Evaluative Report of the School of Mathematics-A

1. Name of the Department School of Mathematics

2. Year of establishment 1971

3. Is the Department part of a School/Faculty of the university?

    Part of science faculty.

4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.)

    M.A./M.Sc, M.Phil, Ph.D.

5. Interdisciplinary programmes and departments involved
    Nil.

6. Courses in collaboration with other universities, industries, foreign institutions, etc.
    Nil.

7. Details of programmes discontinued, if any, with reasons
    None.

8. Examination System: Annual/Semester/Trimester/Choice Based Credit System

    Semester.

9. Participation of the department in the courses offered by other departments
    None.

10. Number of teaching posts sanctioned,   filled and actual (Professors/Associate

    Professors/Asst. Professors/others)

Sanctioned	Sanctioned	Filled	Actual(including CAS & MPS)
Professor	01	0	01
Associate Professors	03	01	02
Asst. Professors	03	02	0
Others(visiting)	-	-	03

11. Faculty profile with name, qualification, designation, area of specialization, experience and research under guidance

Name	Qualification	Designation	Specialization	No. of Years of Experience	No. of Ph.D./ M.Phil students guided and completed for the last 4 years(2009-2013)
Dr. K.N. Rajeswari	Ph.D	Professor	Representation Theory of Linear Algebraic Groups.	24	01/5
Dr. M.N. Dumaldar	Ph.D	Reader	Linear Programming	13	0/4
Dr. D.K. Panchal	Ph.D	Reader	Distribution Theory, Transform Analysis.	16	0/1

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors

    Trying to get an Adjunct Professor under UGC Scheme.

13. Percentage of classes taken by temporary faculty – programme-wise information

    On average 30% in each of the programmes offered.

14. Programme-wise Student Teacher Ratio   13:1 for M.A./M.sc.

                                            3:1 for M.Phil.

15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

Technical staff	
Sancti	

oned	4
Filled	3

16. Research thrust areas as recognized by major funding agencies
Nil.

17. Number of faculty with ongoing projects from a) national b) international funding agencies and c) Total grants received. Give the names of the funding agencies, project title and grants received project-wise.
Nil.

18. Inter-institutional collaborative projects and associated grants received

    a) National collaboration   b) International collaboration
    Nil.

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants received.
Nil.

20. Research facility / centre with

    - state recognition
    - national recognition
    - international recognition

    Nil.

21. Special research laboratories sponsored by / created by industry or corporate bodies
Nil.

22. Publications:

Dr. K.N. Rajeswari

S. No.	Title of the published research paper Name of the Authors	Editors Name, Title, Volume, and Page number	Publishing Company	ISSN/ISBN
1	An upper bound on separable	Editor :Steve Kirkland	Taylor& Francis	ISSN:0308-1087,

	index of certain SL(3)- modules	Linear & Multilinear Algebra vol.57(6),2008,633-640.		Impact factor: 0.73
2	(with Rafia Aziz) Relative strong cleanness of upper triangular matrices,	Editor:S.Nenov International Journal of Pure and Applied Mathematics Vol. 46, No. 5, 2008,691-695	Academic Publications	ISSN:1311-8080 Impact factor:0.25 H-index: 17
3	On Determinants of 3x3 matrices with non-negative integer entries and fixed column sums,	Editor:S.S.Chandel Varahamihir Journal of Mathematical Sciences Vol.8,No.2, 2008.	Sandipani Academy	ISSN:0972-7329
4	(with Rafia Aziz) A note on clean-matrices in $M_2(Z)$,	Editor: Emil Minchev International Journal of Algebra Vol.3, No.5, 241-248,2009	Hikari Ltd	ISSN:1312-8868 Impact factor:.23
5	with Rafia Aziz)Certain Units in M_2(Z) which are uniquely clean	Editor : D.K.Kachhara Research Journal in Pure Algebra, Vol.1(3),58-70,2011	Online	ISSN:2248-9037

