

Sixty Seventh Annual Report : 1998-99

Sunder, V.S., Institute of Mathematical Science, Chennai (16.04.1998) : G-Relations

Tikkiwal, G. C., University of Jodhpur (17.06.1998) : Crop Acreage Estimation for Small Domains.

Upadhyay, S.K., Banaras Hindu University, Varanasi (08-10.03.1999) : I-2. Sample Based Bayesian Computations.

Ylisen, Kari, University of Turku, Finland (29.12.1998) : Positive operator measures and bi-measures with applications to quantum mechanics.

Applied Statistics Division

Applied Statistics Unit

Bandyopadhyay, Subir, University of Windsor, Canada (18.08.1998) : De - sign of Wavelength Routed Single Hop and Multihop Optimal Networks.

Jammalamadaka, S. Rao, University of California, Santa Barbara (04.09.1998) : Middle-censoring.

Jana, Smarajit, All India Institute of Hygiene and Public Health (09.02.1999) : Social Dynamics of HIV Transmission and its Impact.

Rathalli, R. N. Shivaji University, Kolhapur (17.11.1998) : Circular Asymmetric Distributions.

Sen, Saunak, Stanford University (08.12.1998) : Confidence intervals for gene location : The effect of model misspecification and smoothing.

Computer & Communication Sciences Division

Computer Vision and Pattern Recognition Unit

Ashish, Navin, University of Southern California, USA (03.02.1999) : Information Mediators - Information Gathering and Integration over the World Wide Web.

Bhattacharya, Prabir, University of Nebraska-Lincoln, NE, USA, (August 1998) : Some Application of Invariants in Computer Vision .

Advanced Computing and Microelectronics Unit

Das, Debasish, BFL, Calcutta (16.06.1998) : Static Interconnection Networks and Parallel Algorithms for efficient Problem Solving.

Dey, Suhrit K., Eastern Illinois University, Illinois, USA (22.07.1998) : An Efficient Algorithm for the Rectangle Intersection Problem with Applications to VLSI Design.

Prasanna,Viktor K., Department of Computer Science, University of Southern California, USA (18.08.1998) : High Performance Computing for Signal Processing.

Sen, Arunabha, Department of Computer Science and Engineering, Arizona State University, Tempe,USA (06.08.1998) : Some New Results on Radio Resource Management Functions in Wireless Networks.

Indian Statistical Institute

Machine Intelligence Unit

Anasuya Devi, H.K., National Institute of Advanced Studies, Bangalore (23.03.1999) : Image Based Character Recognition for Epigraphy Texts.

Ghosh, J., Department of Electrical and Computer Engineering, University of Texas, Austin, U.S.A. (12.01.1999) :
(i) Network ensembles: when many heads are better than one and (ii) The supra-classifier framework for scalable.

Paul, A., Department of Computer Science and Automation, Indian Institute of Science, Bangalore (07.08.1998) :
Quantum computing : A new paradigm of computation.

Pujari, A. K., Department of Computer Science, University of Hyderabad, Hyderabad, (29.07.1998) : (i) New Learning Rule for Hopfield Model and Its Application to Wordsense Disambiguation and (ii) Dater : A Approach to Dating.

Sarkar, G., Department of Computer Science and Engineering, Regional Engineering College, Durgapur (05.02.1999) : Concept Theory Based Learning System.

Sudhakar, S., Regional Remote Sensing Service Centre, Kharagpur, (08.01.1999) : Remote Sensing and Geographical Information System for Resource Mapping and Management.

Physics and Earth Sciences Division

Physics and Applied Mathematics Unit

Bhattacharyya, J. K., IACS, Jadavpur (10-21.08.1998) : Dynamical Systems.

Chakraborti, A., Department of Mathematics, Indian Institute of Science, Bangalore (23 and 25.02.1999) : Hybrid Fourier Transforms and their Applications to Water Wave Problems - I, II.

Das, G. C., IASSI, Guwahati (30.06.1998) : (i) Waves in Plasma, (ii) Formation and Propagation of Solitons in Plasma.

Niyogi, P., (12-30.11.1998) : Finite Difference Methods .

Pushkin, D., Department of Theoretical and Applied Mathematics, University of Illinois, Urbana Champaign (13.01.1999) : Entropy Driven Phase Transition.

Roychowdhury, S., Department of Mathematics, University of Central Florida, USA (11.08.1998) : Pattern formation in non-linear dissipative PDE's.

Biological Sciences Division

Biochemistry Unit

Swarnakar, S., Department of Pharmacology, State University of New York at Stony Brook, New York, USA (13.10.1998) : Low Density Lipoprotein Cholesterol Metabolism in Mouse Adrenal Cells.

Social Sciences Division

Economic Research Unit

Banerjee, Sanjay, McGill University, Canada (11.03.1999) : Consumption smoothing and Risk taking activities under moral hazard.

Sixty Seventh Annual Report : 1998-99

- Basu, Parantap, Fordham University, U.S.A. (06.08.1998 and 14.01.1999) : (i) Trade Liberalization and Stock Prices, (ii) Growth and Distribution.
- Bera, Anil K., University of Illinois, U.S.A (15.05.1998) : Rao's Score, Neyman's C () and Silvey's LM Tests : An Essay on Historical Developments and Some New Results.
- Lahiri, Somdeb, Indian Institute of Management, Ahmedabad (31.07.1998) : Voting Operators on Ballot Profiles.
- Roy, Joydeep, University of Carlos III (18.06.1998) : Quantal Response Learning with Cognitive Rounds.
- Sen, Swapan, Michigan Technological University, U.S.A. (12.08.1998) : Currency Contracts in Informational Bank Loans.
- Sengupta, Ramprasad, Jawaharlal Nehru University (15.06.1998) : Ecology and Environment.

Sociological Research Unit

- Howmick, Sharit, University of Bombay, Mumbai (05.0.6.1998) : Workers cooperation : a sociological appraisal.
- Mukherjee, Harshanath, Tennessee Technological University, USA (19.6.1998) : Quality of life : sociological explication.

Statistical Quality Control and Operations Research Division

Bangalore Unit

- Wu, C F.J., University of Michigan, USA (04.03.1999) : Industrial Experimental Design : Box, Taguchi and Beyond (P.C. Mahalanobis lecture).

Library, Documentation and Information Sciences Division

Documentation Research and Training Centre (Bangalore)

- Bhattacharya, G., (12.09.1998) : Dr. S. R. Ranganathan's contributions.
- Prabha, Chandra, OCLC Network, Ohio, USA (28.12.1998) : Emerging Trends in Library Science.
- Reddy, E. Rama, Gandhi Memorial Library, University of Hyderabad, Hyderabad (15.05.1998) : Library Services in University Libraries in India.
- Urs, Shalini, DLIS, University of Mysore, Mysore (November 1998) : Recent Issues in Information Retrieval and Processing.

6. PUBLICATION OF SANKHYA

Founded and edited by Professor P.C. Mahalanobis in 1933, Sankhyā, the Indian Journal of Statistics and the official organ of the Indian Statistical Institute is now published bi-monthly in two series - Ser. A on Probability and Mathematical Statistics, and Ser. B on Statistical Methodology and Applications including Sample Survey and Quantitative Economics. Since its inception, eminent scholars all over the world have been contributing research articles for publication in Sankhyā, one of the most prestigious and internationally renowned journals. Sankhyā office takes care of publication of Sankhyā (A&B) with the assistance of Publication and Printing Unit.

Journal Committee :

Editors : Somesh Das Gupta and J.K. Ghosh

Co-Editors : Sankhyā A : P.K. Bhattacharya, Sujit Kumar Basu, Arup Bose, Anirban Das Gupta,
Mohan Delampady, R.L. Karandikar, Hira L. Koul and Kesar Singh.

Co-Editors : Sankhyā B : Dipankar Coondoo, Anup Dewanji, Alope Dey, S.R. Mohan, T.J. Rao
and Bimal K. Sinha.

Managing Editors : Series A : Arup Bose
Series B : T. J. Rao.

The following publications are published during April 1998 to March 1999

Sankhyā Ser. A : Volume 60, Parts 2 and 3
Volume 61, Part 1

Sankhyā Ser. B : Volume 60, Parts 1, 2 and 3

7. SCIENTIFIC PAPERS AND PUBLICATIONS

BOOKS PUBLISHED

Theoretical Statistics and Mathematics Division

Delhi Unit.

Dey Alok and Mukerjee Rahul : *Fractional Factorial Plans*. John Wiley & Sons, Inc., New York, xii+212 pages. 1999.

Computer and Communication Sciences Division

Computer Vision and Pattern Recognition Unit

Sengupta, P. and Chaudhuri, B.B. : *Object Oriented Programming : Fundamentals and Applications*, Prentice Hall of India, New Delhi, 1998.

Advanced Computing & Microelectronics Unit

Sinha, B.P., Das, N. and Bhattacharya, B.B (eds.) : *Recent Trends in High Performance Computing*, Indian Statistical Institute, Calcutta, 1998.

Machine Intelligence Unit

Pal, S. K. and Skowron, A. (eds) : *Rough Fuzzy Hybridization : New Trends in Decision Making*, Springer Verlag, 1999.

Physics and Earth Sciences Division

Physics and Applied Mathematics Unit

Mandal, B.N. and Mandal, Nanigopal : *Advances in Dual Integral Equations*, Chapman & Hall CRC *Research Notes in Mathematics*, 400. CRC Press LLC, Boca Raton, Florida, USA, 226 pages, 1999.

Roy, S. and Lehner, Bo : *Extended Electromagnetic Theory*, World Scientific Publishings, Singapore, 1998.

Social Sciences Division

Economic Research Unit

Chakravarty, S.R., Coondoo, D. and Mukherjee, R. (eds) : *Quantitative Economics : Theory and Practice, Essays in honour of Professor N. Bhattacharya*, Allied Publishers, New Delhi, 1998.

Indian Statistical Institute

Chatterjee, N., Bhattacharya, N. and Haldar A. : *Socio- Economic Profile of Households in Calcutta Metropolitan Area : 1996-97*, Calcutta Metropolitan Development Authority, Calcutta, 1999.

Chattopadhyay, M., Maiti, P. and Rakshit, M. (eds) : *Essays on Public Intervention, Institutional Arrangements and Economic Efficiency*, K. P. Bagchi & Company, Calcutta, 1999.

Mallik, Bhakti Prasad, Bhattacharya, N., Kundu S. C. and Dawn Mina : *The Phonemic and Morphemic Frequencies of the Bengali Language*, The Asiatic Society, Calcutta, 1998.

Planning Unit

Dasgupta, D. : *Macroeconomy*, Oxford University Press, 2nd edition, 215 pages, New Delhi, 1999.

Population Studies Unit

Mukhopadhyay, B. K. and Sarkar, B.N. : *Control of Population Growth in India : Statistical Review of Information (1958-59 to 1992-93)*, Survey Research Centre, Indian Academy of Social Sciences, Calcutta, 64 pages, 1998.

Library, Documentation and Information Sciences Division

Documentation Research and Training Centre

Prasad, A. R. D. : *Application of Optical Character Recognition Technology to Library and Information Work*, ISI/DRTC, Bangalore, 155 pages, 1999.

Rao, I. K. Ravichandra : *Information Management including ISO 9000 QMS*, ISI/DRTC, Bangalore, 320 pages 1999.

Papers Published in Journals

Theoretical Statistics and Mathematics Division

Calcutta Unit

Bagchi, S. and Ray, S. K. : Uncertainty Principles Like Hardy's Theorem on Some Lie Groups, *Journal of Austral. Mathematical Society (Series A)*, 65, 289-302, 1998

Bandyopadhyay, P. and Basu, S. : On a New Asymptotic Norming Property, *Indagatione Mathematica NS* 10, 15-23, 1999

Barua, R. and Sarkar, P. : The set of reversible 90/150 cellular automata is regular, *Discrete Applied Mathematics*, 84, 199-213, 1998

Barua, R. and Sarkar, P. : Multidimensional σ -automata, π - Polynomial and generalized S-matrices, *Theoretical Computer Science*, 197, 111-138, 1998.

Basu, S., Basu, A., Chakraborty, M.S., Dewanji, A., Ghosh, J.K. and Majumder, P.P. : Projection of HIV infection in Calcutta, *Indian Journal of Medical Research*, 107, 159-172, 1998.

Basu, S. and Basu A. : Penalized minimum disparity methods for multinomial models, *Statistica Sinica*, 8, 841-860, 1998.

- Bhandari, S. and Bose M. : Selecting the t -best cells of a multinomial distribution, *Sankhyā A*, 61, 139-147, 1999.
- Bishwal J.P.N. : Large deviations inequalities for the maximum likelihood estimator and the Bayes estimators in nonlinear stochastic differential equations, *Statistics and Probability Letters*, 43, 207-215, 1999.
- Bishwal J.P.N. : Bayes and sequential estimation in Hilbert space valued stochastic differential equations, *Journal of the Korean Statistical Society*, 28, 93-106, 1999.
- Chaudhuri, P., Chakraborty, B. and Oja, H. : Operating transformation retransformation on spatial median and angle test, *Statistica Sinica*, 8, 767-784, 1998.
- Chaudhuri, P. and Chakraborty, B. : On an adaptive transformation retransformation estimate of multivariate location, *Journal of the Royal Statistical Society, Series B*, 60, 145-157, 1998.
- Ghosh, J.K., Maiti, P., Rao T.J. and Sinha, B.K. : Evolution of Statistics in India, *International Statistical Review*, 67, 13-34, 1999.
- Ghosh, J.K., Ghosal, S. and Ramamoorthi, R.V. : Consistent Semiparametric Bayesian Inference for Location Parameter, *Journal of Statistical Planning and Inference*, 77, 181-193, 1999.
- Ghosh, J.K., Ghosal, S. and Ramamoorthi, R.V. : Posterior Consistency of Dirichlet Mixtures in Density Estimation, *The Annals of Statistics*, 27, 1999.
- Mukherjee, A. and Datta, M. : Parametric Homotopy Principle of some Partial Differential Relations, *Mathematica Slovaca*, 48, 411-421, 1998.
- Pandey, N. : A Combinatorial Lefschetz Fixed Point Formula, *Proceedings of Indian Academy of Sciences (Math. Science)*, 109, 1-10, 1999.
- Rao, S. B., Panda, B. S., and Mohanty, S. P. : Chordal Graphs with Specified Perfect Elimination Orderings, *Journal of Ramanujan Mathematical Society*, 13, 144-156, 1998.

Delhi Unit

- Akian, M., Bapat, R.B. and Ganbert, S. : Asymptotics of the Perron Eigenvalue and Eigenvector using Max-Algebra, *C.R. Academy Science Paris*, 327, 927-932, 1998.
- Atal, S. and Sinha, K.B. : Stopping Semimartingales on Fock Space, *Quantum Probability Communications*, 10, 171-186, 1998.
- Bapat, R.B. : A Max Version of Perron - Frobenius Theory, *Linear Algebra and its Applications*, 275-276, 3-18, 1998.
- Bapat, R.B. and Pati, S. : Algebraic Connectivity and the Characteristic Set of a Graph, *Linear and Multilinear Algebra*, 45, 247-273, 1998.
- Bhatia, R., Kittaneh, F. and Li, R.C. : Eigenvalues of Symmetrizable Matrices, *BIT*, 38, 1-11, 1998.
- Bhatia, R., Elsner, L. and Semrl, P. : Distance between Commuting Tuples of Normal Operators, *Archive der Mathematik*, 71, 229-232, 1998.
- Bhatia, R., Semrl, P. : Orthogonality of Matrices and some Distance Problems, *Linear Algebra and Applications*, 287, 77-85, 1999.
- Bhatia, R., Semrl, P. and Sourour, A.R. : Maps on Matrices that Preserve the Spectral Radius Distance, *Studia Mathematica*, 134, 99-110, 1999.

- Bhatia, R. and Drissi, D. : Perturbation Theorems for Hermitian Elements in Banach Algebras, *Studia Mathematica*, 134, 111-117, 1999.
- Bhattacharya, C. O. : Goodness of Yates-Rao Procedure for Recovery of Interblock Information, *Sankhyā*, A, 60, 134 - 144, 1998.
- Bhattacharya, T. and Weitsman, A. : Some Estimates for the Symmetrized First Eigenfunction of the Laplacian, *Potential Analysis*, 9, 143-172, 1998
- Bhattacharya, T. and Weitsman, A. : Estimates for Green's function in terms of Asymmetry, *AMS Contemporary Mathematics Volume*, 221, 31- 58, 1998.
- Bhattacharya, T. and Weitsman, Allen : A note on the Faber-Krahn inequality, *Le Matematiche*, LIII-Fasc.I, 71-83, 1998.
- Das, A., Dey, A. and Dean, A.M. : Optimal Block Designs for Diallel Crossing Experiments, *Statistics and Probability Letters*, 36, 427-436, 1998.
- Das, A., Dean, A.M. and Notz, W.I. : Designs with Nearly Minimal Number of Observations and Flexible Blocking, *Journal of Statistical Planning and Inference*, 72, 133-147, 1998.
- Das, A. : Optimality of a Class of Efficiency - Balanced Designs, *Statistics and Probability Letters*, 39, 317-326, 1998.
- Das, A., Dean, A.M. and Gupta, S. : On Optimality of Some Partial Diallel Cross Designs, *Sankhyā*, B, 60, 511-524, 1998.
- Dey, A. and Chawla, G.C. : A Series of Balanced Ternary Change Over Designs, *Journal of the Indian Society of Agricultural Statistics*, 51, 42-50, 1998.
- Dey, A. and Midha, C.K. : Addition or Deletion ?, *Statistics and Probability Letters*, 37, 409-414, 1998.
- Dey, A. and Mukerjee, R. : Techniques for Constructing Asymmetric Orthogonal Arrays, *Journal of Combinatorics, Information and System Sciences*, 23, 351-366, 1998.
- Dey, A. and Shah, K.R. : Optimal Asymmetric Fractional Factorial Plans for Estimating Main Effects and Selected Two-Factor Interactions, *International Journal of Mathematical and Statistical Sciences*, 7, 27-38, 1998.
- Dykstra, R., Kochar, S. and Robertson, T. : Restricted Tests for Testing Independence of Time to Failure and Cause of Failure in a Competing Risks Model, *Canadian Journal of Statistics*, 26, 57-68, 1998.
- Kochar, S.C., Fernandez Ponce, J.M. and Munoz-Perez, J. : Partial Ordering of Distributions based on Right-Spread Functions, *Journal of Applied Probability*, 35, 221-228, 1998.
- Kochar, S.C. : On Stochastic Orderings between Distributions and their Sample Spacings, *Statistics and Probability Letters*, 42, 345-352, 1999.
- Murthy, G.S.R., Parthasarathy, T. and Sriparna, B. : Some Recent results on the Linear Complementarity Problem, *SIAM Journal of Matrix Analysis and its Applications*, 19, 898-905, 1998.
- Murthy, G.S.R. and Parthasarathy, T. : Fully Copositive Matrices, *Mathematical Programming*, 82, 401-411, 1998.

Sixty Seventh Annual Report : 1998-99

- Prakasa Rao, B. L. S. : On a Characterization of Stochastic Processes by the Absolute Moments of Stochastic Integrals, *Theor. Veroyat. iee Primenen.*, 43, 189-191, 1998.
- Prakasa Rao, B. L. S. and Rubin, H. : Uniform Approximations for Families of Stochastic Integrals, *Sankhā Series A*, 60, 57-73, 1998.
- Prakasa Rao, B. L. S. : Hoeffding Identity, Multivariate and Multicorrelation, *Statistics*, 32, 13-29, 1998.
- Prakasa Rao, B. L. S. : Inequalities of Weyl-Type and Information Inequalities, *Indian Journal of Pure and Applied Mathematics*, 29, 681-694, 1998.
- Prakasa Rao, B. L. S. : Covariance Identity for Exponential and Related Distributions, *Statistics and Probability Letters*, 42, 305-311, 1999.
- Sarkar, A. : Finite Clusters in High Density Boolean Models, *Advances in Applied Probability*, 30, 929-947, 1998.

Bangalore Unit

- Balaji, S. and Ramasubramanian, S. : Reflecting Diffusions in the Quadrant : Recurrence and Transience, *Differential Equations and Dynamical Systems*, 6, 9-24, 1998.
- Balaji, S. and Ramasubramanian, S. : Reflecting Diffusions in an Orthant : An Introduction, *Differential Equations and Dynamical Systems*, 6, 25-36, 1998.
- Bhat, B.V. Rajarama : Product Systems of One Dimensional Evans-Hudson Flows, *Quantum Probability Communications*, X, 187-194, 1998.
- Padmawar, V. R. : A note on Comparison of Estimation Strategies in the Survey Sampling of Continuous Populations, *Sankhyā B*, 1998.
- Rao, T. S. S. R. K. : Denting and Strongly Extreme Points in the Unit Ball of Spaces of Operators, *Proceedings of the Indian Academy of Sciences (Mathematical Sciences)*, 109, 75-85, 1999.
- Rao, T. S. S. R. K. : Spaces of Operators as Continuous Function Spaces, *Extracta Mathematicae*, 12, 251-253, 1997.
- Sitaram, A. : Uncertainty Principles and Fourier Analysis, *Resonance*, 1999.
- Sitaram, A. and Thangavelu, S. : Fourier Series to Fourier Transforms, *Resonance*, 1998.
- Thangavelu, S. : Hermite and Special Hermite Expansions Revisited, *Duke Mathematical Journal*, 94, 257-278, 1998.

Applied Statistics Division

Applied Statistics Unit

- Bose, M. : Designs with Repeated Measurements on any Number of Units over Varying Periods, *Australia and New Zealand Journal Statistics*, 40, 241-248, 1998.
- Basu, A. Basu, S., Chakraborty, M. S., Dewanji, A., Ghosh, J.K. and Majumder, P.P. : Projection of HTV Infection in Calcutta, *Indian Journal of Medical Research*, 107, 159-172, 1998.
- Basu, A. and Basu, S. : Penalized Minimum Methods in Multinomial Models, *Statistica Sinica*, 8, 841-860, 1998.

