Evaluative Report of the Department- A

1. Name of the Department :School of Chemical Sciences
2. Year of establishment :1976
3. Is the Department part of a School/Faculty of the university? Yes
4. Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc., D.Litt., etc.)

Programmes	Number	Course/Subjects
UG	Nil	Nil
P.G.	03	M.Sc. (Chemistry) M.Sc. (Applied Chemistry) M.Sc. (Pharmaceutical Chemistry)
Ph.D.		As per faculty specialization

5. Interdisciplinary programmes and departments involved: We have Introduced Mathematics for Biology, Biology for Mathematics students and Computers for Chemists as interdisciplinary papers. Of course, these papers are taught by internal faculty.
6. Courses in collaboration with other universities, industries, foreign institutions, etc. No
7. Details of programmes discontinued, if any, with reasons: NA
8. Examination System: Annual/Semester/Trimester/Choice Based Credit System: Semester
9. Participation of the department in the courses offered by other departments: Teachers of School of Chemical Sciences have been resource persons in refresher / orientation courses conducted by Academic Staff College.
10. Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors/others)

	Sanctioned	Filled	Actual (including CAS & MPS)
Professor	02	01	01+03(MPS)+04(CAS)
Associate Professors	05		
Asst. Professors	04	01 (Contractual)	01 (Contractual)
Others			

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

Name	Qualification	Designation	Specialization	No. of Years of Exp. (in This Univ.)	No. of Ph.D. students guided for the last four-years
Dr. R. Prasad	M.Sc., Ph.D.	Professor (MPS)	Physical	31	02
Dr. K. K. Pandey	M.Sc., Ph.D., D.Sc.	Professor	Inorganic	32	Nil
Dr. A.V. Bajaj	M.Sc., Ph.D.	Professor (MPS)	Organic	32	Nil
Dr. Ashok Kumar	M.Sc., Ph.D., D.Sc.	Professor(MPS)	Physical	27	02
Dr. H. P. S. Chauhan	M.Sc., Ph.D.	Professor (CAS)	Inorganic	23	02
Dr. Sheela Joshi	M.Sc., Ph.D.	Professor (CAS)	Organic	30	02
Dr. Pratibha Sharma	M.Sc., Ph.D.	Professor (CAS)	Organic	23	02
Dr. Savita Khare	M.Sc., Ph.D.	Professor (CAS)	Organic	23	02
Mr. Pankaj Bariya	M.Sc. NET	Asstt. Professor (Contractual)			

12. List of senior Visiting Fellows, adjunct faculty, emeritus professors : No
13. Percentage of classes taken by temporary faculty – programme-wise information: One contractual faculty recently appointed.
14. Programme-wise Student Teacher Ratio: 13:1 (120 students: 9 Faculty)
15. Number of academic support staff (technical) and administrative staff: sanctioned, filled and actual

Post	Sanctioned	Filled
Sr. Technician	03	02
Store Keeper	01	-

Asst. Grade-3/ Steno typist	02	01
Lab. Technician/ Store Keeper	01	01
Lab. Technician	02	02
Lab. Attendant	04	01
Gas Mistry	01	01
Peon	01	01
Watchman	01	-
Farrash	01	-
Cleaner	01	-
Gardener	01	01
Total	19	10

16. Research thrust areas as recognized by major funding agencies:
    Organometallic Chemistry, Coordination Chemistry, Theoretical Chemistry, Nanotechnology, Catalysis, Organic/Inorganic Synthesis, Medicinal Chemistry.

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.

Name of the Investigator	Title of the project and duration	Status	Amount sanctioned	Funding agency
Dr. R. Prasad	Surface and catalytic studies of nanocrystalline and nanoporous metal oxides.	Completed	Rs.3,06,000/-	CSR-CRS
	Studies of few catalytic vapour phase alkylation and cyclization reactions.	Completed	Rs. 7,64,800/-	UGC
Dr. Ashok Kumar	Synergistic extraction and spectrophotometric determination of toxic metal ions and lanthanides at trace level by chromogenic substituted calix(n) arenes.	Completed	Rs. 10,46,000/-	CSIR

	Synergistic extraction and stripping voltammetric determination of toxic metal ions and lanthanides at trace level.	Completed	Rs. 17,00,000/-	DST
Dr.H.P.S. Chauhan	Synthetic, Spectroscopic, Thermal and Biochemical Studies on some Group 14 (Si, Ge and Sn) and Group 15 (As, Sb and Bi) Metal and Organometallic Complexes with some sulphur and/or Oxygen Donor Organic Ligands.	Completed	Rs.4,11,100/-	UGC
Dr.Pratibha Sharma	Design, Synthesis, Electrochemical Studies and Evaluation of Therapeutic Potential of Purines and Benzimadazoles Through Quantitative Structure - Activity Relationship	Completed	Rs.17,20,000/-	DRDO
Dr. R. Prasad	Quantum Mechanical and Molecular Mechanics Computation of few molecules, Reactions and Nano materials.	Ongoing	Rs. 4,94,000/-	MPCST, Bhopal
Dr.H.P.S. Chauhan	Group 15 Metal and Organometallic Derivatives with Mixed Sulphur and/or Oxygen Donor Ligands: Synthesis and Characterization: Thermal and Biochemical Studies	Ongoing	Rs. 8,04,800/-	UGC, New Delhi