6	(with Rafia Aziz) Strongly Clean Matrices in $M\_2(Z)$, An Intrinsic Characterization,	Editor:D.K.Kachhara International Journal of Mathematical Archive, vol. 2(7),1159-1166,2011.	Online	ISSN:2229-5046
7	(with Rafia Aziz)Uniquely Clean Idempotent 2x2 matrices over Integral domains	Editor:D.K.Kachhara International Journal of Mathematical Archive,vol.3(7),2012,	Online	ISSN:2229-5046

Dr. D.K. Panchal

S. No.	Title of the published research paper Name of the Authors	Editors Name, Title, Volume, and Page number	Publishing Company	ISSN/ISBN
1	(with Naresh Berwal & C.L.Parihar) Some aspects of wavelet's and it's applications.	Journal of Social Developments.Vol. 11, No. 2 ,Page 737-749	Serial Publication	ISSN:0972-3692
2	Naresh Berwal, C.L. Parihar, D.K.	Italian Journal of pure and applied mathematics;Vol. 29.		ISSN:2239-0227

	Panchal ; Solution of L-C-R equation based on Haar Wavelet			
3	Naresh Berwal, C.L. Parihar, D.K. Panchal ; Solution of wave-like equation based on Haar Wavelet	Le Mathematics (journal of pure and applied mathematics and information science; Vol. 67 f.2 pp 157-167.	University of Catania	ISSN:03733505, 20375298
4	Naresh Berwal, C.L. Parihar, D.K. Panchal ; Solution of differential equation based on Haar operational method	Bulletin of pure and applied mathematics Rajasthan	Scientific Publishers Jodhapur	ISSN: 0973-5933
5	Naresh Berwal, C.L. Parihar, D.K. Panchal ; Solution of Heat –like equation BASED ON	Journal of Rajsthan of physical sciences ; Vol. 11. No. 3 .pp 231-240.	Rajsthan academy of physical sciences	ISSN: 0912-6306

	Haar wavelet			
6	Naresh Berwal, C.L. Parihar, D.K. Panchal ; Haar Wavelet method for numerical solution of telegraph equation ;	Italian Journal of pure and applied Mathematics ;Vol.32		ISSN:2239-0227
7	Naresh Berwal, C.L. Parihar, D.K. Panchal ; Solution of partial differential equation Based on Haar Wavelet	Accepted in Applicable Analysis and discrete Mathematics		ISSN: 1452-8630

- Number of papers published in peer reviewed journals (national / international) 14

  - Monographs 0
  - Chapters in Books 0
  - Edited Books 0
  - Books with ISBN with details of publishers 0
  - Number listed in International Database (For *e.g.* Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.)
  - Citation Index – range / average
  - SNIP
  - SJR

- Impact Factor – range/ average Maximum 0.73
- h-index

23. Details of patents and income generated   None

24. Areas of consultancy and income generated   None

25. Faculty selected nationally / internationally to visit other laboratories / institutions
/ industries in India and abroad
Nil

26. Faculty serving in

a) National committees b) International committees c) Editorial Boards d) any other (please specify)
None.

27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs).

- Organizing guest lectures by experts and national
  seminars/workshops.
- Faculty are encouraged to attend national/International
  conferences, seminars and workshops.
- Lectures of Shanti Swarup Bhatnagar Awardees were
  organized in 2007 and 2009
- Seminar on "Fostering Excellence in Research" at University
  Auditorium on 15.01.2013
- Teaching Learning Process Quality Workshop on 10.05.2013.

28. Student projects
- percentage of students who have done in-house projects including inter-departmental projects 100%
- percentage of students doing projects in collaboration with other universities
  / industry / institute Nil.

29. Awards / recognitions received at the national and international level by
- Faculty
- Doctoral / post doctoral fellows
- Students

Nil

30. Seminars/ Conferences/Workshops organized and the source of funding (national
/ international) with details of outstanding participants, if any.