Indian Statistical Institute

- Basu, A., Harris, I. R., Hjort, N. L. and Jones M. C. : Robust and Efficient Estimation by Minimising a Density Power Divergence, *Biometrika*, 85, 549-559, 1998.
- Chaudhuri, A., Adhikary, A. K. and Maity, T. : A Note on Non-Negative Mean Square Error Estimation of Regression Estimators in Randomized Response Surveys, *Statistical Papers*, 39, 409 - 415, 1999.
- Dewanji, A. : Serial Sacrifice Experiments, *Encyclopedia of Biostatistics*, 5, 4084 - 4089, 1998.
- Dewanji, A. : Smoking Radon and Lung Cancer, *Environment Management with Indian Experience*, 197 - 202, 1998.
- Khan, A. K., Palchaudhury, P., Dighidar, K. and Verma, R. : Text Compression using Two-Dimensional Cellular Automata, *Computers and Mathematics with Applications*, 37, 115 -127, 1999.
- Markatou M., Basu, A. and Lindsay, B. G. : Weighted Likelihood Equations with Bootstrap Root Search, *Journal of the American Statistical Association*, 93, 740-750, 1998.
- Pak, R. J. and Basu, A. : Minimum Disparity Estimation in Linear Regression Models : Distribution and Efficiency, *Annals of the Institute of Statistical Mathematics*, 50, 503-521, 1998.
- SenGupta, A. and Maitra, R. : On Best Equivariance and Admissibility of Simultaneous MLE for Mean Direction Vectors of Several Langevin Distributions, *Annals of the Institute of Mathematical Statistics*, 50, 715 -727, 1998.
- SenGupta, A. and Jammalamadaka, S. R. : Predictive Inference for Directional Data, *Statistics and Probability Letters*, 40, 247 -257, 1998.
- Sengupta, D., Bhattacharjee, A. and Rajeev, B. : Testing for the Proportionality of Hazards in Two Samples Against the Increasing Cumulative Hazard Ratio Alternative, *Scandinavian Journal of Statistics*, 25, 637-647, 1998.
- Sengupta, D. and Jammalamadaka, S. R. : Changes in the General Linear Model: a Unified Approach, *Linear Algebra and its Applications*, 289, 225-242, 1999.

Computer and Communication Sciences Division

Computer Vision and Pattern Recognition Unit

- Adiga, P.S. Umesh, Rodenacker, K., Aubele, M., and Hutzler, P. : Groping for Quantitative 3D Image Analysis: An Approach Quantitative Evaluation of Fluorescence in situ Hybridization in Thick Sections of Prostate Carcinoma, *International Journal on Analytical Cellular Pathology*, 15, 19-29, 1998.
- Adiga, P.S. Umesh and Chaudhuri, B.B. : An Efficient Cell Segmentation Tool for Confocal Microscopy Tissue Images for Quantitative Evaluation of FISH Signals, *International Journal on Microscopy Research and Techniques*, 44, 48-68, 1999.
- Chaudhuri, B.B. and Pal, U. : A Complete Printed Bangla OCR System, *Pattern Recognition*, 31, 531- 549, 1998.
- Parui, S.K. and Datta, A. : Shape Extraction : A Comparative Study Between Neural Network Based and Conventional Technique, *Neural Computing and Application*, 7, 343- 355, 1998.

Advanced Computing & Microelectronics Unit

- Jana, P.K. and Sinha, B.P. : Fast Parallel Algorithms for Graeffe's Root Squaring Technique, *Computers and Mathematics with Applications*, (Pergamon-Elsevier), 35, 71-80, 1998.
- Mitra, P. and Nandy, S.C. : Efficient Computation of Rectilinear Geodesic Voronoi Neighbor in Presence of Obstacles, *Journal of Algorithms*, 28, 315-338, 1998.
- Nandy, S.C., and Bhattacharya, B.B. : Maximal Empty Cuboids among Points and Blocks, *Computers and Mathematics with Applications* (Pergamon - Elsevier), 36, 11-20, 1998.
- Sen Gupta, S., and Sinha, B.P. : An $O(\log n)$ Time Algorithm for Testing Isomorphism of Maximal Outerplanar Graphs, *Journal of Parallel and Distributed Computing*, 56, 144-155, 1999.

Electronics and Communication Sciences Unit

- Bezdek, J.C. and Pal, N.R. : Some New Indices of Cluster Validity, *IEEE Trans. Syst., Man and Cybern.*, 28, 301-315, 1998.
- Chanda, B., Kundu, M.K. and Padmaja, V. : A Multi-Scale Morphologic Edge Detector, *Pattern Recognition*, 31, 1469-1478, 1998.
- Chanda, A., and Das, J. : On Geometrical and Statistical Self-Similarity in Wind Detector, *Journal of Technical Physics*, 39, 23-29, 1998.
- Chanda, A., Das, Prabir, De, A.K. and Das, J. : Existence of Self-Similarity in the Acoustic Radar Imagery of Atmospheric Turbulent Convection, *Journal of Acoustic Society, India*, 26, 255-263, 1998.
- De, A.K., Mukherjee, D.P., Pal, P. and Das, J. : SODAPRETER : A Novel Approach towards Automatic Sodar Data Interpretation, *International Journal of Remote Sensing*, 19, 2987-3002, 1998.
- Ganguli, N.R., Datta, A.K. and Mukherjee, B. : Some Studies on Duration of Vowels and Syllables in Bengali Text Reading, *Journal of Acoustic Society of India*, xxvi, 454 - 459, 1998.
- Ganguli, N.R., Datta, A.K. and Mukherjee, B. : Acoustic Phonetic Features of Non-Nasal Oriya Vowels, *Journal of Acoustic Society of India*, xxvi, 472-477, 1998.
- Mudi, R. and Pal, N.R. : A Self-Tuning Fuzzy PD Controller, *Journal of IETE*, 44, 177-189, 1998.
- Mudi, R. and Pal, N.R. : A Robust Self-Tuning Scheme for PI and PD Type Fuzzy Controllers, *IEEE Trans. Fuzzy Systems*, 7, 1-16, 1999.
- Pal, N.R. and Chintalapudi, K. : A Simple Scheme for Pruning a Multilayer Perception Networks, *Journal of Knowledge Based Intelligence Engineering Systems*, 2, 145-163, 1998.
- Pal, N.R., Pal, K. and Keller, J.M. : Some Neural Net Realizations of Fuzzy Reasoning, *International Journal of Intelligence Systems*, 13, 859-886, 1998.
- Pal, N.R. and Vijay, E. Kumar : Two Efficient Connectionist Schemes for Structure Preserving Dimensionality Reduction, *IEEE Trans. Neural Networks*, 9, 1142-1153, 1998.
- Pal, N.R. : Soft Computing for Pattern Recognition, *Fuzzy Sets and Systems*, 103, 197-200, 1999.
- Pal, N.R. : Soft Computing for Feature Analysis, *Fuzzy Sets and Systems*, 103, 201-221, 1999.

Indian Statistical Institute
Machine Intelligence Unit

- Bandyopadhyay, S., Murthy, C.A. and Pal, S.K. : Pattern Classification Using Genetic Algorithms : Determination of H, *Pattern Recognition Letters*, 19, 1171-1181, 1998.
- Bandyopadhyay, S., Pal, S.K. and Maulik, U. : Incorporating Chromosome Differentiation in Genetic Algorithms, *Information Sciences*, 104, 293-319, 1998.
- Bandyopadhyay, S., Pal, S.K. and Murthy, C.A. : Simulated Annealing Based Pattern Classification, *Information Sciences*, 109, 165-184, 1998.
- Bandyopadhyay, S., Murthy, C.A. and Pal, S.K. : Theoretical Performance of Genetic Pattern Classifier, *Journal of the Franklin Institute*, 336, 387-422, 1999.
- Banerjee, M., Mitra, S. and Pal, S.K. : Rough Fuzzy MLP : Knowledge Encoding and Classification, *IEEE Transactions on Neural Networks*, 9, 1203-1216, 1998.
- Basak, J. and Pal, S.K. : Hough Transform Network, *Electronic Letters*, 35, 577-578, 1999.
- Basak, J. and Amari, S. : Blind Separation of a Mixture of Uniformly Distributed Signals : A Novel Approach, *Neural Computation*, 11, 1011-1034, 1999.
- Basak, J., De, R.K. and Pal, S.K. : Fuzzy Feature Evaluation Index and Connectionist Realization - II : Theoretical Analysis, *Information Sciences*, 111, 1-17, 1998.
- Basak, J., De, R.K. and Pal, S.K. : Unsupervised Feature Selection using Neuro-Fuzzy Approach, *Pattern Recognition Letters*, 19, 997-1006, 1998.
- Chanda, B., Kundu, M. K. and Vanipadmaja, Y. : Multiscale Morphological Edge Detector, *Pattern Recognition*, 31, 1469-1478, 1998.
- Das, S., Pal, S.K. and Ghosh, A. : Genotypic and Phenotypic Assortative Mating in Genetic Algorithm, *Information Sciences*, 105, 209-226, 1998.
- Ghosh, A. and Tanaka, H. : On Making Neural Network Based Learning Systems Robust, *IETE Journal of Research*, 44, 219-225, 1998.
- Mitra, S., Banerjee, M. and Pal, S.K. : Rough Knowledge - Based Network, Fuzziness and Classification, *Neural Computing and Applications*, 7, 17-25, 1998.
- Mitra, S.K., Murthy, C.A. and Kundu, M.K. : Technique for Fractal Image Compression Using Genetic Algorithm, *IEEE Trans. on Image Processing*, 7, 586-593, 1998.
- Mitra, S.K., Murthy, C.A. and Kundu, M.K. : A Study on Partitioned Iterative Function System for Image Compression, *Fundamenta Informaticae*, 34, 413-428, 1998.
- Murthy, C.A. and Pittman, J. L. : Multilayer Perceptrons and Fractals, *Information Sciences*, 112, 137-150, 1998.
- Murthy, C.A., Bhandari, D. and Pal, S.K. : E - Optimal Stopping Time for Genetic Algorithms, *Fundamenta Informaticae*, 35, 91-111, 1998.
- Pal, N.R., Nandi, S. and Kundu, M.K. : Self-crossover : A New Genetic Operator and its Application to Feature Selection, *International Journal of System Sciences*, 29, 207-212, 1998.

Sixty Seventh Annual Report : 1998-99

- Pal, S.K., Basak, J. and De, R.K. : Fuzzy Feature Evaluation Index and Connectionist Realization, *Information Sciences*, 105, 173-188, 1998.
- Pal, S.K. : Soft Computing Tools and Pattern Recognition, (R. L. Wadhwa Award Lecture), *Journal of Institution of Electronics and Telecom. Engineers*, 44, 61-87, 1998.
- Pal, S.K., Bandyopadhyay, S. and Murthy, C.A. : Genetic Algorithms for Generation of Class Boundaries, *IEEE Trans. on System, Man and Cybern.*, 28, 816-828, 1998.
- Pal, K., Pal, N.R. and Keller, J. : Some Neural Net Realizations of Fuzzy Reasoning, *International Journal of Intelligent Systems*, 13, 859-886, 1998.
- Sarbadhikari, S.N., Basak, J., Pal, S.K. and Kundu, M.K. : Noisy Fingerprint Classification with Directional FFT Features using MLP, *Neural Computing and Applications*, 7, 180-191, 1998.
- Tsutsui, S., Ghosh A and Fujimoto, Y. : Search Space Division in GAs using Phenotypic Properties. *Information Sciences*, 109, 119-133, 1998.
- Uma Shankar, B., Murthy, C.A. and Pal, S.K. : A New Gray Level Based Hough Transform for Region Extraction : An Application to IRS Images, *Pattern Recognition Letters*, 19, 197-204, 1998.

Physics and Earth Sciences Division

Geological Studies Unit

- Bhattachary, S. and Kar, R. : Structural Constraints on Reworking in the Western Ghats Granulite Belt, India and the Antarctic Analogues, *Gondwana Research*, 1, 285-290, 1998.
- Dutta, B. : Stratigraphic and Sedimentologic Evolution of the Proterozoic Siliciclastics in the Southern part of Chatusgarh and Khariar, Central India, *Journal of Geological Society of India*, 51, 345-360, 1998.
- Joy, S. and Chatterjee, S. : A Bootstrap Test using Maximum Likelihood Ratio Statistics to check the Similarity of two 3-dimensionally Oriented Data Samples, *Mathematical Geology*, 30, 275-284, 1998.
- Joy, S. and Saha, D. : Influence of Micaceous Impurity on Dynamically Recrystallized Quartz C-axis Fabric from the Singhbhum Shear Zone and its footwall, Eastern India, *Journal of Structural Geology*, 20, 1509-1520, 1998.
- Mishra, S., Deomurari, M.P., Wiedenbeck, M., Goswami, J.N., Ray, S. and Saha, A.K. : $^{207}\text{Pb}/^{206}\text{Pb}$ Zircon Ages and the Evolution of the Singhbhum Craton, Eastern India : an Ion Microprobe Study, *Precambrian Research*, 93, 139-151, 1999.
- Pattnaik Deb, S. and Fukuoka, M. : Fe-illites in a Proterozoic Deep Marine Slope Deposit in the Penganga Group of the Pranhita-Godavari Valley : their origin and Environmental Significance, *Journal of Geology*, 106, 739-747, 1998.
- Paul, B.K. and Moullick, S.P. : Structure, Dynamics and Transport Properties of Microemulsions, *Adv. Colloid Interface Science (Elsevier)*, 78, 99-195, 1998.
- Saha, D. : Local Volume Changes versus Overall Volume Constancy during Crenulation Cleavage Development in Low Grade Rocks, *Journal of Structural Geology*, 20, 587-599, 1998.
- Saha, D. : Field Excursion of IGCP 368 in the Precambrian Crust of Eastern and Central India, *Gondwana Research*, 2, 325-327, 1998.

Saha, D. and Ghosh, G. : Lithostratigraphy of Deformed Proterozoic Rocks from around the Confluence of Godavari-and Indravati rivers, South India, *Indian Journal of Geology*, 70, 217-230, 1998.

Physics and Applied Mathematics Unit

Bandyopadhyay, P. and Basu, B. : Area Preserving Diffeomorphism, Quantum group and Berry Phase, *International Journal of Modern Physics*, A14, 409, 1998.

Bandyopadhyay, S. and Majumder, B.S. : Unsteady Convective Diffusion in a Pulsatile Flow through a Channel, *Acta Mechanica*, 134, 1-16, 1999.

Barron, R. and Dandapat, B. S. : Steady Thermocapillary and Buoyancy driven Flow in two-dimensional slots, *European Journal Mechanics B/ Fluids*, 17, 773-780, 1998.

Basu, B. : Integral and Fractional Quantum Hall Effect : A Unified Approach, *Communications in Mathematical and Theoretical Physics*, 1, 175 - 187, 1996

Basu, B. and Bandyopadhyay, P. : Topological Aspects of Quantum Hall Fluid and Berry Phase, *International Journal of Modern Physics*, B12, 2649-2707, 1998.

Basu, B. and Bandyopadhyay, P. : Shift in Quantum Hall-Fluids and Topological Aspects of Chiral Anomaly, *Modern Physics Letters B*, 11, 1313-1325.

Basu, B. and Bandyopadhyay, P. : The Hierarchy of Fractional Quantum Hall States and Berry Phase, *International Journal of Modern Physics B*, 12, 49-62, 1998.

Bhattacharyya, S. and Roy, Dhiman : Updating of \bar{p} flux estimation vis-a-vis the new expectations, *Modern Physics Letters A*, 13, 2173-2178, 1998.

Bhowmik, N.G., Soong, D., Adams, J. R., Majumder, B.S. and Xia, R. : Physical Changes associated with Navigation Traffic on the Illinois and Upper Mississippi Rivers : Prepared by Illinois State Water Survey for U. S. Geological Survey, Environmental Management Technical Centre, Onalaska, Wisconsin, *LTRMP 98-S001*, 205, 1998.

Bhowmik, N.G., Soong, D., Adams, J. R., Majumder, B. S. and Xia, R. : Physical changes associated with Navigation Traffic on the Illinois and Upper Mississippi Rivers (Appendices) : Prepared by Illinois State water survey for U. S. Geological Survey, Environmental Management Technical Centre, Onalaska, Wisconsin, *LTRMP 98-S001 A, I- XXII*, 1998.

Chakraborti, A. and Mondal, B. N. : Oblique Wave Scattering by a Derivation of the Solution of a Simple Hypersingular Integral Equation, *International Journal of Mathematical Education in Science & Technology*, 29,47-53, 1998.

Dandapat, B.S., Holmedal, L. E. and Andersson, H. I. : On the Stability of MHD Flow of a Viscoelastic Fluid Part a Stretching Sheet, *Acta Mechanica*, 130, 143-146, 1998.

Dandapat, B.S. and Ray, P. C. : Effect of Thermocapillary on the Production of Conducting Thin Film in the Presence of Transverse Magnetic Field, *ZAMM*, 78, 635-640, 1998.

Dandapat, B.S. : Spin-coating : A Survey, Review Bull, *Calcutta Mathematical Society*

Das, P.K. : Eigenvectors of Backwardship on a Deformed Hilbert Space, *International Journal of Theoretical Physics*, 37, 5716-5720, 1999.

Sixty Seventh Annual Report : 1998-99

- Falcon, E., Kumar, K., Bajaj, K.M.S. and Bhattacharya, J.K. : Heap Corrugation and Hexagon Formation of Power under Vertical Vibrations, *Physics Review E*, 37, 5716-5720.
- Ghosh, Prity, Basu, Uma and Mandal, B.N. : Waves due to initial disturbances at the inertial surface of a stratified fluid, *International Journal of Mathematics and Mathematical Sciences*, 22, 1999.
- Ghosh, Prity and Mandal, B. N. : Generation of Waves at an Inertial Surface, *Applied Mechanics and Engineering*, 4, 73-96, 1999.
- Ghosh, Prity and Basu, Uma : Waves due to initial disturbances at the inertial surface between two superposed fluids, *Applied Mechanics and Engineering*, 3, 233-247, 1998.
- Kanoria, M., Mandal, B.N. and Chakraborti, A. : The Wiener Hopf Solution of a Class of Mixed Boundary Value problems arising in Surface Water Wave Phenomena, *Wave Motion*, 29, 267-293, 1999.
- Mandal, B.N. and Basu, U. : A Pulsating Line Source in the presence of a nearly Circular Cylinder Submerged in Deep Water, *Mechanics Research Communications*, 25, 599-604, 1998.
- Roy, B. : Nonclassical Properties of the Real and Imaginary Schrodinger Cat States, *Physics Letters*, A249, 1998.
- Roy, B. and Roy, P. : Coherent states even and odd coherent states in a finite dimensional Hilbert space and some of their properties, *Journal of Physics*, 31, 1307, 1998.
- Roy, P and Junker, G. : Conditionally exactly solvable potentials : A supersymmetric construction method, *Ann. Physics*, 270, 155, 1998.
- Roy, S., Datta, S., Roy, M. and Moles, M. : No-Blushift Condition in Wolf Mechanism, *International Journal of Theoretical Physics*, 37, 1327, 1998.
- Roy, S., Datta, S., Roy, M. and Moles, M. : Frequency shift of spectral lines generated by dynamic multiple scattering, *International Journal of Theoretical Physics*, 37, 1469, 1998.
- Roy, S., Datta, S., Roy, M. and Moles, M. : Effect of Multiple Scattering on the Shift of Spectral Lines, *Physics Review*, A, 1998.
- Roy, S. and Kar, G. : Unsharp Observables and Objectification problem in Quantum Theory, *La Rivista del Nuovo Cimento*, 21, 1900, 1998.
- Roy, S. and Kar, G. : Quantum Cryptography, Eavesdropping & unsharp spin measurement : Chaos, Solitons & Fractals, 10, 1715, 1999.
- Roychoudhury, R. and Chatterjee, P. : Arbitrary amplitude double layer in dusty plasma, *Physics of Plasmas*, 6, 4 06, 1999.
- Roychoudhury, R. and Chatterjee, P. : Effect of finite ion-temperature on large amplitude solitary kinetic Alfvén waves, *Physics of Plasma*, 5, 3828, 1998.
- Roychoudhury, R. and Sinha, A. : Scalar Coulomb interaction for a Deformed non-relativistic spin-1/2 particle, *Canad. Journal of Physics*, 78, 1998.
- Znojil, M. and Roychoudhury, R. : Spiked Anharmonic Oscillator, *Czech Journal of Physics*, 48, 1, 1998.

Indian Statistical Institute

Biological Sciences Division

Agricultural Sciences Unit

Bagchi, D.K., Blaikie, Piers, Cameron, John, Chattopadhyay, M., Gyawali, N. and Seddon, David : Conceptual and Methodological Challenges in the Study of Livelihood Trajectories : Case-Studies in Eastern India and Western Nepal, *Journal of International Development*, 10, 453-468, 1998.

Chakraborty, K., Bhattacharya, P., Chakraborty, A., Banik, P. and Bagchi, D. K. : Microbial Biomass-C and Urease Activity of Soils : Influence of Soil Properties, *Indian Agriculturist*, 42, 27-36, 1998.

Anthropology and Human Genetics Unit

Bharati, S. and Bharati, P. : Relationship between Menarcheal Age and Nutritional Anthropometry in Urban Girls of Howrah District, West Bengal, India, *Anthropologischer Anzeiger*, 56, 57-61, 1998.

Bharati, P., Bharati, S. and Ghosh, R. : Height and Weight of Healthy Bengali (Brahmin) Boys of Howrah District, West Bengal, *Acta Medica Auxologica*, 30, 97-101, 1998.

Datta, S., Paul, R.R. and Roy, B. : GSTMI "null" Mutation and Occurrence of Oral Cancer, *Indian Journal of Oral Pathology*, 1V, 10-15, 1998.

Deb, S., Sahu, P.N. and Vasulu, T.S. : An Anthropometric Study of Cephalo-Facial Growth among Down's Syndrome and Normal Children, *Acta Medica Auxologica*, 31, 1999.

Ganguli, K.S. and Roy, M. : An Epidemiological Study of Rheumatoid Arthritis in an Urban Indian Population, West Bengal, India, *Journal of Indian Rheumatism Association*, 5, 91-100, 1998.

Ghosh, Dastidar, M. and Gupta, R. : Life Table : A Methodological Approach as Applied to Small Scale Anthropological Study, *Journal of Indian Anthropological Society*, 33, 251-255, 1998.

Gupta, R. : Biology, Culture and Society in India. *Temporal and Spatial Dimensions*, 1999.

