	1	0	0	30
Student-Lab attendant interaction	29	1	0	0	0	30

On Teachers									
Communication skills	27	1	1	1	0	30			
Knowledge base of teachers	27	2	1	0	0	30			
Prepartion for teaching	29	0	1	0	0	30			
Regularity and Punctuality	30	0	0	0	0	30			
Use of innovative methods	25	3	2	0	0	30			
Accesibility in and outside the class	28	1	1	0	0	30			



Students' Feedback on Various Indicators



Annexure-III

Result Analysis

Department of Mathematics

Result (2015-16)

Session	Student Appear	Student Passed	Division/Class	
2015-16	15	13	1st	08
			2 nd	05

Meeting of the faculty members of the Department of Mathematics is held today, 13.07.2016 at 2 PM to discuss about the analysis of result of final examination of 2016 and it is resolved that:

- 1. Updated information regarding the subject should be provided in the class hours.
- 2. Some special classes apart from the regular classes should be taken in certain week.
- 3. Students should be inspired to take online classes for better knowledge and perfection.
- 4. Smart classes should be taken in every week.
- 5. Analyze the previous year's questions and follow the question pattern accordingly the preparation should be started and thoroughly practice more and more question answers.
- 6. Library hours should be increased and every week a certain time for library reading season should be allotted.
- 7. The number of reference books, journals, and magazines and text books should be increased in the library.
- 8. Interdisciplinary classes should be arranged for betterment of their knowledge.
- 9. Practice more and more at home and for any doubt arises, doubt clearing classes should be arranged.

Meeting ends to the thanks of the chair.