➤ Mathematical Training & Talent Search Programme funded by National Board for Higher Mathematics(24-05-2009 to 21-06-2009)

- S. Kumaresan, Mumbai University, Mumbai. (presently at central university of Hyderabad)
- Ajit Kumar, Institute of Chemical Technology, Mumbai.
- K. Santaram, D.A.V.V., Indore
- K.N. Rajeswari, D.A.V.V., Indore
- M.N. Dumaldar, D.A.V.V., Indore.

➤ National workshop on "Linear Algebra & its applications" funded by National Board for Higher Mathematics(26-27th Nov. 2012)

List of speakers:

- Rajendra Bhatia, Indian Statistical Institute (ISI), New Delhi.
 (Recipient of Bhatnagar Award)

- Ravindra Bapat, Indian Statistical Institute (ISI), New Delhi.
 (Recipient of J.C. Bose Fellowship)

- P. Bhimasankaram, Indian School of Bussiness (ISB),Hyderabad

- Sk. Safiq Ahmad, Indian Institute of Technology (IIT), Indore.

➤ On the occasion of 125th birth anniversary of Srinivasa Ramanujan (Mathematics Day), one day seminar on Analytical Number Theory on 22nd Dec. 2012 funded by Madhya Pradesh Council of Science & Technology.

Speaker:

- N. Saradha, Tata Institute of Fundamental Research, Mumbai.

> Shanti Swarup Bhatnagar Awardees first and second conferences held in 2007 and 2009, respectively.

Year and Date	Renowned Mathematicians and Shanti Swarup Bhatnagar Awardee		Topic
	Name	Organization	
2007, 8th March	Dr. Sujatha Ramdaroi	T.I.F.R., Mumbai	Problems in Number Theory: Simple yet sophisticated
2007, 10th March	Dr. Kalyanmoy Deb	IIT, Kanpur	Multiobjective Evolutionary Optimization for Scientific and Engineering Problem Solving.

31. Code of ethics for research followed by the departments

Not compromising on the quality and giving due credit to all those who contribute. Following principles of ethical and social responsibility.

32. Student profile programme-wise:

Name of the Course (refer to question no. 4)	Applications received	Selected Male	Female	Pass percentage* Male	Female
M.A./M.Sc.	Not known as admission was through CET.	16	31	NA	NA
M.Phil	33	02	08	6%	24%
Ph.D.	98	07	05	7%	5%

*Pass percentage in entrance test.

33. Diversity of students.

Name of the Course	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries

Name of the Course	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
M.A./M.Sc.	86	12	2	0
M.Phil	90	0	10	0
Ph. D.	58	25	17	0

34. How many students have cleared Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise.

S.No	Name of the students	Qualified In	Category	Year of passing
1.	Deepti Dubey	NET & NBHM Ph.D. Exam.	Gen	2007
2.	Ramkrishna Tripathi	NET	Gen	2007
3.	Seema Gupta	NET	Gen	2008
4.	Sweta Tiwari	NET	Gen	2010
5.	Pallavi Mahale	GATE	Gen	2007
6.	Arun Bhalke	GATE	ST	2012
7.	Paramjeet Singh Mandar	NET	Gen	2009

Competitive Examinations

S.No	Name of the students	Qualified In	Category	Year of passing
1.	Janki Varandani Nagrani	Bank PO	Gen	2010
2.	Veer Singh Maida	MPPSC		2003

35. Student progression

Student progression	Percentage against enrolled
UG to PG	NA
PG to M.Phil.	15%
PG to Ph.D.	10%

Evaluate SSR Report of School of Mathematics

Student progression	Percentage against enrolled
Ph.D. to Post-Doctoral	Nil
Employed • Campus selection • Other than campus recruitment	Nil 62%
Entrepreneurs	

36. Diversity of staff

Percentage of faculty who are graduates	
of the same university	33%
from other universities within the State	0
from universities from other States	66%
from universities outside the country	0

37. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period

None

38. Present details of departmental infrastructural facilities with regard to

a) Library

The department has a library housing all the books prescribed in the curriculum. It has several books, in addition, covering advanced topics which have been received from the National Board for Higher Mathematics(NBHM) as complimentary copies. The journals subscribed to using the NBHM library grant are also kept in the departmental library. The central library also provides accesses to e-resourses through INFLIBNET.