Heinan, N.S. and Reddy, B.M. : The Changing Forest Management and Utilization Patterns in Manipur : A Historical Analysis. *Journal of Human Ecology*, 9, 529-544, 1998.

Heman, N.S. and Reddy, B.M. : Demographic Implications of Socioeconomic Transition among the Tribal Populations of Manipur, India, *Human Biology*, 70, 595-619, 1998.

Majumder, P.P., Moss, H.B. and Murrelle, L. : Familial and Non-Familial Factors in the Prediction of Disruptive Behaviors in Boys at Risk for Substance Abuse, *Journal of Child Psychology and Psychiatry*, 39, 203-213, 1998.

Mukhopadhyay, S. : Role Behaviours among Urban Women as revealed by Time Allocations, *Collegium Anthropologicum*, 22, 241-246, 1998.

Reddy, B.M. : Fluctuating Asymmetry and Canalization : An Appraisal Based on a-b Ridge Counts among a Large Number of Indian Populations with Diverse Backgrounds, *American Journal of Human Biology*, 11, 367-381, 1998.

Reddy, B.M. and Malhotra, K.C. : Genetics of Dermatoglyphics in Humans, *Bulletin of the Department of Anthropology, Dibrugarh University*, 26, 91-116, 1998.

Sixty Seventh Annual Report : 1998-99

- Roy, B., Dey, B., Chakraborty, M., and Majumder, P.P. : Frequency of Homozygous Null Mutation at Glutathione-S-Transferase M₁ Locus in some Populations of Orissa, India, *Anthropologischer Anzeiger*, 56, 43-47, 1998.
- Roy, S.K. : Smoking Status and its effect on Cardiorespiratory System, Dimension and Plucking Performance of Orson Tea garden labourers. *Anthropoloischer Anzeiger*, 56, 151-162, 1998.
- Roy, S.K. and Pal, B. : Variation in Habitual Physical Activity of the Orson Agricultural Labourers of Jalpaiguri District, West Bengal : Age difference, *Journal of Indian Anthropological Society*, 32, 285-289, 1998.
- Vasulu, T.S. : The Method of Pattern Combination Analysis in Dermatoglyphics : Diversity and Sex Differences among the Regional Populations of the Yandi, *International Journal of Anthropology*, 13, 11-24, 1998.

Biometry Unit

- Basu, T.K. and Bhattacharyya, B. Sarkar, S.K., Ganguly, S. and Medda, C. : Autoregressive Technique in Length Growth Modelling of *Callinectes* (Ham) and *Cirrhinus* *Mrigala* (ham) reared in two holding conditions. *Aquaculture Research*, 29, 625-634, 1998.
- Basu, T.K., Ganguly, S., Sarkar, S.K. and Arnab, R.N. : Analysis of Survey Data Investigating the Malarial Endemicity of a Mixed Tribal Population of Bihar, India, *Questio*, 22, 365-378, 1998.
- Sarkar, S.K., Ganguly, S., Basu, T.K. and Medda, C. : Length-Weight Relationship and Relative Condition Factors during the early period of development of *Cirrhinus* *Mrigala* (Hamilton) Spawnd in Bundh and Hatchery, reared in Experimental Hoopnets, *Journal of Aquaculture in Tropic*, 13, 95-106, 1998.

Embryology Unit

- Chattopadhyay, J. and Arino, O. : A Predator-Prey Model with Disease in the Prey, *Nonlinear Analysis*, 36, 747-766, 1999.
- Ghosh, A.K. and Tapaswi, P.K. : Dynamics of Japanese Encephalitis - A Study in Mathematical Epidemiology, *IMA Journal of Mathematics, Applied in Medicine and Biology*, 16, 1-27, 1999.
- Mandal, S. and Bramachary, R.L.: Chemical Ecology of Certain Tropical Fruit Pulp II, *Current Science*, 75, 662-663, 1998.
- Mandal, S. and Bramachary, R.L. : Growth Stimulators in Shed Leaves of Teak (*Tectona grandis*) *Indian Forester* 124, 267-269, 1998.
- Mukhopadhyay, A., Chattopadhyay, J. and Tapaswi, P.K. : A Delay Differential Model of Plankton Allelopathy, *Mathematical Bio-sciences*, 149, 167-189, 1998.

Plant Chemistry Unit

- Bhaduri, S.K., Chanda, S. and Majumdar, P. : Chemical Characterization of the Stem of *Cyperus Tegetum* - a Semi Aquatic Plant of Economic Importance, *Bioresource Technology*, 63, 279-281, 1998.
- Chanda, S., Chakraborty, S., and Sasmal, B.C. : Monitoring Microbial Aeroflora using Vegetable Waste Media : an Ecological Aspect, *Aerobiologia*, 14, 341-346, 1998.
- Ghosh, K., Chandra, M. and Chakraborty, S. : Thermostable Proteolytic Enzyme from a Soil Streptomycete, *Indian Biologist*, 30, 66-69, 1998.

Indian Statistical Institute

Labbe, R.F., Dewanji, A. and McLaughlin, K. : Observations on the Zinc Protoporphyrin/ Heme Ratio in Whole Blood, *Clinical Chemistry*, 45, 146-148, 1999.

Social Sciences Division

Economic Research Unit

- Chakravarty, S.R. : Efficient Horizontal Mergers, *Journal of Economic Theory*, 82, 277- 289, 1998.
- Chakravarty, S.R. and Mukherjee, D. : Lorenz Domination utilitarian Deprivation Rule and Equal Sacrifice Principle, *Manchester School*, 66, 521-531, 1998.
- Chakravarty, S.R. and Mukherjee, D. : Optimal Subsidy for the Poor, *Economics Letters*, 61, 313-320, 1998.
- Chakravarty, S.R., Mukherjee, D. and Ranade, Ravindra R. : On the Family of Subgroup and Factor Decomposable Measures of Multidimensional Poverty, *Research on Economic Inequality*, 8, 176-194, 1998.
- Coondoo, D., Bose, S., Bhaumik, S.K. : The Indian Bond Market, *Money and Finance*, 8, 45-59, 1999.
- Das, S., and Chattopadhyay, M. : Farm Efficiency under Cobb-Douglas Production Technology, *Economic and Political Weekly*, 32, A159- A162, 1998.
- Ghosh, B. : Economic Geography of Global Capital, *Economic and Political Weekly*, 34, 20, 1999.
- Ghosh, B., Majit, S. and Neogi, C. : Economic Growth and Regional Divergence in India, *Economic and Political Weekly*, 33, 1998.
- Ghosh, B. and De, P. : Role of Infrastructure in Regional Development : A Study of India over the Plan Period, *Economic and Political Weekly*, 33, 1998.
- Ghosh, C. and Ghosh, A. : Inflation Wage Goods Constraint and Growth, *Artha Beekshan*, 7, 65-76, 1998.
- Maiti, P. and Das, P.K. : Bank Credit, Output and Bank Deposits in West Bengal and Selected States, *Economic and Political Weekly*, 33, 3081-3088, 1998.
- Majumder, A. and Chakraborty, M. : A Non- parametric Exploratory Analysis of the form of Engel Curves in a Rank of Demand System - The Case of Rural Maharashtra, *Sankhyā, Series B*, 60, 349-376, 1998.
- Mazumdar, K. : Pairwise Comparisons of Social Development of Selected Countries : 1960-1994 : An Application of D^2 -Statistics, *Social Indicators Research*, 44, 155-194, 1998.
- Neogi, C. and Ghosh, B. : Impact of Liberalization on Performance of Indian Industries : A Firm Level Study, *Economic and Political Weekly*, 33, M16-M24, 1998.
- Sarkar, A. : Endogenous Growth and the Size of the Market, *Keio Economic Studies*, 35, 29 - 44, 1998.

Economic Analysis Unit

Krishna Kumar, T. : The Nuclear Option : Some Economic and Strategic issues, *Economic and Political Weekly*, 327-330, 1999.

Linguistic Research Unit

- Bandyopadhyay, D. : Why English ? *Frontier*, 31, 6-10, 1998.
- Bandyopadhyay, D.K. and Reddy, Nagamma : On Speech Technology Symposium, *Dravidian Linguistic Association News*, 22, 8-10, 1998.
- Bandyopadhyay, D. : Reflections on Computer Parsing of Bangla Verbs, *Linguistic Today*, 11, 95-98, 1998.
- Bandyopadhyay, D. : Archaeology of Bangla Grammar (Synopsis), *Udayan- I*, 1-2, 1998.
- Bandyopadhyay, D. : Computational Parsing and Language Planning, *Udayan- II*, 6-8, 1998.
- Bandyopadhyay, D. : Glottopolitics of Sub-alternity in India, *Udayan- II*, 8-9, 1998.
- Bandyopadhyay, D. : Foucault-r Sr i NgartOtto, (Foucault's History of Sexuality), *alocOnacOkkro*, Collection XI, 33-56, 1998.
- Bandyopadhyay, D. : The Crippled Creativity - A Brief Theoretical Perspective, *International Journal of Communications*, 8, 93-103, 1998.
- Bandyopadhyay, D. : Re-reading Hdlub's Anti-Poetry 'A Textbook on Deadlanguage', *Creative Forum*, 8, 4-8, 1999.
- Bandyopadhyay, D. : Electronic Capitalism, *Frontier*, 31, 4-8, 1999.
- Bandyopadhyay, D. : Nuclear Purana, *Frontier*, 31, 8-11, 1999.
- Bandyopadhyay, D. : dost *ayub-er SONge SaHittotattik poribhromon, (Literary Text Analysis by Abu Said Ayub), *jOnopOdprpoYnS I*, 35-76, 1999.
- Bandyopadhyay, D. : bhaSabodh, bEpok poNguta o loknather SONge bilap, (Language, Crippled Creativity and Loknath Bhattacharya), *ebON muSavera V*, 335-343, 1999.
- Bandyopadhyay, D. : peSadiSoNgit : ekTi Onekanto PaTher ProstabOna [Ramprasad : Plural Reading of Text], *alocOnacOkkro* Collection - XII, 24-52, 1999.
- oudhry, A. and Verma, M. K. : Language attitudes of the Gujaratis in Britain, *Asmita*, 7, 391-400, 1998.
- oudhry, A. and Verma, M. K. : Language Maintenance Strategies amongst the Bangladeshis in Britain, *Minority Language Series - IV*, 1999.

Planning Unit

- s, S.P. : Direct Foreign Investment and Licensing, *Review of Development Economics*, 3, 1999.
- sgupta, D. : Growth Versus Welfare in a Model of Nonrival Infrastructure, *Journal of Development Economics*, 58.
- an, J. and Ravallion, M. : Transient Poverty in Post-Retorm Rural China, *Journal of Comparative Economics*, 26, 1998.
- an, J. and Ravallion, M. : Are there Dynamic Gains from A Poor Area Development Programme ?, *Journal of Public Economics*, 67, 1998.

Indian Statistical Institute

Jalan, J. and Ravallion, M. : Are the Poor Less Insured? Evidence on Vulnerability to Income Risk in Rural China, *Journal of Development Economics*, 58, 1998.

Sen, A. : Seller Financing of Consumer Durables, *Journal of Economics and Management*, 7, 1998.

Psychology Research Unit

Banerjee, S.N. : Development of Psychometric Tests and the related Problems, *Journal of Education and Psychology*, 54 - 55, 1-8, 1998.

Banerjee, S.N. : Assessment of Minimum Levels of Learning in Mathematics of the pupils in the Primary School Leaving Class, *Journal of Education and Psychology*, 55, 1-7, 1998.

Dutta Roy, D. and Banerjee, I. : Correspondence Analysis between Stimulus Length and Amount of Forgetting in Assessment of short-term Memory span, *Indian Journal of Psychometry and Education*, 29, 7-12, 1998.

Ghosh, A. : Perceived need Satisfaction in Executives of Public Sector Organisations, *Journal of the Indian Academy of Applied Psychology*, 24, 33-36, 1998.

Sociological Research Unit

Chakraborti, P. : Health Management and Care for the Elderly, *The Eastern Anthropologist*, 51, 1998.

Chatterjee, A.K. : Personal Relations and the Question of Development : an experience in a West Bengal Village, *Man and Development*, 21, 1999.

Choudhuri, A.K. : Seasonal Migration - A Technique for self-preservation by the rural poor : A case study in West Bengal, *Demography India*, 27, 327-336, 1998.

Ghosh, B.N. : Some experience of Diffusion-adoption in Rural Societies, *South Asian Anthropologist*, 19, 31-36, 1998.

Maiti, A. : Arms and Man, *Bharatiya Samajik Chinton*, 21 i-v, 1998.

Maiti, A. : Survival of Democracy, *Bharatiya Samajik Chinton*, 21, 3-4, 1998.

Sarkar, K. and Bhowmik, S.K. : Trade Unions and Women Workers in Tea Plantations, *Economic and Political Weekly*, 33, 1998.

Statistical Quality Control and Operations Research Division

Acharya, U.H. and Mahesh, C. : Winning back Customers' Confidence - A case study on Application of Design of Experiments to Injection Molding Process, *Quality Engineering*, 11, 357 - 364, 1999.

Anand, K.N., Rai, B.K. and Prasad, V.R. : Efficiency Improvement of a Filter Circuit through Design Optimisation, *Quality Engineering*, 10, 1998.

Anand, K.N. : Dispersion Control as a Management Philosophy can meet the competitive challenges of today and tomorrow, *Quality Engineering*, 10, 563 - 572, 1998.

Anand, K.N. : Thinking beyond Design Specifications, *Journal of Engineering Design*, 9, 1998.

Anand, K.N. : Determination of Optimum Sand Mix for Co₂ Core, *Total Quality Management*, 9, 563- 572, 1998.

Sixty Seventh Annual Report : 1998-99

Anand, K.N. : Changing Phases of Quality Management - An Indian Experience, *Total Quality Management*, 10, 165 - 172, 1999

Manoa, D.K. and Prasad, V.R.P. : Bounds for the Position of the Smallest Job in Completion Time Variance Minimization, *European Journal of Operational Research*, 14, 411-419, 1999.

Roy Choudhury, A. and Prasad, G.K. : Reduction of Gold Plating Thickness Variation, *Quality Engineering*, 11, 61 - 67, 1998.

Library, Documentation and Information Sciences Division

Documentation Research and Training Centre

Rao, I.K. Ravichandra and Seetharam, Geetha : Growth of Food Science Literature, *Scientometric*, 1999.

Library (Calcutta)

Basak, Nandadulal. : Prathamik O Madhyamik Tathya Parisevaye Madhyam Paribartaner Haas Evam Sampad Unnayan (in Bengali). *RBU Journal of Library and Information Science*, 2, 31-34, 1998.

Basak, Nandadulal : Grantha/ Granthagar Ashryaee Sabeki Tathya Parisevu Evam Internet 3W : Kichu bhabna (in Bengali). *RBU Journal of Library and Information Science*, 3, 35 - 41, 1999.

Papers Published In Conference Proceedings

Theoretical Statistics and Mathematics Division

Calcutta Unit

Barua, R., Roy, S. and Chaochen, Z. : Completeness of Neighbourhood Logic, *Proceedings of the 16th Annual Symposium on the Theoretical Aspects of Computer Science*, LNCS 1563, C. Meinel & S. Tison (eds). Springer, Berlin, 521-530, 1999.

Ghosh, J.K. : Bayesian Density Estimation, *Proceedings of the International Congress of Mathematicians, III* (Berlin 1998) Doc. Math., Extra vol. III, 237-243, 1998

Tripathi, T.P. : Multivariate Estimation for Domain Totals and Means, *Proceedings of the III International Symposium on Optimization and Statistics*, Department of Statistics & O. R., AMU Aligarh, 13-23, 1999.

Tripathi, T.P. and Chaubey, Y.P. : Optimum Probabilities of Selection in PPS-Sampling based on Super Population Model and Multivariate Information, *Frontiers in Probability and Statistics (Proceedings of the Second International Triennial Calcutta Symposium)*, S.P. Mukherjee, S.K. Basu, and B.K. Sinha (eds), Narosa, Calcutta, 365-369, 1998.

Tripathi, T.P., Tuteja, R.K. and Bahl, S. : Sampling Strategies for Population Mean based on Post Stratification and Multivariate Auxiliary Information, *Proceedings of the III International Symposium on Optimization and Statistics*, Department of Statistics & O. R., AMU Aligarh, 56-61, 1999.

Indian Statistical Institute

Delhi Unit

- Das, A. and Shah, K. R. : Discrimination among Equivalent Block Designs, *Frontiers in Probability and Statistics (Proceedings of the Second International Triennial Calcutta Symposium)*, S.P. Mukherjee, S.K. Basu, and B.K. Sinha (eds), Narosa Publishing House, 341-349, 1998.
- Kochar, S. C. : Stochastic Comparisons of Spacings and Order Statistics, *Frontiers in Probability and Statistics (Proceedings of the Second International Triennial Calcutta Symposium)*, S.P. Mukherjee, S.K. Basu, and B.K. Sinha (eds), Narosa Publishing House, 201-216, 1998.
- Sinha, K.B. : Quantum Stochastic Calculus and Applications - Probability towards 2000, *Lecture Notes Series # 128*, Springer- Verlag, 1998.

Bangalore Unit

- Balaji, S. and Ramasubramanian, S. : Asymptotics of Reflecting Diffusions in and Orhant, *Proceedings of the International Conference on Stochastic Processes*, A. Krishnamoorthy (ed), Department of Mathematics, Cochin University of Science and Technology, Kerala, 57-81, 1998.
- Bhat, B. V. Rajarama : A Generalised Intertwining Lifting Theorem, *Fields Institute Communications 20, Operator Algebras and Their Applications II*, P. Fillmore and J. Mingo (eds), American Mathematical Society, Providence, 1-10, 1998.
- Douglas, R. G. and Misra, G. : Geometric Invariants for Resolutions of Hilbert Modules, *Operator Theory : Advances and Applications*, 104, Birkhauser, 83-112, 1998.
- Narasimha Sastry, N. S. and Peter, Sin : The Code of a Regular Generalized Quadrangle of even order, *Group Representations : Cohomology, Group Actions and Topology Proceedings of the Symposium of Pure Mathematics*, American Mathematical Society, 63, 485-495, 1998.

Applied Statistics Division

Applied Statistics Unit

- Chaudhuri, A. and Adhikary, A. K. : On Generalized Regression Predictors of Small Domain Totals - A Evaluation Study in Indian Statistical Institute, Calcutta, *Frontiers in Probability and Statistics (Proceedings of the Second International Triennial Calcutta Symposium)*, S.P. Mukherjee, S.K. Basu, and B.K. Sinha (eds), Narosa, 100-105, 1998.
- Roy Chaudhuri, A., Basu, A., Bhandari, S. K. and Chaudhuri, B. B. : Consistent Set Estimation in k-dimension : An Efficient Approach, *Proceedings of Second International Workshop on Statistical Techniques in Pattern Recognition*, Sydney, Springer Verlag, 1998.
- SenGupta, A. : Analysis of Directional Data in Agricultural Research using DDSTAP, *Proceedings of the Golden Jubilee International Conference of the Indian Society of Agricultural Statistics*, Prem Narain (ed), Indian Society of Agricultural Statistics, Delhi, 43-59, 1998.
- Vijayan, K. S. : Lambda Designs and the Lambda Design Conjecture, *Proceedings of Conference on Graph Connections*, Allied publishers.

Computer and Communication Sciences Division

Computer Vision and Pattern Recognition Unit

- Adiga, P. S. Umesh and Chaudhuri, B.B. : Segmentation of Histo-Pathological Images by Surface Following Using Constrained Snakes. *Proceedings of 14th ICPR-98*, Brisbane, Australia, 1998.
- Adiga, P. S. Umesh and Chaudhuri, B.B. : Analysis of Volumetric Images of Filamentous Bacteria in Industrial Sludge. *Proceedings of 14th ICPR-98*, Brisbane, Australia, 1998.
- Adiga, P. S. Umesh and Chaudhuri, B.B. : Segmentation of 3D Histo-Pathological Images using Snakes and its Application in Quantitative Evaluation of FISH Signal, *Proceedings of 2nd International Conference on MIUA-98*, Leeds, UK, 1998.
- Adiga, P. S. Umesh and Chaudhuri, B.B. : Automatic Segmentation of 3-D cells from Confocal Microscopy Images and its Application in the FISH Signal Evaluation, *16th International Conference on CODATA-98*, New Delhi, 1998.
- Adiga, P. S. Umesh and Chaudhuri, B.B. : Classification of Prostate Tumor Specimen based on Cyto and Histological Features measured from 3-D Images, *Proceedings of 16th International Conference on CODATA-98*, New Delhi, 1998.
- Adiga, P. S. and Chaudhuri, B.B. : Quantitative Evaluation of Bacterias in Industrial Sludge by 3-D Images Analysis, *Proceedings of 16th International Conference on CODATA-98*, New Delhi, 1998.
- Adiga, P. S. Umesh and Chaudhuri, B.B. : Automatic Prostrate Cancer Grading System based on 3D Histo-Pathological Images, *Proceedings of IAPR Workshop on MVA-98*, Chiba, Japan, 1998.
- Adiga, P. S. Umesh and Chaudhuri, B.B. : Active Surface for the segmentation of the Volumetric Histo-Pathological Images, *Proceedings of Indian Conference on CVGIP-98*, IIT, New Delhi, 35-44, 1998.
- Dash, N. S. and Chaudhuri, B. B. : On Automatic Parsing of Bangla Pronominal Forms, *Proceedings of ISOCAL-II*, Patiala, Punjab, 1999.
- Garain, U. and Chaudhuri, B. B. : Compound Character Recognition by Rum-Number based Metric Distance, *Proceedings of SPIE*, San Jose, California, USA, 90-97, 1998.
- Garain, U. and Chaudhuri, B. B. : Automatic Detection of Italic Bold and All-Capital Words in Document Images, *Proceedings of 14th ICPR-98*, Australia, 610-612, 1998.
- Garain, U. and Chaudhuri, B. B. : An Approach for Processing Mathematical Expressions in Printed Documents, *Proceedings of DAS-98*, Japan, 1998.
- Garain, U. and Chaudhuri, B. B. : On Recognition of Touching Characters in Bangla Documents, *Proceedings of ICVGIP-98*, New Delhi, 1998.
- Pal, U. and Chaudhuri, B. B. : Automatic Separation of Indian Multi-Script Document, *Proceedings of DAS-98*, Japan, 1998.
- Pal, U. and Chaudhuri, B. B. : Automatic Separation of Different Script Line from Indian Multi-Script Document, *Proceedings of ICVGIP-98*, New Delhi, 1998.