No. of Books : about 1200

No. of Complimentary Copies (from NBHM): 177

No. of Journals :0 3

No. of M. Phil. Dissertations : 64

No. of Ph. D. Theses : 02

UGC grant for department library in XI plan : Rs. 2,00,000.

Central Library is also very close to School. Students have sufficient books and Journals after combining facilities in the Department as well as in the Central Library.

b) Internet facilities for staff and students Available for all

c) Total number of class rooms   Two

d) Class rooms with ICT facility Two

d) Students' laboratories One

e) Research laboratories One computer lab.

39. List of doctoral, post-doctoral students and Research Associates

a) from the host institution/university

b) from other institutions/universities

Miss. Rafia Aziz was doctoral student from 2008 to 2012.

1. Neelam George
2. Parag Mittal
3. Umesh Gupta
4. Chandrashekhar Chauhan
5. Richa Jain
6. Rajneesh Jain
7. Naresh Berwal
8. Abhilasha Sharma
9. Ashish kumar Soni
10. Madhavi Acharya
11. Manoj Joshi
12. Neha Yadav

40. Number of post graduate students getting financial assistance from the university.

Madhya Pradesh state government Scholarship for students belonging to reserved category.

41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.

Discussions are regularly held on possibility of introducing new programmes. No new programme could be undertaken in view of resource crunch and shortage of permanent faculty.

42. Does the department obtain feedback from

   a. faculty on curriculum as well as teaching-learning-evaluation? If yes, how does the department utilize the feedback?

   Feedback is obtained in faculty meetings and necessary actions are taken.

   b. students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback?

   Student feedback on curriculum and teaching-learning–evaluation are analyzed. Matters where feedback calls for improvement are addressed to in the following semester.

   c. alumni and employers on the programmes offered and how does the department utilize the feedback?

   Feedback from alumni is being filed.

43. List the distinguished alumni of the department (maximum 10)

Name	Batch	Present Status
Gaurav Singh	1995-1997	Senior Research Scientist: CSIRO, Australia
Dipti Dubey	2003-2005	Reasearch Scholar, IIT Delhi
Pallavi Mahale	2001-2003	Ph.D. IIT Madras
Devendra Rajput	1994-1996	CSP, Madhya Pradesh Police, Bhopal
Sree Dulla	1992-1994	Software Engineer, USA.
Janki Varandani	2002-2004	Officer at Bank of India

Nagrani

Rohit Pathak	2000-2002	Faculty at IET, DAVV, Indore.
Sufia Aziz	2001-2002	Faculty at IET, DAVV, Indore.
Gajendra Ujjainkar	1987-1989	Faculty at Govt. PG college Dhar.
Seema Gupta	2004-2006	Faculty at Amity University, Noida

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

   1. Prof. M.S. Narasimhan, FRS, addressed the students of the department on 22-3-2011.
   2. Prof. S. Kumaresan held interactive session with the students of the department on basics of Topology on 6-4-2011.
   3. Prof. D.N. Verma, ex-member of TIFR has delivered a lecture on "Some Important Problems in Theoretical Computer Science-elementary Mathematical Solutions" in the department on 22-4-2011.
   4. Prof. T. Parthasarathy, ISI Chennai & CMI, (Bhatnagar Award Winner), delivered a lecture on "On Univalent Results"
   5. Retired Prof. Y.S. Pawar, Kolhapur University, delivered a lecture on "Introduction to Fuzzy Mathematics"
   6. Prof. Ivans Slapnicar, University of Split, Croatia delivered a lecture on "Fiedler Vectors" on 22nd January 2013.