Advanced Computing and Microelectronics Unit

- Chakraborty, S., Das, S., Das, D.K. and Bhattacharya, B.B. : Synthesis of Symmetric Functions for Path Delay Fault Testability, *Proceedings of 12th International Conference on VLSI Design*, IEEE CS Press, USA, 512-517, 1999.
- Das, S., Nandy, S. C. and Bhattacharya, B. B. : High-Performance MCM Routing : A New Approach, *Proceedings of 12th International Conference on VLSI Design*, IEEE CS Press, USA, 564-569, 1999.
- Das, N., Bhattacharya, B. B., Menon, R. and Bezrukov, S. : Permutation Admissibility in Shuffle-Exchange Networks with Arbitrary Number of Stages, *Proceedings of 5th International Conference on High Performance Computing*, IEEE CS Press, USA, 270-276, 1998.
- Ghosh, S., Sur-kolay, S. and Bhattacharya, B. B. : VLSI Chips on Three Dimensional Closed Surface, *VLSI Design and Test Workshop*, New Delhi, 1998.
- Majumder, S., Bhattacharya, B. B., Agrawal, V. D. and Bushnell, M. L. : A complete characterization of path delay faults through stuck-at faults, *12th International Conference on VLSI Design*, IEEE CS Press, USA, pp. 492-497, January 1999.
- Rahaman, H., Das, D.K. and Bhattacharya, B. B. : An Adaptive BIST to Detect Multiple Stuck-open Faults in CMOS Circuits, *Proceedings of Asia and South Pacific Design Automation Conference*, Hong Kong, 1999.
- Sarkar, D. and Bhattacharya, B. B. : Circuit Extraction from Switch-level Description, *VLSI Design and Test Workshop*, New Delhi, 1998.

Electronics and Communication Sciences Unit

- Chanda, B. and Das, A. K. : Segmentation of Text and Graphics from Document Images : A Morphological Approach, *Proceedings of International Conference on Computational Linguistics, Speech and Document Processing*, Calcutta, India, A-50-56, 1998.
- Chanda, B. and Haralick, R.M. : Bridging Transformation : An Aid to Spatial Transformation in the Discrete Domain, *Proceedings of ICVGIP'98*, New delhi, India, 267-272, 1998.
- Chanda, B., Mukhopadhyay, S. and Ghosh, P. : Multiscale Morphological Fusion of MR and CT Images, *Proceedings of ICVGIP'98*, New Delhi, India, 21-26, 1998.
- Chintalapudi, K. and Pal, N. R. : A Novel Scheme to Determine the Architecture of a Multilayer Perception, *IEEE International Conference on System Man and Cybern.*, USA, 2297-2303, 1998.
- Das, A.K. and Chanda, B. : Detection of Tables and Headings from Document Images : A Morphological Approach, *Proceedings of International Conference on Computational Linguistics, Speech and Document Processing*, Calcutta, India, A57-64, 1998.
- Ganguli, N. R., Datta, A. K. and Mukherjee, B. : Acoustic Correlates of Perceptual Stress in Bengali Text Reading, *Proceeding of the International Conference on Computational Linguistic, Speech and Document Processing*, ISI, Calcutta, B68 - 71, 1998.
- Ghosh, P. and Chanda, B. : Bi-variate Pattern Spectrum, *Proceedings of SIBGRAPI'98*, Rio de Janeiro, Brazil, 476-483, 1998.
- Mukhopadhyay, S. and Chanda, B. : A Scheme of Vectorization of Engineering Drawings, *Proceedings of ICVGIP '98, Japan*, 703-706, 1998.

- Pal, N. R., Banerjee, K., and Hayashi, Y. : SUM-PI NETWORK : a New Multilayered Feed-forward Network, *Fifth International Conference on Neural Information Processing (ICONIP '98)*, Japan, 687-690, 1998.
- Pal, N. R. and Hayashi, Y. : A Proposal for Direct Fuzzy Rule Generation from Numerical Data, *Proceedings of Fifth International Conference on Fuzzy Logic, Neural nets and Soft Computing (IIZUKA '98)*, Iizuka, Japan, 971-974, 1998.
- Pal, N. R., Kundu, M. K. and Nandi, S. : Application of a new Genetic Operator for Feature Selection Problems, *Proceedings of IEEE Region Ten Conference (TENCON'98)*, New Delhi, India, 37-40, 1998.
- Raha, S., Pal, N. R. and Ray, K. S. : Some new similarity based approaches in approximate reasoning and their applications to pattern recognition, *Asian Fuzzy Systems Symposium*, Korea, 719-724, 1998.
- Suganthan, P. N. and Pal, N. R. : pattern classification using multiple SOMs, *Fifth International Conference on Neural Information Processing (ICONIP'98)*, Japan, 1065-1068, 1998.

Machine Intelligence Unit

- Basak, J., De, R. K. and Pal, S. K. : Unsupervised Neuro-Fuzzy Feature Selection, *Proceedings of 1998 IEEE International Joint Conference on Neural Networks (IJCNN'98)*, Anchorage, USA, 18-23, 1998.
- Basak, J. and Amari, S. : Blind separation of uniformly distributed source signals, *Proceedings of the International Symposium on Nonlinear Theory and Applications*, Hawaii, U.S.A., 997-1000, 1998.
- De, R. K., Basak, J. and Pal, S. K. : Unsupervised Neuro-Fuzzy Feature Extraction, *Proceedings 5th International Conference on Soft Computing (IIZUKA'98)*, Iizuka, Japan, 577-580, 1998.
- De, R. K. : Neuro-Fuzzy Computing for Feature Evaluation, Classification and Rule Generation, *Conference on Automated Learning and Discovery*, Pittsburgh, USA, 1998.
- De, R. K. and Pal, S. K. : Case-based Classification using Fuzziness and Neural Networks, *Proceedings of Colloquium on Knowledge Discovery and Data Mining*, London, UK, 1998.
- De, R. K. : Application of Neuro-Fuzzy System to Time Series Prediction : An overview, *Proceedings of FOSET*, Calcutta, India, 1999.
- De, S. and Pal, S. K. : Evolution of Hopfield type Networks for Object Extraction using Simulated Annealing, *Proceedings of International Conference on Computers and Devices for Communication*, Calcutta, India, 413-416, 1998.
- Ghosh, A., Tsutsui, S. and Tanaka, H. : Function optimization in nonstationary environment using steady state genetic algorithms with aging of individuals, *Proceedings of the International Conference on Evolutionary Algorithms (ICEC98)*, USA, 666-671, 1998.
- Kundu, M.K., Chanda, B. and Vanipadmaja, Y. : Morphologic Edge Detection with Multi-scale Approach, *Proceedings of IEEE Region Ten Conference (TENCON'98)*, New Delhi, India, 53-56, 1998.
- Mitra, S. K., Murthy, C. A. and Kundu, M.K. : Image Compression and Magnification using Fractal Technique, *Proceedings of IEEE Region Ten Conference (TENCON'98)*, New Delhi, India, 57-60, 1998.
- Mitra, S. K., Murthy, C. A. and Kundu, M. K. : Fractal Image Magnification Technique, *9th International Symposium on System Modeling Control (SMC'98)*, Zakopane, Poland, 1998.

Indian Statistical Institute

- Pal, K. : Extraction of Fuzzy Rules with Importance for Classifier Design, *Proceedings of the Asian Fuzzy Systems Symposium (AFSS' 98)*, Korea, 725-730, 1998.
- Pal, K. and Pal, N. R. : Using Fuzzy Rules with Importance Factors for Time Series Prediction and Rule Selection, *Proceedings of the 5th International Conference on Soft Computing and Information/Intelligent Systems (IZUKA' 98)*, Iizuka, Japan, 418-421, 1998.
- Pal, K. and Pal, N. R. : Modeling Dehydrating Behaviour of Hydrogen Storage Materials with Neural Networks, *Proceedings of the Fifth International Conference on Neural Information Processing (ICONIPS' 98 / JNNS' 98)*, Kitakyushu, Japan, 703-706, 1998.
- Pal, K., Mudi, R. K., and Pal, N. R. : Rule Extraction and Reduction through Exploratory Data Analysis for Designing a Self-tuning Fuzzy Controller, *Proceedings of the Japan-Vietnam Bilateral Symposium on Fuzzy Systems and Applications (VJFUZZY' 98)*, Ha-Long Bay, Vietnam, 607-613, 1998.
- Tsutsui, S., Ghosh, A., Fujimoto, Y. and Corne, D. : A study on the effect of multi-parent recombination in real coded genetic algorithms, *Proceedings of the International Conference on Evolutionary Algorithms (ICEC98)*, USA, 828-833, 1998.

Physics and Earth Sciences Division

Geological Studies Unit

- Bandyopadhyay, S. and Sengupta, D. P. (1998) : Middle Triassic Vertebrate Faunas from India, *10th International Gondwana Symposium*, University of Cape Town, South Africa, Abstract in Journal of African Earth Sciences, v. 27 (1A), p. 16-17., June 28 - July 4, 1998.
- Ghosh, P. S., Rudra, D. K. and Maulik, P.K. (1998) : Paleoclimatic indicators in the Satpura Gondwana successions, India, *10th International Gondwana Symposium*, University of Cape Town, South Africa, Abstract in Journal of African Earth Sciences, v. 27 (1A), June 28 - July 4, 1998.
- Ray, S. (1998) : A Permian Vertebrate Fauna from India and its correlation, *10th International Gondwana Symposium*, University of Cape Town, South Africa, Abstract in Journal of African Earth Sciences, V. 27 (1A), pp. 151, June 28 - July 4, 1998.

Physics and Applied Mathematics Unit

- Bandyopadhyay, P. : Nonperturbative Quantum Geometry, *Proceedings of the International Conference on 70 Years of Quantum Mechanics and Recent Trends in Theoretical Physics*, ISI, Calcutta (Communications in Mathematical and Theoretical Physics 1,) 255, 1998.
- Ghosh, Prity and Basu, Uma . : Internal Wave Scattering by a Thin Vertical Barrier in a stratified fluid, *17th International Conference on Offshore Mechanics and Arctic Engineering (OMAE 98)*, 1-5, Lisbon, 1998.
- Kumar, K. : Pattern-forming instability in granular materials under vertical vibration, *International Conference on Statistical Physics*, Calcutta- III, 1999.
- Mandal, B. N. and Kanoria, Mridula : Oblique wave scattering by thick barriers, *17th International Conference on Offshore Mechanics and Arctic Engineering (OMAE 98)*, OMAE' 98-0572, t 9, Lisbon.

Roy, S. and Kar, G. : Quantum cloning, Eves dropping & Unsharp Spin Measurement, *First NASA Conference on Quantum Cryptography and Quantum Computing Lecture Notes in Computer Science* (Springer Verlag), USA, 1509, 1998.

Roy, S. Datta, S. and Roy, M. : Wolf Effect and Red Shift Mechanism, *CMS Conference Bulletin of Calcutta Mathematical Society (Special issue)*, 1998.

Biological Sciences Division

Agricultural Sciences Unit

Bagchi, D.K., Maiti, A., Sasmal, T., Ghosh, T. and Sarkar, K. : Studies on Microwatershed development in Low Productive Agricultural Systems, *Proceedings of the Conference on the challenge of the balance environmental economics in India*, A. Agarwal (ed), Centre for Science and Environment, New Delhi, 127-134, 1998.

Anthropology and Human Genetics Unit

Majumder, P. P. : Thoughts on some Bioethical Issues Arising out of Human Genome Diversity Studies with Special Reference to India, *Human Genome Research : Emerging Ethical, Legal, Social and Economic Issues*, M.G.K. Menon, P.N. Tandon, S. S. Agarwal and V.P. Sharma (eds), Allied Publishers Ltd., New Delhi, 96-105, 1999.

Social Sciences Division

Economic Research Unit

Coondoo, D. and Neogi, C. : Total Factor Productivity Growth in Indian Manufacturing Industries : An Interregional Analysis, *Conference on Regional Dimensions of the Indian Economy*, Biswajit Chatterjee and Harendranath Sur (eds.), Allied Publishers Ltd. in collaboration with DSA Centre for Regional Economic Studies, Department of Economics, Jadavpur University, 127-142, 1998.

Ghosh, B. and De, P. : The Role of Ports in Trade between India and China in the 21st Century, *Proceedings of the 1998 Marine Port China Conference*, Shanghai, China, 1998.

Rudra, A., Chakrabarti, S., Mazumdar, K. and Bhattacharya, N. : Criteria for Identification of Rural Poor - Preliminary Results Based on a Survey in West Bengal, *Data Base on Rural Poverty Indicators*, S. Balakrishna and K. Hanumantha Rao (eds.), National Institute of Rural Development, Hyderabad, 1998.

Sarkar, A. and Mitra, S. : Price and Arrival Seasonality in Selected Rice and Wheat Markets in India, *Conference on Regional Dimensions of the Indian Economy*, Biswajit Chatterjee and Harendranath Sur, (eds.) Allied Publishers Limited in Collaboration with DSA Centre for Regional Economic Studies, Department of Economics, Jadavpur University, Calcutta, 33-45, 1998.

Economic Analysis Unit

Krishna Kumar, T. : A Strategic Approach to Economic Reforms in India, *Proceedings of Conference on Economic Reforms : The Next Step*, Tirthankar Roy (ed.), Rajiv Gandhi Foundation and Rajiv Gandhi Institute for Contemporary Studies, Frank Brothers & Company, New Delhi, 1998.

Krishna Kumar, T. : Models of North-South Trade, Growth and Development as Differential Game Problems, *Proceedings of the 4th International Conference on Optimization : Techniques and Applications*, L. Caccetta, K.L. Teo, P.P. Siew, Y.H. Leung, L.S. Jennings and V. Rehbock (eds.), Curtin University of Technology, Perth, Australia, 204-209, 1998.

Indian Statistical Institute

Linguistic Research Unit

Bandyopadhyay, D. : The Myth of Regionalism, *Proceedings of the Seminar on Regionality and Comparative Literature*, Department of Comparative Literature, Jadavpur University, 77-83, 1998.

Psychology Research Unit

Dasgupta, A., Ghosh, A. and Sengupta, D. : Significance of the Literacy Movement in West Bengal : Decentralisation and People's Participation, *Proceedings of the International Seminar on Decentralisation and Planning*, Calcutta, 1998.

Sengupta, D., Ghosh, A., Dasgupta, A. and Bandyopadhyay, S. : Implementation of Decentralized Planning in Primary Education : Some Basic Issues, *Proceedings of the State level seminar on Decentralisation : Devolution and Participation*, State Planning Board, Government of West Bengal, Calcutta, 1-12, 1998.

Statistical Quality Control and Operations Research Division

Ghosh, D. T. : The Optimum Continuous Sampling Plan CSP -3 that Minimises Amount of Inspection, *Proceedings of 6th Conference of Asia Pacific Quality Organization*, Korean Standard Association, 98 - 103, 1998.

Library, Documentation and Information Sciences Division

Documentation Research and Training Centre

Madalli, Devika P. : Multimedia Technology and Virtual Libraries, *SIS Conference on Virtual Libraries : Internet Based Library and Information Services*, SIS, Hyderabad, 1998.

Madalli, Devika P. : Quality Management in Collection Development of Electronic Resources, *Information Management Including ISO 9000 QMS*, DRTC, ISI, Bangalore, AF 1-16, 1999.

Madalli, Devika P. : Gearing up to the Internet : Revamping the LIS Curriculum, *ALJBER-99 6th Nation Convention on Academic Libraries in the Internet Era*, Nagpur University, Nagpur, 1999.

Madalli, Devika P. : Optical Character Recognition Technology : An Overview, *Application of Optical Character Recognition Technology to Library and Information Work*, DRTC, ISI, Bangalore, CA1-4, 1999.

Madalli, Devika P. : A Model for Interactive Online Examination, *Application of Optical Character Recognition Technology to Library and Information Work*, DRTC, ISI, Bangalore, DC 1-10, 1999.

Narayana, N.S.S. and Prasad, A.R.D. : Conflicts Analysis, *Application of Optical Character Recognition Technology to Library and Information Work*, Bangalore, DRTC, ISI, Bangalore, EB1-8, 1999.

Prasad, A.R.D. : Chaos! Thy Name is Internet, *Information Management Including ISO 9000 QMS*, DRTC, ISI, Bangalore, EB 1-7, 1999.

Prasad, A.R.D. : Pygmalion, *Application of Optical Character Recognition Technology to Library and Information Work*, DRTC, ISI, Bangalore, BA 1-16, 1999.

- Prasad, A.R.D. : *IDA Version 2 : A Retrospective Conversion Software for LC, OCLC, BNB and Bookfind CD-ROM Databases, Application of Optical Character Recognition Technology to Library and Information Work*, DRTC, ISI, Bangalore, BB 1-15, 1999.
- Prasad, A.R.D. and Madhwacharya Mundgod. : *A Heuristic approach for Automatic Identification of Bibliographic Data Elements using the Physical Layout of the Title Pages of Books, Application of Optical Character Recognition Technology to Library and Information Work*, DRTC, ISI, Bangalore, EA 1-17, 1999.
- Rao, I.K. Ravichandra : *Information Management: Scope, Definition, Challenges & Issues, Information Management Including ISO 9000 QMS*, ISI, DRTC, Bangalore, AA1-16, 1999.
- Rao I.K. Ravichandra : *A Procedure to Identify a Core Collection for Retrospective Conversation, Application of Optical Character Recognition Technology to Library and Information Work*, DRTC, ISI, Bangalore, CC 1-5, 1999.
- Rao, I.K. Ravichandra and Sanul Abideen P : *Standards for Library and Information Work : Missing Links and Limitations, National Conference on Standardisation (NACOSTAN)*, Institute of Standards Engineering, Bangalore, 5-2/1 - 5-2/7, 1999.
- Rao, I.K. Ravichandra : *Need for a change in the Library and Information Science Curriculum, Proceedings of the seminar held in connection with 75th year of Madras Library Association (MALA)*, Madras Library Association, Madras, 1999.
- Rath, Durga Sankar and Prasad, A.R.D. : *A Study on the Sequence of Major Data Elements in the Title Pages of Monographs, Application of Optical Character Recognition Technology to Library and Information Work*, DRTC, ISI, Bangalore, EC 1-7, 1999.

Computer and Statistical Services Centre

- Maitra, S. and Sarkar, P. : *Enumeration of Correlation Immune Boolean Functions, Proceedings of the Fourth Australasian Conference on Information Security and Privacy*, University ofWollongong, NSW, Australia, 1999.
- Maitra, S. and Bagchi, A. : *Dynamic Restructuring of classification Hierarchy towards Data Mining, Proceedings of 9th International Conference on Management of Data (COMAD' 98)*, 143 - 160, Hyderabad, India, 1998.

Papers Published In Books

Theoretical Statistics and Mathematics Division

Calcutta Unit

- Ghosh, J.K., Ghosal, S. and Ramamoorthi, R.V. : *Consistency Issues in Bayesian Nonparametrics, Asymptotics, Nonparametrics and Time Series : A Tribute to Madan Lal Puri*, Subir Ghosh (ed), Marcel Dekker, Inc., 639-667, 1998.

Delhi Unit

- Deby, A. : *Orthogonal designs, Encyclopaedia of Biostatistics*, 4, 3200-3202, 1998.
- Prakasa Rao, B.L.S. : *Nonparametric Functional Estimation : An overview, Asymptotics, Nonparametrics and Time Series*, Subir Ghosh (ed), Marcel Dekker, Inc., 461-509, 1999.

Computer and Communication Sciences Division

Machine Intelligence Unit

- Mitra, S., Pal, S.K. and Banerjee, M. : Rough Fuzzy Knowledge-based Network - A soft Computing Approach, *Rough Fuzzy Hybridization : New Trends in Decision Making*, S.K.Pal and A. Skowron (eds.), Springer Verlag, 428-454, 1999.
- Mitra, S.K., Murthy, C.A. and Kundu, M.K. : Digital Image Magnification using Fractal Operators and Genetic Algorithm, *Computational Intelligence and Applications*, P.S. Szczepaniak (ed.), Physica Verlag, Heidelberg, 250-259, 1998.
- Pal, S. K. and Mitra, S. : Expert Systems in Soft Computing Paradigm, *Neural Network Systems Techniques and Applications*, Leondes, C. T. (ed.), Academic Press, San Diego, 211-241, 1998.

Physics and Earth Sciences Division

Geological Studies Unit

- Paul, B.K. and Moulik, S.P. : Transport Process in Microemulsions, *Surfaces of Nanoparticles and Porous Material*, James A. Schwarz and Christian Contescu (eds), Marcel Dekker Inc., New York, 259-280, 1999.

Physics and Applied Mathematics Unit

- Roy, S. and Kafatos, M. : Bell-type Correlations & Large Scale Structure of the Universe : *Instantaneous Action at a Distance : Pro & Contra*, Chybukla, A. (ed), Nuova Publishing Company, New York, 1999.

Biological Sciences Division

Anthropology and Human Genetics Unit

- Gadgil, M., Heman, NS and Reddy, B. M. : People, Refugia and Rediliena, *Linking Social and Ecological Systems*, F. Berks and C. Folkes (eds), Cambridge University Press, Cambridge, 30-47, 1998.
- Mukhopadhyay, B. : Health Scenario in Sikkim : An Assesment, *Sikkim : Perspective for planning and development*, S. C. Rai, R. C. Sundriyal, and E. Sharma (eds), Sikkim Science Society, Gangtok, 485-496, 1998.

Social Sciences Division

Economic Research Unit

- Bera, A.K., Ra, S.S. and Sarkar, N. : Hypothesis Testing for some Nonregular Cases in Econometrics, *Quantitative Economics : Theory and Practice*, Chakravarty, S. R., D. Coondoo and R. Mukherjee (eds.), Allied Publishers, New Delhi, 319-353,, 1998.
- Bhattacharya, K., Coondoo, D. and Mjijumder, A. : Employment Risk in Rural India, *Quantitative Economics : Theory and Practice*, S.R. Chakravarty, D. Coondoo and R. Mukherjee (eds.), Allied Publishers, New Delhi, 119-138, 1998.

- Chakravarty, S. R. and Tyagarupananda, Swami : The Subgroup Decomposable Absolute Indices of Inequality, *Quantitative Economics : Theory and Practice*, S. R. Chakravarty, D. Coondoo and R. Mukherjee (eds.), Allied Publishers, New Delhi, 247-257, 1998.
- Chakravarty, S.R. and Chattopadhyay, N. : Horizontal Merger and the Entropy Index of Concentration, *Quantitative Economics : Theory and Practice*, S.R. Chakravarty, D.Coondoo and R. Mukherjee (eds.), Allied Publishers, New Delhi, 258-268, 1998.
- Chakravarty, S.R. : Poverty and Social Welfare, *Evaluation of World Bank Research*, World Bank, 18-29, 1998.
- Chakravarty, S.R. : On Efficiency of Merger, *Essays on Public Intervention, Institutional Arrangements and Economic Efficiency*, Manabendu Chattopadhyay, Pradip Maiti and Mihir K. Rakshit (eds.), K.P. Bagchi and Company, Calcutta, 82-91, 1999.
- Chattopadhyay, M. and Chakrabarti, S. : Trickle-Down Hypothesis Reexamined, *Quantitative Economics : Theory and Practice*, S. R. Chakravarty, D. Coondoo and R. Mukherjee (eds.), Allied Publishers, New Delhi, 68-81, 1998.
- Chattopadhyay, M. and Sengupta, A. : Measuring Farm Efficiency : An Application to Indian Agriculture, *Essays on Public Intervention, International Arrangements and Economic Efficiency*, Manabendu Chattopadhyay, Pradip Maiti and Mihir K. Rakshit (eds.), K.P. Bagchi and Co., Calcutta, 131-151, 1999.
- Ghosh, C. : Planning, Rationing and Poverty, *Essays on Public Intervention, Institutional Arrangements and Economic Efficiency*, Manabendu Chattopadhyay, Pradip Maiti and Mihir K. Rakshit (eds.), K.P. Bagchi and Company, Calcutta, 1999.
- Kabiraj, T. : On a Dynamic Analysis of Protection Licensing and R and D, *Essays on Public Intervention, Institutional Arrangements and Economic Efficiency*, Manabendu Chattopadhyay, Pradip Maiti and Mihir K. Rakshit (eds.), K.P. Bagchi and Co., Calcutta, 1999.
- Maiti, P. : Studies on Level of Living and Poverty in India, *Quantitative Economics : Theory and Practice*, S.R., Chakravarty, D. Coondoo and R. Mukherjee (eds.), Allied Publishers, New Delhi, 1-39, 1998.
- Majumder, A. and Bhimasankaram, P. : A Note on Linear Regression Modelling, *Quantitative Economics : Theory and Practice*, S.R., Chakravarty, D. Coondoo and R. Mukherjee (eds.), Allied Publishers, New Delhi, 303-318, 1998.
- Pal, M., Neogi, C. and Ghosh, B. : Estimation of Frontier Production Function with Errors-In-Variables : An Illustration with Indian Industry, *Quantitative Economics : Theory and Practice*, S.R., Chakravarty, D. Coondoo and R. Mukherjee (eds.), Allied Publishers, Delhi, 177-202, 1998.

Economic Analysis Unit

- Kolluri, B. K. and Surekha, K. : Wagner's Law of Public Expenditure : A Reevaluation, *Studies on Indian Economic Reforms*, V. V. Somayajulu (ed.), Himalayan Publishing House, Delhi.

Linguistic Research Unit

- Bandyopadhyay, D. : gronthonbad, utargronthonbad, Odhigronthonbad, *Turism theke tirhojatra*, biSSomOnon-III, alocOnacOkkro, 69-90, Calcutta, 1998.
- Bandyopadhyay, D. : SeS moHaakkhan, biSSomOnon-III, alocOnacOkkro, 91-151, Calcutta, 1998.

Choudhry, A. : Language Policy and Planning in a Plural Society : The Indian Multilingual Ethos, *Report of the European Cultural Foundation*, published jointly by the European Parliament and Ministry of Culture, Luxembourg, 1998.

Sociological Research Unit

Maiti, A.K. and Chakraborti, S. : Industrialisation in North East India : An Art of the Possible . *Sociological Constraints to Industrial Development in North East India*, B. Datta Ray and Prabin Baishya (eds.), Concept Publishing Company, New Delhi, 50- 72, 1998.

Statistical Quality Control and Operations Research Division

Pal, B.K. and Joseph, V.R. : Developing Objective Strategies for Monitoring Multi Input / Single Output Chemical Processes, *Quality Improvement through Statistical Methods*, Birkhauser, 263 - 274, 1998.

Pal, B. K. : India's Past and Future Trends in Quality, *American Society for Quality*, Milwaukee, Wisconsin, 1998.

Pal, B. K. : Case Studies of Quality Engineering Applications in India, *The Best on Quality*, International Academy for Quality Book Series, American Society for Quality Control, Milwaukee, Wisconsin, 1998.

Roy Choudhury, A., Rajesh, J. and Prasad, G. K. : Process Optimization through Designed Experiment - Two Case Studies, *Quality Improvement through Statistical Methods*, Bovas Abraham, Birkhauser, 263 - 274, 1998.

Books Accepted For Publication

Theoretical Statistics and Mathematics Division

Delhi Unit

Prakasa Rao, B. L. S. : *Semimartingales and their Statistical Inference*, CRC Press, Boca Raton, Florida.

Prakasa Rao, B. L. S. : *Statistical Inference for Diffusion Type Processes*, Arnold, London.

Roy, Rahul : *Percolation Theory and Particle Systems*, Indian Academy of Sciences, University series of Orient Longmans, Hyderabad.

Bangalore Unit

Sitaram, A., Bagchi, S. C., Madan, S. and Tewari, U.B. : *A first course on Linear Lie groups and Representation Theory*, University Press.

Computer and Communication Sciences Division

Electronics and Communication Sciences Unit

Bezdek, J.C., Keller, J.M., Krishnapuram, R. and Pal, N. R. : *Fuzzy Models and Algorithms for Pattern Recognition and Image Processing*, Kluwer Academic, USA.

Machine Intelligence Unit

Pal, S. K., Ghosh, A. and Kundu, M. K. (eds.) : *Soft Computing for Image Processing*, Physica Verlag, Heidelberg.

Pal, S. K. and Mitra, S. : *Neuro-Fuzzy Pattern Recognition : Methods in Soft Computing*, John Wiley, New York.

Physics and Earth Sciences Division

Physics and Applied Mathematics Unit

Mandal, B.N. and Chakrabarti, A. : *Water wave Scattering by Barriers*, Computational Mechanics Publications, Southampton, U.K.

Lehnert, Bo and Roy, S. : *Electromagnetic Theory with Space-charges in Vacuo and Nonzero Photon Mass*, World Scientific Publishers, Singapore, 170, 1998.

Papers Accepted For Publication In Journals

Theoretical Statistics and Mathematics Division

Calcutta Unit

Basu, S., Raychaudhuri, A. and Basu, A. : Measuring Agreement between Two Rates for Ordinal Response : a Model based Approach, *The Statistician*.

Bhattacharya, U. and Chaudhuri, B. B. : Efficient Training and Improved Performance of Multilayer Perception in Pattern Classification, *Neurocomputing*.

Bose, S., Marras, W.S., Ferguson, S.A., Gupta, P., Parnianpour, M., Kim, J. and Crowell, R.R. : The Quantification of Low Back Disorder Using Motion Measures : Methodology and Validation, *SPINE*.

Chaudhuri, P. and Marron, J. S. : Sizer for Exploration of Structures in Curves, *Journal of the American Statistical Association*.

Chaudhuri, P. and Chakraborty, B. : A note on the Robustness of Multivariate Median, *Statistics & Probability Letters*.

Chaudhuri, P. : Asymptotic Consistency of Median Regression Trees, *Journal of Statistical Planning and Inference*.

Chaudhuri, P. and Marron, J. S. : Scale Space View of Curve Estimation, *The Annals of Statistics*.

Chaudhuri, P., Basu, S., and Burma, D. P. : Words in DNA Sequences : Some Case Studies Based on their Frequency Statistics, *Statistical Science*.

Dutta, A.K. and Bhatwadekar, S. M. : Structure of A^* - Fibrations Over One-Dimensional Seminormal Semi-local Domain, *Journal of Algebra*.

Indian Statistical Institute

- Ghosh, J. K., Ghosal, S. and Samanta, T. : Approximation of the Posterior Distribution in a Change-point Problem, *Annals of the Institute of Statistical Mathematics*.
- Mukherjee, G. : Cobordism of Manifolds with $Z_2 \times Z_2$ - Action having Isolated Stationary Points, *South East Asian Bulletin of Mathematics*.
- Mukherjee, G. : Minimal Models of Oriented Grassmannians and Applications, *Slovak Mathematical Journal*.
- Naolekar, Aniruddha C. and Sankaran, P. : Chaotic Actions on Manifolds, *Topology and its Applications*.
- Sengupta, D., and Ghosh, S. K. : Multivariate Monotonic Measures of Location with High Breakdown Point, *Sankhya, Series A*.
- Sengupta, D., Dey, B. K. et. al. : Propranolol in Primary and Secondary Prophylaxis of Variceal Bleeding among Cirrhotics in India : A Haemodynamic Evaluation, *Amer. Journal of Gastroenterology*.

Delhi Unit

- Bapat, R. B., Jain, S.K. and Prasad, K.M. : Generalized Power Symmetric Stochastic Matrices, *Proceedings of Amer. Mathematical Society*.
- Bapat, R. B., Grossman, J. W. and Kulkarni, D. M. : Generalized Matrix Tree Theorem for Mixed Graphs, *Linear and Multilinear Algebra*.
- Bhatia, R. and Holbrook, J.A. : Frechet Derivatives of the Power Function, *Indiana University Mathematics Journal*.
- Bhatia, R. and Sinha, K. B. : Derivations, Derivatives and Chain Rules, *Linear Algebra and its Applications*.
- Bhatt, A. G. and Karandikar, R. L. : Characterisation of the Optimal Filter : The non- Markov Case, *Stochastics and Stochastic Report*.
- Bhatt, A. G., Kallinpur, G. and Karandikar, R. L. : Robustness of the Nonlinear Filter, *Stochastic Processes and their Applications*.
- Bhattacharya, T. : A proof of the Fabre-Krahn Inequality for the first Eigenvalue of the p-Laplacian, *Annali Mat Pura ed Applicata*.
- Das, A., Das, P. and Das, M.N. : Streamlining some Innovative Banking Services and an Algorithm therefor, *Statistics and Applications*.
- Dey, Aloke, Balasubramanian, K. and Gupta, S. : Incomplete Block Designs for Slope Ratio Assays, *Journal of Statistical Planning and Inference*.
- Dewan, I. and Prakasa Rao, B. L. S. : A General Method of Density Estimation for Associated Random Variables, *Journal of Nonparametric Statistics*.
- Goswami, D. and Sinha, K. B. : Minimal QDS. on a von Neuman Algebra, *Infinite Dimensional Analysis and Quantum Probability*.
- Goswami, D. and Sinha, K. B. : Hilbert Modules and Stochastic Dilation of a QDS, *Comm. Math. Physics*.
- Khaledi, B. and Kochar, S. C. : Stochastic Comparisons and Dependence among Concomitants of Order Statistics, *Journal of Multivariate Analysis*.

2	Health Home	3,534.62		3,534.62
3	Boundary Wall	51,579.72	77,612.31	129,192.03
3.1	Delhi:	7,545,294.65	1,082,603.00	8,627,897.65
2	Delhi(Renovation and Face Lifting)	2,065,959.18	588,683.00	2,654,642.18
4	Hyderabad:	4,573,042.42		4,573,042.42
5.1	Bangalore:	24,581,520.95	2,951,809.96	27,533,330.91
2	Bangalore (Face lifting of Building)	1,048,927.61		1,048,927.61
	Sub-Total:	93,235,760.37	8,337,366.05	101,573,126.42
C. Sheds and Structure:				
1	Girdih:			
1	Petty Construction	91,834.24		91,834.24
1	Bangalore:			
1	Temporary Structure Office shed	34,645.71		34,645.71
1	Hyderabad:	27,575.07		27,575.07
4	Delhi:	471,278.38		471,278.38
1	Calcutta:	219,986.35	171,093.11	391,079.46
	Sub-Total:	845,319.75	171,093.11	1,016,412.86
D.				
1	Office Machinery & Equipment:			
1	Calculating,Punching & other Tabulating equipment	263,218.80	7,733.00	270,951.80
2	Other Machinery and Equipment	4,497,777.30	568,695.60	5,066,472.90
3	Microfilm Reprography Optical	8,216,974.94	1,733,151.00	9,950,125.94
4	Laboratory Equip.	23,506,801.25	1,556,549.00	25,063,350.25
5	Mini Computer at Delhi	9,601,565.82	1,161,732.00	10,763,297.82

6	Electronic Computer at Beranagar	60,371,036.75	34,397,515.00	84,768,551.75
7	Mini Computer at Bangalore	6,913,358.15	1,109,386.00	8,022,744.15
	Sub-Total:	103,370,733.01	40,534,761.80	143,905,494.81
E.	Audio Visual Documentry Film on Prof.PCM	656,000.00		656,000.00
F.	Busts and Statues etc.	200,000.00		200,000.00
G.	Passenger Lift	1,285,253.66	1,576,993.00	2,862,246.66
H.	Electrical Equipment and Installation			
1.	High Tension Electricity	2,789,306.58	317,790.00	3,107,096.58
2.	Electrical Equipment and Fittings	14,254,916.84	2,508,483.90	16,763,400.74
I.	Furniture and Fittings	16,087,148.18	2,976,290.00	19,063,438.18
J.	Motor Cars and Vehicles	5,195,281.85	1,166,983.15	6,362,265.00
K.	Water Supply arrangement	3,964,811.86	641,895.20	4,606,507.06
L.	PABX Installation: Calcutta	3,202,794.40		3,202,794.40
M.	PABX Installation Delhi:	404,000.50	53,997.80	457,998.30
N.	VSAT Terminal	3,027,812.00		3,027,812.00
	Total:	255,799,898.75	58,817,747.83	314,617,446.58
ii.	Assets acquired out of Current Revenue Expenditure Books & Journals	105,654,671.37	18,202,661.70	123,857,333.07
	GRAND TOTAL: (I)&(II)	361,454,370.12	77,020,409.53	438,474,779.65

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumdar
In-Charge
Administration & Finance

S B Rao
Director

For Sarma & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road
Calcutta-700001.
13 October 1999

B Sinha
Partner

APPENDIX-A50

Statement of Income and Expenditure for the year ended 31st March 1999
in connection with the project "Strengthening Local Government in Madhya
Pradesh", Funded by M/s. Price-Waterhouse Coopers Ltd.

(Forming part of Schedule V) A/c.283, Sl. No.100

Expenditure	Amount	Income	Amount
To Salary and Allowances	56,900.00	By Grant in aid received during the year	503,999.80
* Contingent Expenses	4,265.00		
* Stores and Stationaries	12,141.00		
* Capital Equipment	37,500.00		
* Books and Journals	558.00		
* Transport Charges	200.00		
* Excess of Income over Expenditure	392,435.80		
	503,999.80		503,999.80
Income during the year 1998-99			503,999.80
Expenditure during the year 1998-99			111,564.20
Total Income upto 31.3.99			503,999.80
Total Expenditure upto 31.3.99			111,564.20
 S Sengupta Accounts Officer	S S Panja Accounts Officer	Anup Majumdar In- Charge Administration & Finance	S B Rao Director
in terms of our Separate report of even date		For Sarma & Co. Chartered Accountants	
8/2 Kiran Sankar Roy Road, Calcutta-700001. 13 October 1999		B. Sinha Partner	

APPENDIX-A51

Statement of Income and Expenditure for the year ended 31st March 1999
 in connection with the project "Molecular Genetics Study of Schizophrenia
 and Bipolar Disease-amulti-centric, Funded by Dept. of Bio Technology
 Ministry of Sc. & Technology(Foming part of Schecu A/c.284, Sl. No.101

Expenditure	Amount	Income	Amount
To Excess of Income over Expenditure	664,000.00	By Grant in aid received during the year	664,000.00
	664,000.00		664,000.00

Income during the year 1998-99	664,000.00
Expenditure during the year 1998-99	NIL
Total Income upto 31.3.99	664,000.00
Total Expenditure upto 31.3.99	NIL

S Sengupta Accounts Officer	S S Panja Accounts Officer	Anup Majumdar In- Charge Administration&Finance	S B Rao Director
--------------------------------	-------------------------------	---	---------------------

In terms of our Separate report of even date

For Sarma & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road,
Calcutta-700001.
13 October 1999

B Sinha
Partner

APPENDIX-A52

Statement of Income and Expenditure for the year ended 31st March 1999
in connection with the project "Large Amplitude ION etc. Wave Plasma".
Funded by Ministry of Science and Technology. (Forming part of Schedule V)
A/c. 286, Sl.No.58

Expenditure	Amount	Income	Amount
To Travelling Expenses	2,859.00	By Grant in aid received during the year	NIL
• Contingent Expenses	3,839.80		
• Stores and Stationaries	1,750.00		
• Books and Journals	7,145.00	By Excess of Expenditure over Income	15,393.80
	<u>15,393.80</u>		<u>15,393.80</u>
Income during the year 1988-99			NIL
Expenditure during the year 1998-99			15,393.80
Total Income upto 31.3.99			194,000.00
Total Expenditure upto 31.3.99			201,817.30

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumdar
In- Charge
Administration & Finance

S B Rao
Director

In terms of our separate report of even date

For Sarma & Co.
Chartered Accountants

9/2 Kiran Sankar Roy Road,
Calcutta-700001.
13 October 1998

B Sinha
Partner

APPENDIX-A53

Statement of Income and Expenditure for the year ended 31st March 1999
in connection with the project "Coal India Project" Funded by Coal India
Limited and Mahanadi Coalfields Limited (MCL) (Forming Part of Schedule V)
V/c. 287, Sl.No.102

Expenditure	Amount	Income	Amount
To Salary and Allowances	3,075.75	By Grant in aid received	
* Contingent Expenses	7,295.00	during the year	1,150,000.00
* Transport Charges	5,418.00		
* Stores and Stationaries	4,289.75		
* Capital Equipment	214,290.00		
* Overhead Charges	115,000.00		
* Excess of Income over Expenditure	800,651.50		
	<u>1,150,000.00</u>		<u>1,150,000.00</u>

Income during the year 1998-99	1,150,000.00
Expenditure during the year 1998-99	349,348.50
Total Income upto 31.3.99	1,150,000.00
Total Expenditure upto 31.3.99	349,348.50

S Sengupta Accounts Officer	S S Panja Accounts Officer	Anup Majumdar In- Charge Administration & Finance	S B Rao Director
--------------------------------	-------------------------------	---	---------------------

In terms of our Separate report of even date

For Sarma & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road,
Calcutta-700001.
13 October 1999

B Sinha
Partner

APPENDIX-A54

Statement of Income and Expenditure for the year ended 31st March 1999
in connection with the project "Application Recognitions Interpretation of
Acoustic Rader Imagery" Funded by Ministry of Sc.&Technology ,Govt. of India
(Forming part of Schedule V) A/c. 288, Sl.No.35

Expenditure	Amount	Income	Amount
To Contingent Expenses	954.60	By Grant in aid received during the year	N I L
· Transport Charges	400.00	· Excess of Expenditure over Income	1,354.60
	<u>1,354.60</u>		<u>1,354.60</u>
Income during the year 1998-99			NIL
Expenditure during the year 1998-99			1,354.60
Total Income upto 31.3.99			830,000.00
Total Expenditure upto 31.3.99			826,656.32

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumdar
In- Charge
Administration&Finance

S B Rao
Director

In terms of our Separate report of even date

For Sarma & Co.
Chartered Accountants

82 Kiran Sankar Roy Road,
Calcutta-700001.
13 October 1999

B Sinha
Partner

APPENDIX-A55

Statement of Income and Expenditure for the year ended 31st March 1999
in connection with the project "Review of IPP-VIII in C.M.A. (CMDA)"
Funded by Calcutta Metropolitan Development Authority.