45. List the teaching methods adopted by the faculty for different programmes.

   - Mainly Black board teaching
   - Tutorials
   - Student Seminars
   - Group Discussions
   - PowerPoint Presentations as and when required

46. How does the department ensure that programme objectives are

constantly met and learning outcomes are monitored?

1. Monitoring the progress of students (through tests / examination and
   classroom discussions) and counseling them accordingly.

2. Learning outcomes: Placements, taking higher studies, passing national level competitive examinations.

All learning outcomes are monitored by the faculty. Remedial steps are taken accordingly.

47. Highlight the participation of students and faculty in extension activities.

- Students and faculty actively participate in academic events like workshops, guest lectures conducted by the department.

- Participation in Green Calendar activities of the university.

   Celebration of "The World Meteorological Day" on 23$^{rd\ March}$ 2013 Speaker: Sanjay Sharma, Department of Meteorology, Agriculture College, Indore.

48. Give details of "beyond syllabus scholarly activities" of the department.

- Student Projects,
- Participation in advanced training programmes in Mathematics.
- Exposure to lectures by eminent mathematicians.
- Attending Language laboratory programmes/special coaching classes.

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.
No

50. Briefly highlight the contributions of the department in generating new knowledge, basic or applied.

   Alumni of the department have been serving the Nation in various capacities. For instance, in various teaching institutes(private as well as govt.), in Government Organizations, Research Institutions, Industries and Planning Organizations.

   Departmental faculty have been publishing research articles in national/international journals in the areas of Algebra, Linear Algebra

and their applications to systems and control theory and also Graph Theory and its application to chemistry.

Department has introduced new courses(like Linear/Non linear programming, Programming in C++, Computational Linear Algebra) which are more problem oriented and this helps student acquire practical knowledge.

51. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

Strengths :

(1) Academically highly experienced, well trained and devoted Faculty.

(2) Library catering to the requirements of the students in association with NBHM.

Weaknesses:

(1) Inadequate permanent Faculty members and the dependence on Visiting Faculty.

(2) Inadequate resources like number of classrooms, space for office, budgetary allocation by the university.

Challenges:

(1) Due to lesser interest of students in comparison to engineering, computer science, information technology and management, attracting brilliant students.

(2) Attracting highly experienced permanent Faculty at senior level.

(3) Enhancing research activities

(4) Solving industry related problems of applied mathematics.

52. Future plans of the department.

1. The Mathematical background of students taking admission in M.A./M.Sc. (Mathematics) is generally poor. Department plans to organize rigorous training programmes for under graduate students atleast once a year. One such programme will be held in September 2013.
2. Organizing National Seminars on recent advances in the subject.
3. Subject to availability of the faculty, department plans to introduce electives which are computational in nature.
4. Improve infrastructural facilities.
5. Undertaking programmes to popularize mathematics.

Write up of efforts for Quality Sustenance and Assurance in the department- B

- Department has an Internal Quality Assurance Committee to monitor proper functioning of the department. Besides, the expert suggestions are taken and incorporated for enhancement of academic and administrative activities.

- Students' feedback is taken regularly and concerned faculty is asked to take necessary action.

- Inviting Retired Professors of the Department as visiting faculty to maintain Academic Standards.

- Quality issues were discussed at University Workshops on Sept. 26, 2012, May 10, 2013 and May 15, 2013.

Evaluate SSR Report of School of Mathematics

I certify that the data included in this Self-Study Report (SSR) is true to the best of my knowledge.

This SSR is prepared by the institution after internal discussions, and no part thereof has been outsourced.

I am aware that the Peer team will validate the information provided in this SSR during the peer team visit.

Kn Rajeswari
(Dr. K.N. RAJESWARI)
Prof. & Head
School of Methematics
D. A. V. V., INDORE

Signature of the Head of the institution

with seal:

Place: Indore
Date: 22-08-2013