(Forming part of Schedule V) A/c.290, Sl.No.87

Expenditure	Amount	Income	Amount
To Salary & Allowances	8,440.00	By Grant in aid received	
* Travelling Expenses	283.00	during the year	292,554.00
* Contingent Expenses	18,369.80		
* Stores and Stationaries	11,433.00		
* Over head charges	66,000.00		
* Other Expenses	61,917.00		
* Excess of Income over Expenditure	126,111.20		
	<u>292,554.00</u>		<u>292,554.00</u>
Income during the year 1998-99			292,554.00
Expenditure during the year 1998-99			166,442.80
Total Income upto 31.3.99			285,829.80
Total Expenditure upto 31.3.99			438,554.00

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumder
In- Charge
Administration & Finance

S B Rao
Director

In terms of our Separate report of even date

For Sarma & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road
Calcutta-700001.
13 October 1999

B. Sinha
Partner

APPENDIX-A68

Statement of Income and Expenditure for the year ended
31st March 1999 in connection with the Project "Unsteady Surface
water Waves in Ocean" Funded by University Grant Commission
(Forming part of Schedul V) A/c.292, Sl.No.45

Expenditure	Amount	Income	Amount
To Salary and Allowances	53,500.00	By Grant in aid received during the year	110,724.00
* Contingent Expenses	7,955.00		
* Stores and Stationaries	5,094.00		
* Books and Journals	28,834.00		
* Overhead Charges	2,250.00		
* Excess of Income over Expenditure	13,091.00		
	<u>110,724.00</u>		<u>110,724.00</u>
Income during the year 1998-99			110,724.00
Expenditure during the year 1998-99			97,633.00
Total Income upto 31.3.99			232,524.00
Total Expenditure upto 31.3.99			240,798.40

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumdar
In- Charge
Administration & Finance

S B Rao
Director

In terms of our Separate report of even date

For Sarma & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road.
Calcutta-700001.
13 October 1999

B. Sinha
Partner

APPENDIX A57

Statement of Income and Expenditure for the year ended 31st March 1999
in connection with the Project "Winter School on Human Genetics"
Funded by Ministry of Science and Technolocy, Government of India.
(Forming part of Schedule V) A/c.293, Sl.No.88

Expenditure	Amount	Income	Amount
To Books and Journal	8,084.00	By Grant in aid received during the year	NIL
▪ Stores and Stationaries	5,050.00		
▪ Overhead Charges	29,000.00	By Excess of Expenditure over Income	40,134.00
	40,134.00		40,134.00
			NIL
			40134.00
			730000.00
			563615.50

Income during the year 1998-99

Expenditure during the year 1998-99

Total Income upto 31.3.99

Total Expenditure upto 31.3.99

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumdar
In- Charge
Administration&Finance

S B Rao
Director

In terms of our Separale report of even date

For Sama & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road,
Calcutta-700001.
13 October 1999

B. Sinha
Partner

APPENDIX-A58

Statement of Income and Expenditure for year ended 31st March 1999
in connection with the Project "Diagnosis & Therapy Planning using
Multimodality Medical Imaging" Funded by Dept of Science & Technique
Government of India (Forming part of Schedule V)
A/C 295,SL. No.59

Expenditure	Amount	Income	Amount
To Salary & Allowances	17,284.00	By Grant in aid received during the year	15,000.00
* Contingent Expenses	3,192.00	By Excess of Expenditure over Income	9,028.00
* Stores & Stationaries	2,050.00		
* Overhead Charges	1,500.00		
	<u>24,026.00</u>		<u>24,026.00</u>
			15,000.00
Income during the year 1998-99			24,026.00
Expenditure during the year 1998-99			1,338,500.00
Total Income upto 31.3.99			1,345,333.70
Total Expenditure upto 31.3.99			

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumder
In- Charge
Administration & Finance

S B Rao
Director

In terms of our Separate report of even date

For Sarma & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road,
Calcutta-700001.
13 October 1999

B Sinha
Partner

APPENDIX-A69

Statement of Income and Expenditure for the year ended
31st March 1999 in connection with the Project "Rice Based-
Cropping system" (IRRI) D.K.Bagchi.Funded by International Rice
Research Institute. (Forming part of Schedule V)
A/C 296. Sl.No.89

Expenditure	Amount	Income	Amount
To Salary & Allowances	57,771.00	By Grant in aid received	
* Contingent Expenses	41,351.20	during the year	200,000.00
- Travelling Expenses	16,006.00		
* Stores & Stationaries	21,092.20		
* Transport Expenses	13,057.21		
* Overhead Charges	20,000.00		
* Other Expenditure	12,520.00		
* Excess of Income over Expenditure	18,202.39		
	<u>200,000.00</u>		<u>200,000.00</u>
		200000.00	
Income during the year 1998-99		181,797.61	
Expenditure during the year 1998-99		530,000.00	
Total Income upto 31.3.99		429,463.12	
Total Expenditure upto 31.3.99			

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumdar
In- Charge
Administration&Finance

S B Rao
Director

In terms of our Separate report of even date

For Sarma & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road
Calcutta-700001.
13 October 1999

B Sinha
Partner

APPENDIX-A60

Statement of Income and Expenditure for the year ended 31st March 1999
in connection with the Project "UGC Fellowship to Dr.A.Nirmala "
funded by University Grant Commission.
(Forming part of Schedule V) A/c.297, Sl.No.47

Expenditure	Amount	Income	Amount
Salary and Allowances	67,511.00	By Grant in aid received during the year	
Contingent Expenses	1,288.00	By Excess of Expenditure over Income	71,279.00
Stores and Stationaries	2,480.00		
	<u>71,279.00</u>		<u>71,279.00</u>
Income during the year 1998-99			NIL
Expenditure during the year 1998-99			71,279.00
Total Income upto 31.3.99			439,422.00
Total Expenditure upto 31.3.99			429,750.10

§ Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumdar
In- Charge
Administration & Finance

S B Rao
Director

Atms of our Separate report of even date

For Sarma & Co
Chartered Accountants

§2 Kiran Sankar Roy Road,
Calcutta-700001
1 October 1999

B Sinha
Partner

APPENDIX A61

Statement of Income and Expenditure for the year ended 31st March 1999
in connection with the Project "Research Grant-Dr.Biva Karmakar"
Funded by Tel Aviv University
(Forming part of Schedule V) A/c. 298, Sl.No.89

Expenditure	Amount	Income	Amount
To Capital Equipment	48,539.00	By Grant in aid received during the year	NIL
* Contingent Expenses	2.80	By Excess of Expenditure over Income	48541.80
	<u>48,541.80</u>		<u>48,541.80</u>
Income during the year 1998-99			N I L
Expenditure during the year 1998-99			48,541.80
Total Income upto 31.3.99			40,253.75
Total Expenditure upto 31.3.99			48,541.80

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumdar
In- Charge
Administration & Finance

S B Rao
Director

In terms of our Separate report of even date

For Sarma & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road,
Calcutta-700001.
13 October 5 1999

B Sinha
Partner

APPENDIX A62

Statement of Income and Expenditure for the year ended 31st March 1999
in connection with the Project " UGC Refreshers Course in Statistics"
Funded by University Grants Commission
(Forming part of Schedule 'J') A/c.299. Sl.No 48

Expenditure	Amount	Income	Amount
To Salary and Allowances	23,950.00	By Grant in aid received	
• Travelling Allowances	58,748.00	during the year	NIL
• Contingent Expenses	70,543.90		
• Stores and Stationaries	37,584.00	By Excess of Expenditure	
		over Income	190,825.90
	<u>190,825.90</u>		<u>190,825.90</u>
Income during the year 1998-99			NIL
Expenditure during the year 1998-99			190,825.90
Total Income upto 31.3.99			538,255.95
Total Expenditure upto 31.3.99			888,571.25

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumdar
In- Charge
Administration & Finance

S B Rao
Director

In terms of our Separate report of even date

For Sama & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road,
Calcutta-700001.
13 October 1999

B. Sinha
Partner

NDIAN STATISTICAL INSTITUTE
SCHEDULE VI
DETAILS OF CASH IN HAND AS ON 31ST MARCH 1999 AT THE CENTRAL OFFICE
AND OTHER OFFICES OF THE INSTITUTE AND BANK BALANCES ON THAT DATE

	CASH AMOUNT RS. P.	AMOUNT WITH BANK (NAME OF BANK)	TOTAL RS. P.
AT CENTRAL OFFICE (CALCUTTA)	681827.08	ALLAHABAD BANK(DUNLOP BRDG. BRN.) R.B.I. P/L/C NATH BANK LTD (LIQUIDATION DOUBTFUL) SBI SHYAMBAZAR BRANCH GRINDLAYS BANK (CURRENT ACCOUNT) GRINDLAYS BANK (SAVINGS ACCOUNT)	13,252,539.08 5,568.80 3,846.94 1,802,523.49 3,712,266.53 60,336.33
BRANCHES AT DELHI :	7,108.00	UNITED BANK (DUNLOP BRIDGE BRANCH) INDIAN BANK, DELHI STATE BANK OF INDIA, DELHI	14,914,060.26 2,343,156.47 378,241.00
AT GIRIDIH :	106,348.87	UBI, GIRIDIH UCO BANK, GIRIDIH	54,085.09 11,457.31
AT BANGALORE :	41,569.00	UCO BANK, BANGALORE BANK OF BARODA, BANGALORE	2,993,999.26 333,810.62
AT COIMBATORE :	468.48	SYNDICATE BANK, COIMBATORE	129,517.02
AT MADRAS :	669.74	SBI, MADRAS CANARA BANK, MADRAS	13,860.20 576,958.46
AT BOMBAY :	22,687.31	SBI, BOMBAY	377,732.81
AT BARODA :	3,702.89	BANK OF BARODA, BARODA	424,905.42
AT HYDERABAD :	9,588.27	SYNDICATE BANK, HYDERABAD	114,231.38
AT PUNE :	19,398.05	SBI, PUNE	41,389.51
	<u>893,398.09</u>		<u>41,344,585.90</u>

THE ABOVE AMOUNTS HAVE BEEN SHOWN IN THE FOLLOWING BALANCE SHEET AND ITS VARIOUS FUNDS

THE INSTITUTE	893,398.09	THE INSTITUTE	20,214,010.04
		STATISTICAL QUALITY CONTROL DEV. FUND	8,841,749.43
		DEVELOPMENT FUND	1,823,072.50
		MAHALANOBIS INT. SYMPO PRIZE FUND	17,268.03
		DANIEL THORNER MEMORIAL FUND	15,466.75
		ENDOWMENT FUND FOR LECTURE IN ECONOMICS	7,238.24
		DIRECTORS CONTRIBUTION FUND	92,592.31
		HALDANE PRIZE FUND	12,951.77
		RAJA RAO MEMORIAL PRIZE FUND	23,662.50
		ISI ALUMNI ASSOCIATION PRIZE FUND	5,244.31
		P.C.M. CHAIR/FELLOWSHIP FUND	196,455.46
		M.N. MURTHI MEMORIAL PRIZE FUND	29,000.00
		AMBARNATH-SHANTI GHOSH ENDOWMENT FUND	57,875.00
	<u>893,398.09</u>		<u>41,344,585.90</u>

S Sengupta
Accounts Officer

S S Panja
Accounts Officer

Anup Majumdar
In-Charge
Administration & Finance

S B Rao
Director

8/2 Kiran Sankar Roy Road
Calcutta-700001..
13 October 1999

For Sarma & Co.
Chartered Accountants

B Sinha
Partner

INDIAN STATISTICAL INSTITUTE

SCHEDULE VII

GENERAL FUND AS ON 31ST MARCH 1999

Particulars	Amount RS. P
1 Opening Balance	
2 Add: Asset acquired during the year	
1.Capital expenditure Grant A/C As per Schedule 1A(col.4)annexed to Balance Sheet	58,817,747.83
2 Current Expenditure Grant A/C. As per Schedule 1A(col.4)annexed to Balance Sheet	<u>18,202,661.70</u>
3 Less: Amount written off during the year on Fixed Assets As per Schedule 1 (Col.4)	
4 Add: Interest on Investment on Fixed Deposit with Bank	

Sengupta S.S.Panja
Account officer Accounts Officer

Anup Majumdar
In-Charge
Administration & Finance

For Sarma & Co.
Chartered Accountants

1/2 Kiran Sankar Roy Road
Calcutta-700001..
13 October 1999

B Sinha
Partner

**INDIAN STATISTICAL INSTITUTE
SCHEDULE VIII
DEPOSITS AND LIABILITIES AS AT 31ST MARCH 1999**

Previous Year	Particulars	Rs.		Current Year	
		Rs.	P	Rs.	P
695,870.43	Income Tax			12,279	118.18
91,074.18	-do Contractor			113	475.43
595,855.34	Library Deposit			808	950.34
149,887.10	Laboratory Deposit			166	887.10
21,725.00	Hostel Caution Money Deposit			35	785.00
19,185.00	Caution Money of Electric			19	165.00
41,184.39	Membership Fees Deposit			33	184.39
499,472.81	Earnest Money Deposit			651	605.81
2,476,922.83	Security Deposit			3,158	491.06
47,718.53	Retention Money Deposit			47	718.53
70,136.28	Tender Money Deposit			70	136.28
10,821.20	Student Amenities Fund			10	821.20
89,460.72	Professional Tax			91	196.72
207,870.64	ISI Cooperative Society Ltd.			70	807.64
123,681.31	CTD and Annuity Deposit			168	100.31
124,861.51	Staff Insurance Premium (Cal)			271	687.51
28,287.00	Sales Tax outside Party			37	361.00
12,198.10	Cooperative Society (Girdih)			15	543.53
972,943.57	Undisbursed Salary, Stipend, Pension			285	865.00
941.74	Staff Insurance (Girdih & Delhi)			-	-
143,489.21	I. S. I. Provident Fund			4,580	865.21
4,940.00	Find your Feet				-
431,291.00	ISI/ISEC/JNDP, etc.			205	850.00
58,331.00	Disposal of Assets			23	400.00
524,263.00	ISEC Other Trainees(ADB)			930	391.65
-	ISI Salary Savings (LIC)			81	004.00
-	ISEC ISI Fund (Capital)			217	474.00
	Other Liabilities:				
5,274,017.67	For Building Construction	3,957,444.00			
30,547,037.75	Salary & Gratuity Allow. etc.	2,372,997.00			
33,090.00	For Rent, Rates, and Taxes	97,171.00			
35,000.00	Audit Fees	45,000.00			
169,329.00	Stipend and Scholarship etc.	454,784.50			
231,969.00	Travelling Allowance	708,683.92			
833,020.00	Books and Journals	568,415.00			
86,003.00	Laboratory Equipment	281,288.00			
6,486,033.00	Equip in Transit against Margin Money	-			
2,487,765.00	Laboratory Repro. & Other Stores	536,018.00			
13,789,311.00	Computer & Accessories	23,047,074.50			
548,825.00	Postage and Electricity & Telephone	209,803.00			
822,052.00	Furniture & Fittings	1,358,990.00			
-	Printing and Publication	46,600.00			
-	Passenger Lift	48,481.00			
-	Microfilm Equipment	806,553.00			
2,187,105.00	Misc. Expenditure	2,139,845.92			
2,011,727.00	SQC Development Fund Assets	-			
1,425,257.00	Electric equip. Fittings etc.	189,127.00			
-	Water Supply arrangement	217,713.00			
135,300.00	ISI P P Unit	-		37,085	988.84
74,496,233.31				61,360,691.73	

S Sengupta
Accounts Officer

S.S. Panja
Accounts Officer

Anup Majumdar
In-Charge
Administration & Finance

F B Rao
Director

For Sarma & Co
Chartered Accountants

8/2 Kiren Senkar Roy Road,
Calcutta-700011.
13 October 1999

B Sinha
Partner

**INDIAN STATISTICAL INSTITUTE
SCHEDULE IX
INCOME AND EXPENDITURE IN RESPECT OF
CAPITAL EXPENDITURE GRANT RECEIVED
FROM GOVT.OF INDIA AS ON 31ST MARCH 1999**

	Particulars	Amount Rs. P.	Amount Rs. P.
	1. EXCESS OF INCOME OVER EXPENDITURE IN RESPECT OF CAPITAL EXPENDITURE GRANT FROM GOVERNMENT OF INDIA		
2,018,571.66	As per last account		114,011.10
39,300,000.00	2. Grant Received during the year from Govt. of India		52,751,000.00
3,093,826.16	.1 Less: Assets acquired during the year	58,817,747.83	
1,872,000.00	.2 Less: Assets in transit adjusted with grant during the 1997-98	<u>6,486,033.00</u>	52,331,714.83
6,486,033.00	.3 Less: Stock of Building Materials Purchased out of Capital Grant		
	Balance as on 31.3.99	1,262,390.91	
247,298.60	Balance as on 31.3.98	<u>956,725.78</u>	305,665.13
3,420,333.00	Excess of Receipts over Expenditure as on 31.3.99		227,631.14

S.Sengupta
Accounts Officer

S.S.Panja
Accounts Officer

Anup Majumdar
in-Charge
Administration & Finance

S.B.Rao
Director

For Sarma & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road,
Calcutta 700001..
13 October 1999

B Sinha
Partner

**INDIAN STATISTICAL INSTITUTE
SCHEDULE IXA**

**STATEMENT OF EXCESS OF EXPENDITURE OVER RECEIPTS IN RESPECT
OF NON-PLAN REVENUE EXPENDITURE GRANT AS ON 31ST MARCH 1999**

Particulars	Amount Rs. P.	Amount Rs. P.
1. EXCESS OF EXPENDITURE OVER RECEIPT OF NON-PLAN REVENUE EXPENDITURE GRANT		
For the year 1986-87	.... 1,287,866.26	
For the year 1988-89	.... 1,148,363.72	
For the year 1989-90	.... 3,442,454.50	
For the year 1990-91	.... 5,249,680.87	
	<hr/>	
	11,128,365.35	
Less: Amount reimbursed by Govt. against Accumulation upto 1990-91	.... 7,600,000.00	
	<hr/>	
	3,528,365.35	
Less: Amount reimbursed by Govt. during the year 1993-94	.... 3,379,000.00	
	<hr/>	
	149,365.35	
Add: EXCESS OF EXPENDITURE OVER RECEIPTS ON REVENUE EXPENDITURE GRANT		
For the year 1991-92	.... 2,827,507.29	
For the year 1995-96	.... 79,548.29	
For the year 1997-98	.... 31,775.68	
	<hr/>	
		3,088,196.61
Excess of Expenditure over Receipts on Non-Plan Revenue Expenditure Grant as on 31st March 1999		

S.Sengupta
Accounts Officer

S.S.Panja
Accounts Officer

Anup Majumdar
In-Charge
Administration & Finance

S.B. Rao
Director

For Sarma & Co.
Chartered Accountants

8/2 Kiran Sankar Roy Road
Calcutta-700001.
13 October 1999

B Sinha
Partner

INDIAN STATISTICAL INSTITUTE

SCHEDULE IXB

STATEMENT OF EXCESS OF RECEIPTS OVER EXPENDITURE IN
RESPECT OF PLAN REVENUE GRANT AS ON 31ST MARCH 1999

Particulars	Amount Rs. P.	Amount Rs. P.
EXCESS OF RECEIPTS OVER EXPENDITURE ON PLAN REVENUE EXPENDITURE GRANT		
for the year 1987-88	246,671.50	
for the year 1991-92	87,190.00	
for the year 1992-93	181,145.00	
for the year 1994-95	2,110,300.00	
for the year 1995-96	5,410.00	2,630,716.50
As Recovered during the year 1995-96	2,110,000.00	
1996-97	5,410.00	2,115,410.00
		515,306.50
EXCESS OF RECEIPTS OVER EXPENDITURE ON PLAN REVENUE EXPENDITURE GRANT FOR THE YEAR		
1995-97	3,975.00	
1998-99	<u>79,543.30</u>	83,518.30
Excess of Receipt over Expenditure on Plan Revenue Expenditure Grant as on 31.3.99		<u>598,824.80</u>

Sengupta S.S.Panja
Accounts Officer

Anup Majumdar
In-Charge
Administration & Finance

S. B. Rao
Director

For Sarma & Co.
Chartered Accountants

Kran Sankar Roy Road
Kolkata-700001
October 1999

B Sinha
Partner

INDIAN STATISTICAL INSTITUTE

SCHEDULE IXC

STATEMENT OF EXCESS OF EXPENDITURE OVER RECEIPTS IN
RESPECT OF PLAN REVENUE GRANT AS ON 31ST MARCH 1999

Particulars	Amount Rs. P.	Amount Rs. P.
1 EXCESS OF EXPENDITURE OVER RECEIPTS ON PLAN REVENUE EXPENDITURE GRANT		
For the year 1986-87	138,067.77	
For the year 1988-89	148,740.00	
For the year 1989-90	376,210.00	
For the year 1990-91	173,870.00	
For the year 1997-98	21,265.00	
Excess of Expenditure Over Receipts on Plan Revenue Expenditure Grant as on 31.3.99		857,952.77

S. Sengupta S. S. Panja
Accounts Officer Accounts Officer

Anup Majumdar
In-Charge
Administration & Finance

S. B. Rao
Director

8/2 Kiran Sankar Roy Road
Calcutta-700001.
13 October 1999

For Sarma & Co.
Chartered Accountants

B Sinha
Partner

INDIAN STATISTICAL INSTITUTE

SCHEDULE IXD

**STATEMENT OF EXCESS OF RECEIPTS OVER EXPENDITURE IN
RESPECT OF GRANT RECEIPT FROM GOVT. OF INDIA (NON-PLAN)
AS ON 31ST MARCH 1999**

Particulars	Amount Rs. P.	Amount Rs. P.
EXCESS OF RECEIPTS OVER EXPENDITURE ON NON-PLAN EXPENDITURE GRANT		
For the year 1994-95	551.57	
For the year 1996-97	122,517.01	
For the year 1998-99	10,425.35	
	133,503.93	
LESS: RECOVERED DURING 1997-98	122,001.89	
Excess of Expenditure Over Receipts on Plan Revenue Expenditure Grant as on 31.3.99		11,502.04

S Sengupta S S.Panja
Accounts Officer Accounts Officer

Anup Majumdar
In-Charge
Administration & Finance

S. B. Rao
Director

92 Kiran Sankar Roy Road
Calcutta-700001..
13 October 1999

For Sanna & Co.
Chartered Accountants

B Sinha
Partner

INDIAN STATISTICAL INSTITUTE
NOTES ON ACCOUNTS AND SALIENT ACCOUNTING POLICIES
FOR THE YEAR ENDED 31ST MARCH 1999

SCHEDULE X

I. Notes On Accounts

1 Fixed Assets .

1.1 The system of charging depreciation on Fixed Assets has been discontinued w.e.f. the year 1986-87 in terms of the suggestion in this regard given by the CAG and accepted by the Council of the Institute. Accordingly for assets procured during the year 1986-87 and thereafter no depreciation has been charged and actual cost of acquisition has been shown in Schedule IA. For all other assets procured till 31.3.86, written down value as on 31.3.1986 have been shown in Schedule I.

1.2 Effects for disposal of assets on winding up of at Trivandrum S.Q.C. Unit has been given effects in the books accounts for the year under audit. However effects on some assets disposed of at ISI Baranagar for an amount of Rs.23,400/- could not be given effect as those are composed of various old and small items of assets, effects against which will be given in the books accounts after ascertaining the book value. Besides above some other items of assets like motor vehicles, have also been disposed off during the year under audit, which has been shown under deletion/adjustment during the year "Column of Schedule I"

1.3 Assets acquired up to 31st March 1986 for which Depreciation Provided except on land and land development as per Schedule I of this Account refers to the following notes in order of serials mentioned below.

A 3 1 Delhi Lease-hold- For lease hold land at Delhi, lease deed has not yet been executed pending which no write off of the value could be made.

A 3 8 Takda Planters Club - Lease hold land, building etc. acquired in 1964-65 for 54 years . A sum of RS. 481.42 has been written off during the year.

1.4 Schedule IA of this Annual Accounts refers the following points as per serial mentioned against each of those:-

The construction of New Guest house as mentioned under B.11. of Schedule IA is completed. However the final bill is pending till date.

Works of construction of 'A' Type Quarters Bldg. as mentioned under serial B 1.15 are under progress.

The work orders for construction of Bank & P.O. Bldg. and Canteen Bldg. as mentioned under serial B.17 & B.19 have been placed. The amounts represents payment of Architect fees and other municipal charges.

The amount mentioned 2 under Serial 3.1 captioned as Delhi represents amounts paid to CPWD for construction Admn. Bldg. at ISI campus New Delhi and work is under progress.

As regard the construction of Academic Bldg. as mentioned under B.16 the amounts represents payment of Architect fees and municipal charges. No contract has been executed with any contractor.

2. Investment.

2.1 Investments of the Institute for General Fund and other Funds stand in the name of Indian Statistical Institute with appropriate exhibition of such investment, in relative Balance Sheet.

2.2 Interest received on Investment on General Fund is accounted for in the fund account itself.

3. Building Material:

3.1 The actual consumption value of Building materials like Cement, Steel etc. have been shown as Capital or Revenue expenditure for which these are utilized.

3.2 Works Order was issued to M/s. Zeemans for disposal of 250 M.Tons Caked/Solidified Cement for a consideration of Rs.75,000/-. The party has deposited Rs.65,000/- till date. Final adjustment is pending.

4. Loans and Advances:

4.1 Suspense and advance (Party) includes Rs.32,213.56 paid to M/s.Bharat Overseas Pvt. Ltd. and Sundry Debtors for Rs. 81,350.80 is considered doubtful. For adjustment/writing off will be made with the approval of the Competent Authority. Advance of Staff/Workers of the Institute includes Rs.41,000.00 recoverable from some staff under suspension for which a court case is pending. One of the staff associated with this matter had since retired and the amount of Gratuity payable to this staff had been withheld and retained by the Institute.

4.2 The net balance under the head of accounts Advance against T.A. Suspense & Advance (staff, party etc). Imprest etc. had been shown in the schedule. Total debit balance-Rs.1,13,82,160.88 and the credit balance is Rs 46,44,641.84

4.3 The undisbursed Salary, Stipend, Pension, etc. has been segregated from suspense and advance (staffs) and this amount to Rs 9,72,943.57 as on 31st March 1998 and Rs -2,85,685.00 as on 31st March 1999

4.4 Prepaid charges are provided in respect of expenditure on books and journal only.

5. AECD with Regional Provident Fund Commissioner :

5.1 The difference of Rs 12455.21 under additional DA deposit with Regional Provident Fund Commissioner could not be located as yet.

Cash and Bank balance :

6.1 Schedule VI attached to the Balance Sheet indicates the break up of Cash & Bank Balance. Liquidator of Nath Bank Ltd. (in liquidation) informed the Institute that they would inform the position after liquidation proceedings were over. Unrecovered amount if any, will be written off with the approval of Competent authority at appropriate time. In the case of Indian Currency Cheque, date of receipt of the cheque as well as date of issue of the cheque by the Institute is being entered in the Bank Book and in respect of foreign currency cheque, amount is accounted in the Bank Book on getting debit/credit advice Bank in Indian Rupees.

7. Income and Expenditure Account:

7.1 Expenditures on account of Medical Reimbursement & Medical Welfare, L.T.C. have been included in the head of expenditure under Salary and allowances as recommended by Section 8(1) Committee of the Institute. Medical Reimbursement expenses includes Hospital Advances paid by the Institute.

7.2 In case of all other stores material including laboratory stores, minor accessories, stationary items including computer stationers, medicine, farming seeds in Giridih etc., the value of purchase made during the year has been charged to Income and Expenditure Account.

7.3 Orders for payment of adhoc bonus and a portion of D.A. for a particular financial year are issued by the Govt. after the end of a financial year on the basis of which payments are made. As such the payment is booked in the year in which it is paid.

7.4 Terminal Benefit of PP Unit Workers are being paid from Institute Account.

7.5 Out of net receipts on Statistical Quality Control Services a sum of Rs 7 lakhs is shown in the Income Expenditure Account of the Institute and balance is shown under SQC Development Fund. As per the guide lines framed in this regard in consultation with the Government.

7.6 95% of cost of books and journals has been capitalized.

7.7 An amount of Rs.35.50 lakhs has been transferred from "Salary & Allowances" accounts to content the total expenditure of the Institute under Non Plan, in commensurate with the grant received from the Government, as the arrears on entire Salary due to revision of faculty could not be accommodated within the grant released by the Government during the year Audit.

However, the Government has been kind enough to agree to enhance the budget estimate for the year 1999 - 2000 to meet the expenditure towards the payment of revised pay scale/arrears for faculty/staff of ISI

8. Statistical Quality Control Development Fund:

8.1 Institute is utilizing the S.Q.C. Development Fund towards expansion of SQC activities at its various centers and outlying Offices including Head Office.

8.2 Construction of Office complex at its own land at Madras could not be taken up due to unauthorised occupation of land.

8.3 The said fund is also utilised for the purpose of processing computers and other extending infrastructural facilities for promotion and extending of SQC activities.

8.4 Bills raised on clients for professional service rendered by the Institute and expenditure incurred out of SQC Development Fund are accounted for on cash basis as per practice of the Institute. However, expenditure of Rs.20,11,727.00 was provided as liability during the year 1997-98 inadvertently.

8.5 Income tax deducted at source from few SQC Bills and from a portion of interest received on fixed deposit has been shown as net Income.

9. Capital Commitments:

Contracts remaining to be executed on Capital Account amount to Rs. 75.00 lakhs.

10 Contingent liabilities:

10.1 The deed of acquisition relating to property at Gupta Niwas" has not been executed pending final clearance from The Special Land Acquisition Officer, Govt. of West Bengal. The negotiation in this matter is in progress.

10.2 The Institute is contingently liable to pay claims of Rs.9 lakhs approx. on account of registration fees for acquisition of floor space at Madras Office.

11 General:

11.1 As per decision of the Council, Institutes recovered overhead charges for grant received from externally funded project and credited 50% of the same to the Miscellaneous receipt account and balance to the Development Fund account.

11.2 Figures of previous year has been regrouped and rearranged whenever necessary. In absence of prior period adjustment account, all transaction pertaining to the past year have been accounted for to the concern head of account. Interest on House Building advance recovered after loan amount is repaid and same gets funded in the House Building Advance Fund.

11.3 The Statistical Publishing Society at Calcutta was taken over by ISI in 1991 and the corresponding accounts are in process of merging

II Salient Accounting Policy and Practices:

1. The Indian Statistical Institute is an Institute of National Importance by an Act of Parliament. It is funded by Government of India. As such Grant received & Expenditure there to are generally maintained on accrual basis excepting in following cases:

- a) Income from Statistical Quality control services are accounted for on cash basis.
- b) Purchases of stores, stationaries, medicine are accounted for on cash basis.
- c) Interest on investments are accounted for on accrual basis on net of income tax deducted at source. Tax deducted at source are not accounted for.
- d) Accounting of Bonus to employees are made on cash basis.

2.a) The system of charging Depreciation on Fixed Assets has been discontinued w. e.f. the year 1986-87 in terms of the suggestions in this regard given by the CAG and accepted by the Council of the Institute

2.b) Fixed Assets register maintained till 1986 and assets acquired thereafter being compiled.

2.c) Expenses on electricity, telephone, salary and pension of Canteen staff are debited to ISI's main account and not accounted separately.

3. As per rule, sale or disposal of fixed Assets are made on realization and are credited in Miscellaneous Receipts as income and the written down value is deducted directly from the opening balance of General Fund.

Plan Revenue Grant is specifically meant for Teaching, Training and Research activities of the Institute.

S. Sengupta
Accounts Officer

S.S.Panja
Accounts Officer

Anup Mazumder
In-Charge
Administration & Finance

S.B.Rao
Director

AUDITORS REPORT

We have audited the attached Balance Sheet as at 31st March 1999 and Income and Expenditure Account for the year ended on that date of the Indian Statistical Institute Contributory Provident Fund and General Provident Fund. The Balance Sheet and Income and Expenditure Account referred to above and as produced before us for verification are in agreement with the books of accounts and records maintained by the Institute.

On the basis of information and explanations given to us for our verification, we found them to be in accordance therewith subject to the following:-

- 1) Interest earnings pertaining to previous year 1997-98 has been disbursed to the members of GPF and CPF during the financial year 1998-99.
- 2) Interest earned during 1998-99 amounting to Rs. 2,26,36,452.00 has been accounted for but no provision thereof has been made in these accounts in accordance with consistent policy adopted by the fund.
- 3) There are differences between general ledger balances and members ledger balances in various account heads (Refer note 4 on notes on accounts) of GPF and CPF.

For SARMA & CO
CHARTERED ACCOUNTANTS

Karan Sankar Roy Road,
New Delhi 110011

13 October 1999.

B SINHA
PARTNER

**INDIAN STATISTICAL INSTITUTE
CONTRIBUTORY PROVIDENT FUND**

Balance Sheet as at 31st March, 1999

As at 31st March 1998		Fund and Liabilities	Rs.		As at 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
		Members' Own Subscription :				
		As per last account	11391522.26			
		Less: Transferred from CPF to GPF for GPF Optees	5547183.49			
		Add: During the year	5210196.00			
		Less: Refunded during the year	116160.18			
11391522.26		Less: Withdrawal for the year	—			10938374.59
		Employer's Contribution :				
		As per last account	11961768.31			
		Less: Transferred from CPF to Govt. of India for GPF Optees	5706972.18			
		Add: From external sources	67432.00			
		Add: During the year from Institute	5030480.00			
11961768.31		Less: Refunded during the year	149761.38			11202946.75
		Members' Additional Subscription				
		As per last account	4149117.87			
		Less: Transferred from CPF to GPF for GPF Optees	2516040.86			
		Add: During the year	1116583.53			
4149117.87		Less: Refunded during the year	15950.00			2733710.54
		Other Deposit :				
		Opening Balance	226654.76			
		Less: Transferred from CPF to GPF for GPF Optees	78307.99			
226654.76		Less: Paid	1852.23			146494.54
		DA to CPF :				
		Opening Balance	6277507.02			
		Less: Transferred from CPF to GPF for GPF Optees	3057574.94			
		Add: During the year	—			
6277507.02		Less: Paid during the year	39292.00			3180640.08
		Interest Payable :				
		(a) On Members Own Subs.				
		As per last account	14048725.11			
		Less: Transferred from CPF to GPF for GPF Optees	7604702.62			
		Add: During the year	1354761.77			
		Less: Paid during the year	153569.59			
14048725.11		Less: Withdrawal during the year	—			7645214.67
48055295.33						35847381.17

**IN DIAN STATISTICAL INSTITUTE
CONTRIBUTORY PROVIDENT FUND**

Balance Sheet as at 31st March, 1999

As at 31st March 1998		Property & Assets			As at 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
		Investment at costs :				
		(a) 5 Yrs. Postal Time Deposit	10527000.00			
		(b) Fixed Deposit with Allahabad Bank Dunlop Bridge Branch	87795.00			
		(c) Fixed Deposit with United Bank of India Dunlop Bridge Branch	24624205.00			
33948844.00		(d) Fixed Deposit with Union Bank of India Ashokegarh Branch	—		35239000.00	
2518252.51		Loan to Members			1534895.51	
34758.00		Relief loan to ISI & NSSO Workers			34758.00	
		Current Assets :				
		Interest Accrued				
		(a) 5 Yrs. Postal Time Deposit	346297.00			
		(b) On United Bank of India Fixed Deposit	6788514.00			
		(c) On Allahabad Bank Fixed Deposit	14783.00			
3455051.00		(d) On Union Bank of India Fixed Deposit	—		7149594.00	
39956905.51					43958247.51	

Contd.....(2)

**INDIAN STATISTICAL INSTITUTE
CONTRIBUTORY PROVIDENT FUND**

Balance Sheet as at 31st March 1999.

As at 31st March 1998		Fund and Liabilities			As at 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
48055295.33		Brought Forward :				35847381.17
		Interest payable				
		(b) On Employers' Contribution				
		As per last account	12841483.87			
		Less: Transferred from CPF to Govt.				
		of India for CPF Optees	7309925.95			
		Add: for the year	1134508.45			
12541483.87		Less: Paid during the year	162599.62			6503566.75
		(c) On Members' Additional Subs.				
		As per last account	2065151.45			
		Less: Transferred from CPF to GPF				
		for GPF Optees	1295882.04			
		Add: for the year	287714.75			
2063151.45		Less: Paid during the year	123347.00			933637.16
		Amount payable to Government				
		of India				
		As per last account	921411.44			
921411.44		Add: for the year	13016898.13			
		Less: Paid during the year	921411.00			13016898.57
24739639.96		Undistributed Income as per				26887074.46
		Income and Expenditure A/c.				
88622982.05						83188558.11

S. SENGUPTA
Manager/Secretary

A. R. RAO
Member

(ARUN KR. DE
Member

**INDIAN STATISTICAL INSTITUTE
CONTRIBUTORY PROVIDENT FUND**

Balance Sheet as at 31st March 1999.

As at 31st March 1998		Property & Assets	As at 31st March 1999	
Rs.	P.		Rs.	P.
39956905.50		Brought Forwarded :		43958247.51
		Cash and Bank Balance		
		with scheduled Banks		
		(i)Postal Savings bank A/c.	1202.90	
		(ii)With Allahabad Bank		
		Savings A/c.	6587.42	
		(iii)With Union Bank of India		
		Savings A/c.	783.06	
		(iv)With United bank of India		
		Dunlop Bridge branch		
23652.86		Savings A/c.	2161.98	10735.36
47731046.00		Amount due from GPF	33761933.63	
767888.48		Amount due from PPU	776776.40	
143489.21		Amount due from ISI	4680865.21	39219575.24
88622982.05				83188558.11

In terms of our separate report of even date.

For Sarma & Co.
Chartered Accounts

8/2 Kiran Sankar Roy Road
Calcutta - 700001. 13 October 1999 .

B. SINHA
Partner

**INDIAN STATISTICAL INSTITUTE
CONTRIBUTORY PROVIDENT FUND**

Income and Expenditure Account for the year ended 31st March 1999.

Year ended 31st March 1998		Expenditure			Year ended 31st March 1999		
Rs.	P.		Rs.	P.	Rs.	P.	
4501718.50		To excess of Income over expenditure carried down				5060856.00	
						5060856.00	
5824010.73		To Interest on :					
		(i)CPF Members' Own Subs.	1463792.27				
		(ii)CPF Voluntary Subscription	287714.75				
		(iii)CPF Employers' Contribution	1161914.48		2913421.50		
24739639.96		To Balance carried over to Balance Sheet				26887074.46	
35065369.19						29800495.96	

S. SENGUPTA
Manager/Secretary

A.R. RAO
Member

ARUN KR. DE
Member

**INDIAN STATISTICAL INSTITUTE
CONTRIBUTORY PROVIDENT FUND**

Income and Expenditure Account for the year ended 31st March 1999.

Year ended 31st March 1998		Income	Year ended 31st March 1999	
Rs.	P.		Rs.	P.
		By Interest on :		
		(a) 5 Yrs. Postal Time Deposit	1276766.00	
		(b) Allahabad Bank Savings Bank A/c.	2328.00	
		(c) Allahabad Bank Fixed Deposit A/c.	11207.00	
		(d) On United bank of India Fixed Deposit A/c.	3755958.00	
		(e) On United Bank of India Savings Bank A/c.	228.00	
		(f) On Union bank of India Fixed Deposit A/c.	14335.00	
4501718.50		(g) On Union Bank of India Savings Bank A/c.	34.00	5060856.00
4501718.50				5060856.00
26061932.19		By amount brought forwarded from last account		24739639.96
4501718.50		By excess of Income over expen- diture brought down		5060856.00
35065369.19				29800495.96

In terms of our separate report of even date.

8/2, Kiran Sankar Roy Road,
Calcutta - 700001. 13 October 1999.

For Sarma & Co.
Chartered Accountants

B. SINHA
Partner

**INDIAN STATISTICAL INSTITUTE
GENERAL PROVIDENT FUND**

Balance Sheet as at 31st March, 1999

As at 31st March 1998		Fund and Liabilities	Rs.		As at 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
42504279.99		Members' Own Subscription As per last account Add: transferred from CPF to GPF for GPF Optees Add: From PPU Add: During the year Less: Refunded during the year Less: Withdrawal for the year	42504279.99		64900931.12	
275719.55		Other Deposit : Opening Balance Add: transferred from CPF to GPF for GPF Optees Less: Paid	275719.55		329543.78	
3974147.47		DA to GPF : Opening Balance Add: transferred from CPF to GPF for GPF Optees Less: Paid during the year	3974147.47		6580817.41	
29200903.39		Interest payable : On Members' Own Subscription As per last account Add: transferred from CPF to GPF for GPF Optees Add transferred from PPU Add: During the year Less: Refunded during the year Less: Withdrawal for the year	29200903.39		42618639.28	
17233256.73		Undistributed Income transferred from Income and Expenditure A/c.			25438527.90	
47731045.99		Amount due to CPF			33761933.63	
140919353.12					173630393.12	

S. SENGUPTA Manager/Secretary	MIHIR KUMAR CHAKRABARTI Member	AJAY KUMAR ADHIKARI Member
----------------------------------	-----------------------------------	-------------------------------

**INDIAN STATISTICAL INSTITUTE
GENERAL PROVIDENT FUND**

Balance Sheet as at 31st March, 1999

As at 31st March 1998		Property & Assets			As at 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
		Investments at costs :				
		(a) 5 Yrs. Postal Time Deposit	13006824.00			
		(b) Fixed Deposit with Allahabad Bank, Dunlop Bridge Branch	108293.00			
		(c) Fixed Deposit with United bank of India, Dunlop Bridge Branch	98142599.00			
		(d) Fixed Deposit Bank of Maharashtra, Shyambazar Branch	9735514.00			
111581884.00		(e) Corporation Bank,	3896326.00		124889556.00	
		Loan to Members :				16566619.66
		Interest accrued				
		(a) 5 Yrs. Postal Time Deposit	189721.00			
		(b) On Allahabad Bank Fixed Deposit	34832.00			
		(c) On United Bank of India Fixed Deposit	31408009.00			
		(d) On Bank of Maharashtra, Shyambazar Branch	34118.00			
16054997.00		(e) Corporation Bank	298534.00		31965214.00	
		Cash and Bank Balances :				
		(i) With Allahabad Bank Savings A/c.	127837.92			
		(ii) With United Bank of India Savings A/c.	43824.54			
		(iii) With Union Bank of India Saving A/c.	741.00			
35303.46		(iv) With Postal Savings Bank A/c.	36600.00		209003.46	
140919353.12					173630393.12	

In terms of our separate report of even date.

For Sarma & Co.
Chartered Accountants

8/2, Kiran Sankar Roy Road,
Calcutta - 700 001. 13 October 1999.

B. SINHA
Partner

INDIAN STATISTICAL INSTITUTE
GENERAL PROVIDENT FUND

Income and Expenditure for the year ended 31st March 1999.

Year ended 31st March 1998		Expenditure	Rs.		P.		Year ended 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.		
15062384.00		To excess of Income over Expenditure carried down						17575596.00
15062384.00								17575596.00
6899407.05		To interest on : GPF Members' Own Subscription						9370324.83
17233256.73		To Balance carried to Balance Sheet						25438527.90
24132663.78								34808852.73

S. SENGUPTA
Manager/Secretary

MIHIR KR. CHAKRABARTI
Member

**INDIAN STATISTICAL INSTITUTE
GENERAL PROVIDENT FUND**

Income and Expenditure for the year ended 31st March 1999.

Year ended 31st March 1998		Income			Year ended 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
		By Interest on :				
		(a) 5 Yrs. Post Office Time Deposit	1579563.00			
		(b) Allahabad Bank Savings Bank A/c.	405.00			
		(c) Allahabad Bank Fixed Deposit	13302.00			
		(d) United Bank of India Fixed Deposit A/c.	15529681.00			
		(e) United Bank of India Savings Bank A/c.	52.00			
		(f) Bank of Maharashtra Fixed Deposit A/c.	34118.00			
		(g) Union Bank of India Savings Bank A/c.	32.00			
15062384.00		(h) Corporation Bank	418143.00		17575596.00	
15062384.00					17575596.00	
	9070279.78	To amount brought forwarded from last account			17233256.73	
	15062384.00	By excess of Income over expenditure brought down			17575596.00	
	24132663.78				34808852.73	

In terms of our separate report of even date.

8/2, Kiran Sankar Roy Road
Calcutta - 700001. 13 October 1999

For Sarma & Co.
Chartered Accountants

AJAY KUMAR ADHIKARI
Member

B. SINHA
Partner

AUDITOR'S REPORT

We have audited the attached Balance Sheet as at 31st March, 1999 of the Indian Statistical Institute's Publication & Printing Unit Provident fund and also its Income and Expenditure Accounts for the year ended on that date with the books of accounts and records maintained by the Institute and produced before us for our verification and on the basis of information and explanations given to us we found them to be in accordance therewith.

For SARMA & CO.
CHARTERED ACCOUNTANTS

B SINHA
PARTNER

1/2, Kiran Sankar Roy Road,
Calcutta-700 001.

Dated 13 October 1999.

INDIAN STATISTICAL INSTITUTE
PUBLICATION AND PRINTING UNIT
PROVIDENT FUND ACCOUNT

Balance Sheet as at 31st March, 1999.

As at 31st March 1998		Fund and Liabilities	As at 31st March 1999	
Rs.	P.		Rs.	P.
		Members' Own Subscription(CPF):		
		As per last account	19320.46	
		Add:During the year	12972.00	
19320.46		Add:During the year(Additional)	18800.00	51092.46
		Employers' Contribution(CPF):		
		As per last account	12075.46	
12075.46		Add:During the year	12972.00	25047.46
		Members' Own Subscription(GPF):		
		As per last account	1699555.17	
		Add:During the year	904455.00	
1699555.17		Less:Refunded during the year	100260.90	
		Less:Withdrawal for the year	98200.00	
		Less:Transferred to ISIGPF	27113.42	2378435.85
		Interest payable		
		(a)Members' Own Subscription(CPF):		
		As per last account	3699.00	
3699.00		Add:During the year	1703.00	
		Add:During the year(Additional)	568.00	5970.00
		(b)On Employers' Contribution(CPF):		
		As per last account	3552.00	
3552.00		Add:During the year	1696.00	5248.00
1738202.09				2465793.77

**INDIAN STATISTICAL INSTITUTE
PUBLICATION AND PRINTING UNIT
PROVIDENT FUND ACCOUNT**

Balance Sheet as at 31st March, 1999.

As at 31st March 1998		Property & Assets			As at 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
		Investment :				
		(a)Fixed Deposit with United Bank of India(CPF)	741295.00			
1000395.00		(b) RBI Stock Certificate(CPF)	259100.00		1000395.00	
		(c)Fixed Deposit with United Bank of India(GPF)	2088701.00			
		(d)Fixed Deposit with Allahabad Bank (GPF)	199170.00			
		(e)Fixed Deposit with Union Bank of India(GPF)	37156.00			
2549688.00		(f)Fixed Deposit with Corporation Bank (GPF)	261480.00			
		(g)Fixed Deposit with Bank of Maharashtra (GPF)	354486.00			
		(h)Post Office Time Deposit (GPF)	182176.00		3123169.00	
3550083.00					4123564	

Contd.....(2)

**INDIAN STATISTICAL INSTITUTE
PUBLICATION AND PRINTING UNIT
PROVIDENT FUND ACCOUNT**

Balance Sheet as at 31st March, 1999.

As at 31st March 1998		Fund and Liabilities	Rs. P.		As at 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
1738202.09		Brought Forward			2465793.77	
		(c)On Members' Own Subscription(GPF)				
		As per last account	354004.00			
		Add:During the year	176707.10			
354004.00		Less:Refunded during the year	41505.10			
		Less:Transferred to ISIGPF	6841.00		482365.00	
1555796.43		Undistributed Income as per Income and Expenditure A/c.			1927706.83	
767888.48		Amount due to ISICPF			776776.40	
4415891.00					5652642.00	

S. SENGUPTA
Manager/Secretary

(M.K. CHAKRABARTI
Member

A. K. ADHIKARI
Member

A.R. RAO
Member

**INDIAN STATISTICAL INSTITUTE
PUBLICATION AND PRINTING UNIT
PROVIDENT FUND ACCOUNT**

Balance Sheet as at 31st March, 1999.

As at 31st March 1998		Property & Assets			As at 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
355083.00		Brought Forwarded :			4123564.00	
		Loan to Members (GPF) :				
		As per last account		352755.00		
		Add: Loan paid during the year		394200.00		
352755.00		Less: Loan realised during the year		217500.00	529455.00	
		Interest Accrued :				
		United bank of India(CPF)		197019.00		
92191.00		RBI Stock certificate(CPF)		7869.00	204888.00	
		United Bank of India(GPF)		684872.00		
		Allahabad Bank (GPF)		54988.00		
		Union Bank of India(GPF)		4592.00		
420862.00		Corporation Bank(GPF)		33624.00		
		Bank of Maharashtra (GPF)		3086.00		
		Post Office Time Deposit(GPF)		13573.00	794735.00	
4415891.00					5652642.00	

In terms of our separate report of even date.

8/2, Kiran Sankar Roy Road ,
Calcutta - 700001. 13 October 1999

For Sarma & Co.
Chartered Accountants

ARUN K. DE
Member

B. SINHA)
Partner

**INDIAN STATISTICAL INSTITUTE
PUBLICATION AND PRINTING UNIT
PROVIDENT FUND ACCOUNT**

Income and Expenditure Account for the year ended 31.3.99.

Year ended 31st March 1998		Expenditure			Year ended 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
446115.50		To excess of Income over expenditure carried down				552584.50
446115.50						552584.50
		To Interest on :				
		CPF Members' Own Subscription		1703.00		
		CPF Employers' Contribution		1696.00		
		CPF Additional Subscription		568.00		
149705.66		GPF Members' Own Subscription		176707.10		180674.10
1555796.43		To Balance carried over to Balance sheet				1927706.83
1705502.09						2108380.93

S. SENGUPTA
Manager/Secretary

M.K. CHAKRABARTI
Member

A. K. ADHIKARI
Member

A.R. RAO
Member

**INDIAN STATISTICAL INSTITUTE
PUBLICATION AND PRINTING UNIT
PROVIDENT FUND ACCOUNT**

Income and Expenditure Account for the year ended 31.3.99.

Year ended 31st March 1998		Income	Rs.		Year ended 31st March 1999	
Rs.	P.		Rs.	P.	Rs.	P.
		By Interest on :				
		(a)United Bank of India(CPF) Fixed Deposit	113613.00			
107388.50		(b)Govt. of India(RBI) Stock Certificate (CPF)	23066.50		136679.50	
		(c)Union Bank of India(GPF) Fixed Deposit	5252.00			
		(d)Allahabad Bank(GPF) Fixed Deposit	29668.00			
		(e)United Bank of India(GPF) Fixed Deposit	333122.00			
		(f)Corporation Bank (GPF) Fixed Deposit	31204.00			
338727.00		(g)Bank of Maharashtra(GPF) Fixed Deposit	3086.00			
446115.50		(h) P.O.T.D. (GPF)	13573.00		415905.00	
					<u>552584.50</u>	
1259386.59		By amount Brought Forward from last account			1555796.43	
446115.50		By excess of Income over expenditure brought down			552584.50	
1705502.09					2108389.93	

In terms of our separate report of even date.

8/2. Kiran Sankar Roy Road
Calcutta - 700001. 13 October 1999.

For Sama & Co.
Chartered Accountants

ARUN KR. DE
Member

B. SINHA
Partner

Notes on Accounts of Indian Statistical Institute
Contributory Provident Fund and General Provident Fund

- 1 Keeping with the past practice and in accordance with the Indian Statistical Institute CPF and GPF rules, while interest credited to the Income and Expenditure account pertains to the year 1998-99 interest allowed to members of CPF and GPF balances pertains to the previous financial year i.e. 1997-98.
- 2 Interest accrued on investment has been accounted for an average basis as per past practice, i.e. for investment upto 15th of a month interest for the full month has been computed whereas for investment beyond 15th interest for the remaining period of the month has been ignored.
- 3 There is difference of Rs.4588.19 since 1984-85 between the balance as extracted from the register of relief loan to ISI and NSSO workers.
- 4 The difference between balances as per Members' Ledger and General Ledger on different heads of accounts for CPF and GPF was of considerable magnitude during 1990-91, as revision of option opened during 1987-88 and 1988-89 and full impact could not be given in General Ledger. The difference is under scrutiny and efforts are being taken to locate the differences. Position as on 31.3.99 is given below.

<u>1998-99</u>	<u>Balance as per</u> <u>Members' Ledger</u>	<u>Balance as per</u> <u>General Ledger</u>	<u>Difference</u>
<u>G.P.F</u>			
1. Members Own Subscription	64902912.29	64900931.12	(+) 1981.17
2. Interest on Members Own Subscription	42491696.31	42618639.28	(-)126942.97
3. Loan to Members	16544384.12	16566619.66	(+) 22235.54
<u>C.P.F</u>			
1. (a) Members' Own Subscription	10936181.83	10938374.59	(-) 2192.76
(b) Additional Subscription	<u>2785068.69</u> <u>13721250.52</u>	<u>2733710.54</u> <u>13672085.13</u>	<u>(+) 51358.15</u> <u>(+) 49165.39</u>
2. Employers' Contribution	11262627.51	11202946.75	(+) 59680.76

	<u>Balance as per Members' Ledger</u>	<u>Balance as per General Ledger</u>	<u>Difference</u>
3. (a) Interest on Members' Own Subscription	7647075.88	7645214.67	(+) 1861.21
(b) Interest on Additional Subscription	<u>927097.36</u> <u>8574173.24</u>	<u>933637.16</u> <u>8578851.83</u>	(-) 6539.80 <u>(-) 4678.59</u>
4. Interest on Employers' Contribution	6495732.02	6503566.75	(-) 7834.73
5. Loan to Members	1508482.00	1534895.51	(+) 26413.51
<u>C.P.F. & G.P.F.</u>			
1. D.A.P.F.	9776594.98	9761457.49	(+) 15137.49
2. Other Deposit	443300.66	476038.32	(-) 32737.66

After the Accounts are audited, each subscriber is sent a detailed statement of his account in the fund. Subscribers satisfy themselves as to the correctness of the annual statement and errors if any are to be brought to the notice of the Manager/Secretary within 15 days of receipt of the statement.

S SENGUPTA
Manager/Secretary

MIHIR KUMAR CHAKRABARTI
Member

AJAY KUMAR ADHIKARI
Member

A.R. RAO
Member

ARUN KUMAR DE
Member

INDIAN STATISTICAL INSTITUTE
PUBLICATION AND PRINTING UNIT
BALANCESHEET AS 31ST MARCH 1999

PREVIOUS YEAR Rs. P.	FUND AND LIABILITIES	CURRENT YEAR Rs. P.	PREVIOUS YEAR Rs. P.	ASSET & PROPERTIES	CURRENT YEAR Rs. P.
1259846.76	1 General Fund	1259846.76	1837564.66	1. Gross Block As per Schedule -I	1837564.66
1195728.00	2. Deposit & Liabilities As per Schedule III	92699.00	6878.00	2. Advance to staff Balance as on 31.7.91	6878.00
1912575.07	3. Indian Statistical Institute General Fund Balance as per Account	2895095.97	2834.70	3. Suspense Account Balance as on 31.7.91	2834.70
			429633.02	4. Suspense & Adv. As per Sch. II	124393.02
			2082048.48	5. Excess of Expn. over Income 2375046.59 Less: Excess of Income over Exp. Transferred from Income & Expn. Account 131948.99	2243097.60
			1064.64	6. Cash in hand	1148.73
			8126.33	7. Cash at Bank	31725.02
4368149.83		4247641.73	4368149.83		4247641.73

In terms of our separate report of even date

Anup Majumdar
In-Charge
(Administration & Finance)

Pradip Roy
Executive Officer

S. B. Rao
Director

For Sarma & Co.
Chartered Accountants

B Sinha
Partner

8/2 Kiran Sankar Roy Road
Calcutta 700001
13 October 1999

INDIAN STATISTICAL INSTITUTE
PUBLICATION AND PRINTING UNIT
INCOME AND EXPENDITURE ACCOUNTS FOR THE YEAR ENDED 31ST MARCH 1999

PREVIOUS YEAR	EXPENDITURE	CURRENT YEAR	PREVIOUS YEAR	INCOME	CURRENT YEAR
Rs. P.		Rs. P.	Rs. P.		Rs. P.
4452525 44	To Salary & Allowance	4532351 50	893219 00	By Printing	1052955 10
140843 00	Bonus	129417 00	1578569 00	Sankhya Sub.	1647715 64
12806 00	Leave Travel Conces	60748 00	4326 40	Sale of Publication	6956 70
30108 27	Stationary & Stores &	69021 23	907001 89	Grant in Aid	2792998 11
7177 00	Repair & Service Chr	8283 10	590 00	Misc Receipts	
1010 00	Rulling Charges	100 00	1595410 34	Excess of Expend.	
96074 00	Postal & Expn.	96916 00		over Income Transfe-	
6334 00	Bank Charges	6040 50		red to Balance	
2449 00	Employer Cont.CPF	12972 00		Sheet	
2931 42	Block	23737 53			
1867 25	Refreshment & Misc.	6527 20			
9402 40	Staff Welfare	8162 00			
1503 85	Conveyance Charges	925 50			
212250 00	Printing Charges	413475 00			
460 00	Children Educa.Allow	-			
1375 00	Licence Fees	-			
	Excess of Income				
	Over Expenditure tra-	131948 99			
	to Balance Sheet				
4979116.63		5500625.55	4979116.63		5500625.55

In terms of our separate report of even date

Anup Majumdar
In-Charge
(Administration & Finance)

Pradip Roy
Executive Officer

S.B.Rao
Director

For Sama & Co.
Chartered Accountants

82 Kisan Sankar Roy Road
Calcutta 700001
13 October 1999

B.Sinha
Partner

INDIAN STATISTICAL INSTITUTE
PUBLICATION AND PRINTING UNIT

SCHEDULE 1
SCHEDULE OF GROSS BLOCK AS ON 31.3.1999

	As on 31.3.98	Addition during the year	As on 31.3.98
LAND AND BUILDING	218181.43		218181.43
PLANT & MACHINERY			
S P S	13390.08	-	13390.08
Ekas Press	305017.29	-	305017.29
Troika Press	1107.13		1107.13
OFFICE EQUIPMENT			
S P S	5701.20	-	5701.20
P P U (Typewriter)	7824.20		7824.20
P P U (Flanking Machine)	92000.00		92000.00
NONMETAL			
Ekas Press	423126.10	-	423126.10
Troika Press	101815.05	-	101815.05
PHOTOGRAPHIC EQUIPMENTS			
S P S	6280.00	-	6280.00
SPARE PARTS & ACCESSORIES			
Ekas Press	173291.75	-	173291.75
Troika Press	17445.56	-	17445.56
		-2.	
TYPE MATRICES			
Ekas Press	319456.46		319456.46
Troika Press	31418.68		31418.68
ELECTRICAL INSTALLATION			
S P S	11228.61		11228.61
Ekas Press	2856.50	-	2856.50
Troika Press	2697.43	-	2697.43
TOOLS & IMPLEMENT			
Ekas Press	1015.49		1015.49
Troika Press	1125.11	-	1125.11
FURNITURE & FIXTURE			
S P S	16041.48	-	16041.48
Ekas Press	18384.70		18384.70
Troika Press	7136.85		7136.85
AIR COOLER			
Troika Press	1228.58		1228.58
	1837564.66		1837564.66

Anup Majumdar
In-Charge
(Administration & Finance)

Pradip Roy
Executive Officer

S B Rao
Director

For Sarma & Co
Chartered Accountants

B Sinha
Partner

87, Kanan Senkar Roy Road
Calcutta 700001
13 October 1999

INDIAN STATISTICAL INSTITUTE
Publication and Printing Unit
Schedule II
Loans and Advance as on 31.3.1999

Previous Year			Current Year	
Rs.	P.		Rs.	P.
21000.00		1. Cycle Advance	10920.00	
39000.00		2. Festival Advance	52500.00	
29457.02		3. Sundry Debtors	29957.02	
70176.00		4. LTC Advance	31016.00	
270000.00		5. Adhoc Advance		
<hr/>			<hr/>	
<u>429633.02</u>			<u>124393.02</u>	

Anup Majumdar
In-Charge
Administration & Finance

Pradip Roy
Executive Officer

S.B.Rao
Director

'For Sarma & Co.
Chartered Accountants

B.Sinha
Partner

8/2 Kiran Sankar Roy Road
Calcutta-700001
13 October 1999

INDIAN STATISTICAL INSTITUTE
 Publication and Printing Unit
 Schedule III

Deposit and liabilities as on 31.3.1999

Previous Year			Current Year	
Rs.	P.		Rs.	P.
		1. Liabilities for		
1194310.00		Salary & Allowance	70647.00	
994.00		2. Staff Welfare	-	
424.00		3. Consumable Stores	22052.00	
<u>1195728.00</u>			<u>92699.00</u>	

Anup Majumdar
 In-Charge
 Administration & Finance

Pradip Roy
 Executive Officer

S.B.Rao
 Director

For Sarma & Co.
 Chartered Accountants

8/2 Kiran Sankar Roy Road
 Calcutta-700001
 13 October 1999

B. Sinha
 Partner

INDIAN STATISTICAL INSTITUTE
PUBLICATION AND PRINTING UNIT

SCHEDULE IV

NOTES ON ACCOUNTS

- 1 As per order of Govt. of India vide its Memo No. M-17011/21/90 Coord dated 17 May 1991 M/s. Statistical Publishing Society referred to as S. P. S. (a registered Society under Societies Registration Act 1860) including two presses was taken over by Indian Statistical Institute with effect from 1st. August 1991.
- 2 An Audited Balance Sheet and Income and Expenditure Accounts of S. P. S. as on 31st. July 1991 have been duly submitted by the Society. The Administration of ISI has duly made physical verification of all assets taken over.
- 3 The Cash and Bank Balance of erstwhile S. P. S. was not considered. It has been agreed by I S I. that the Cash and Bank Balance would be retained by S. P. S. and they would incur necessary expenditure till dissolution (for formalities of closure) of the Society and the surplus cash, if any, will be transferred to the Institute.
- 4 Stock of Publication and Sankhya Journal together with work in progress as on 31.07.91 amounting to Rs 20,78,662.00 will be accounted for only at the time of sales realization. For want of proper stock verification of stock on 31.03.91 could not be ascertained
- 5 As per Audited Accounts the liability to ISI has been shown at Rs. 1,05,49,108.35 as against receivable of Rs. 87,62,742.40 and Rs. 4,39,331.00 on bills raised to ISI for printing series rendered and cost of Sankhya and house rent for premises No. 204, 204/1, B. T. road respectively. The debit balance as per Accounts as on 31.07.1991 to S. P. S. is Rs. 30,13,339.78. Balance as on 31st March 1999 is Rs. 29,09,388.58 after adjustment of few bills in the earlier years. No bills received during this year. The above difference is subject to reconciliation on scrutiny of relevant details and hence not shown in the opening Balance Sheet.
- 6 All other assets and liabilities of the S. P. S. have not been considered in the balance sheet of ISI P.P. Unit and we will give effect of any demand or receivable as and when they arise.

7. Opening balance of the P.P.Unit has been taken to be the sum total of gross block, Advance to Staff and Suspense Account amounting to Rs. 1,25,984.76 as on 31.07.91 being the date of take over.

8. All transactions from take over date has been separately recorded in the book of Indian Statistical Institute, P.P.Unit and necessary statement of Accounts has been drawn.

9. In respect of foreign currency cheques and Indian currency cheques, amount is accounted in the Cash Book on getting debit/credit advice from Bank in Indian Rupees.

Anup Majumdar
In-charge
Administration & Finance

Pradip Roy
Executive Officer

S B.Rao
Director

13th October 1999.

INDIAN STATISTICAL INSTITUTE
CANTEEN
Balance Sheet as at 31st March 1999

1997-98	Liabilities	1998-99	1997-98	Assets	1998-99
Rs P		Rs P	Rs P		Rs P
	Capital Fund				
3352 44	As per last Account	3352 44	18845 90	Closing Stock	20654 5
2860 65	Sundry Creditors		4766 35	Sundry Debtors	5724 05
18374 26	Excess of Income over Expenditure (as per last account) Rs 18374.26		455 00	Deposit with B Dawn for supply Cold drinks	455 00
	Add During the year (transferred from Income & Expn A/c) Rs 9859 87	28234.13	392 10	Deposit with Milk Commissioner	228 00
				Cash in hand	4525 02
24687.35		31586.57	24687.35		31586.57

In terms of our separate report on even date

Sudev Gupta
In-Charge, Canteen

P K Bose
Administrative Officer

For Sarma & Co
Chartered Accountants

8/2, Kiran Sankar Roy Road
Calcutta- 700 001
13 October 1999

B Sinha
Partner

**INDIAN STATISTICAL INSTITUTE
CANTEEN
Income & Expenditure Account for the year ended
31st March 1999**

1997-98		1998-99		1997-98		1998-99	
Rs.	P.	Rs.	P.	Rs.	P.	Rs.	P.
9990.35		18845.90		369960.45			
48645.50		52784.50					
125658.92		118837.25		122.50			
68694.00		84200.00		205000.00			
39140.05		48198.10					
1866.00		1044.00					
290627.45		339298.63		18845.90			
1010.00		1030.00					
1355.30		2475.00					
5146.30		10395.00					
1794.98							
		9859.87					
593928.85		666988.25		593928.85		666988.25	

In terms of our separate report of even date

Sudev Gupta
In-Charge, Canteen

P. K. Bose
Administrative Officer

For Sarma & Co.
Chartered Accountants

8/2, Kiran Sankar Roy Road
Calcutta-700 001
13 October 1999

B. Sinha
Partner

The Editorial Board gratefully acknowledges the assistance rendered by the staff of the CAO's Office, the Public Relations Unit, the Publication and Printing Unit and the Reprography Unit in the preparation of this Annual Report.

Editorial Board

Robin Mukherjee	.....	Chairman
A.R. Rao	.....	Member
Debasis Sengupta	.....	Member
B.B. Bhattacharya	.....	Member
R.K. Roychowdhury	.....	Member
Ranjan Gupta	.....	Member
Amita Majumder	.....	Member
Anup Majumdar	.....	Member
C. Bhattacharya	.....	Member
J. Verghese	.....	Member
Dipankar Dasgupta	.....	Member
G. Mishra	.....	Member
Pradip Roy	.....	Member-Convenor

CAPTION OF THE PHOTOGRAPHS

Front Cover Page

Main Building of the Institute, Calcutta

Inside Back Cover Page

- Top Left** : C. F. J. Wu, H.C. Carver Professor of Statistics, University of Michigan, USA, delivering the Seventh P.C. Mahalanobis Lecture, Calcutta, March 1, 1999.
- Top Right** : Library of the Institute, Delhi.
- Middle Left** : Students in a Computer Room of the Computer and Statistical Services Centre, Calcutta.
- Middle Right** : V.K. Mishra, Advisor, DST, addressing the inaugural session of the Workshop on " Knowledge Based Framework for Diagnosis and Therapeutic Planning Using Multimodality Medical Imaging", Electronics and Communication Sciences Unit, Calcutta, April 2, 1998.
- Bottom Left** : Inaugural Ceremony of the International Workshop on "High Performance Computing", Advanced Computing and Microelectronics Unit, Calcutta, December 30, 1998 - January 5, 1999.
- Bottom Right** : Participants and faculty members at the World Bank Aided Training Programme on Environmental Economics for Government Officers, Economic Research Unit, Calcutta, January 18-23, 1999.

Back Cover Page

- Top Left** : Sir Walter F. Bodmer delivering the 33rd Convocation Address, Calcutta, February 2, 1999.
- Top Right** : S. B. Rao, Director, ISI, addressing the inaugural session of the National Conference on "50 years of SQC & OR in India : Business Competitiveness and Growth through Quantitative Methods", Chennai, August 6-8, 1998.
- Middle Left** : Main Building of the Institute, Bangalore.
- Middle Right** : Main Building of the Institute, Delhi.
- Bottom Left** : Musical Troupe of the ISI Club at the Annual Cultural Programme, Calcutta, 1999.
- Bottom Right** : Inaugural session of the National Symposium on " Computational Linguistics : Prospects and Implications", Linguistics Research Unit, Calcutta, March 9, 1999.



INDIAN STATISTICAL INSTITUTE
203 Barrackpore Trunk Road, Calcutta - 700 035





67TH ANNUAL REPORT

APRIL 1998 - MARCH 1999



67TH ANNUAL REPORT

APRIL 1998 - MARCH 1999