Dr.H.P.S. Chauhan	Studies on the synthesis and characterization of some group 15 Metal nano complexes with Sulfur donar ligands.	Ongoing	Rs. 7,83,000/-	MPCST, Bhopal.
Dr. KK Pandey (Pankaj Patidar)	Structure and bonding analysis of ylidine complexes Ln-M≡E-R(M=Cr, Mo, W; E=Si Ge, Sn Pb; R=Cp,MeS): A DFT study	Ongoing	Rs. 5,95,000/-	UGC-NET
Dr. Ashok Kumar	Efficient Construction of Novel Triazole as Potential Therapeutics : A Classical Versus Click Chemistry Approach	Ongoing	Rs. 44,84,000/-	DRDO New Delhi
Total Grant INR= 1,31,08,700/-				

18. Inter-institutional collaborative projects and associated grants received

a) National collaboration

Name of the Investigator	Title of the project and duration	Status	Amount sanctioned	Funding agency
Dr. R. Prasad	Surface and catalytic studies of nanocrystalline and nanoporous metal oxides.	Completed	Rs.3,06,000/-	CSR-CRS
Dr.Pratibha Sharma (In collaboration with DRDE, Gwalior)	Design, Synthesis, Electrochemical Studies and Evaluation of Therapeutic Potential of Purines and Benzimadazoles Through Quantitative Structure - Activity Relationship	Completed	Rs.17,20,000/-	DRDO, New Delhi

b) International collaboration

Dr. K.K. Pandey

• World's most prestigious Alexander von Humboldt Fellowship Germany	(May, 2006 – July, 2006) (University of Marburg)
Visiting Professor Department of Chemistry Universitat Autonoma de Bercelona, Spain	May, 2008 – June, 2008
Emerson Center's Visiting Fellow for the, Emory University, Atlanta	July2008-Sept .2008

Dr. Ashok Kumar

Visited University of Pecs, Hungary under Indo-Hungarian Exchange Program	Nov.10, 2008 – Feb.9, 2009

19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE, etc.; total grants sanctioned. Total Grant INR= 1,31,08,700/-

20. Research facility / centre with
    - State recognition- Nil
    - National recognition – DST- FIST supported department.
    - International recognition- Nil

21. Special research laboratories sponsored by / created by industry or corporate bodies : No
22. Publications:
    - Number of papers published in peer reviewed journals (national / international):104 (During 2008-2013)
    - Impact Factor – range / average: range 0.063-12.110
23. Details of patents and income generated: No
24. Areas of consultancy and income generated : No

25. Faculty selected nationally / internationally to visit other laboratories / institutions industries in India and abroad : 02

Dr. K.K. Pandey

World's most prestigious Alexander von Humboldt Fellowship Germany	(May, 2006 – July, 2006) (University of Marburg)
Visiting Professor Department of Chemistry Universitat Autonoma de Bercelona, Spain	May, 2008 – June, 2008
Emerson Center's Visiting Fellow for the, Emory University, Atlanta	July2008-Sept .2008

Dr. Ashok Kumar

Visited University of Pecs, Hungary under Indo-Hungarian Exchange Program	Nov.10, 2008 – Feb.9, 2009

26. Faculty serving in
    a) National committees b) International committees c) Editorial Boards d) any other (please specify)
    - Faculty members have reviewed many papers of International Repute.
    - Dr. H.P.S. Chauhan and Dr. Ashok Kumar are the members in Editorial Board of some National Journals.
    - Most of faculty members are referee to national/ international journals
27. Faculty recharging strategies (UGC, ASC, Refresher / orientation programs, workshops, training programs and similar programs)

A. Faculty recharging strategies
    1. Teachers of the School supported the activities of Academic Staff College for running refresher courses.

2. Workshops on:

(i) Quality issues in paper setting and evaluation on Sept. 26, 2012.

(ii) Quality issues in teaching learning processes on May 10, 2013.

(iii) C.B.C.S. by Prof. Rege, Maharashtra Govt. College of Engineering, Pune on May 15, 2013.

(iv) "Challenges in Higher education" by Padmashri Prof. M.S. Sodha on June 17, 2013.

3. Participation in conferences and workshops.

4. Post Doctoral studies for short periods in International Laboratories.

B. Number and list of faculty with course details of faculty development programs, academic staff college programs or other faculty recharge programs

i) Dr. A. V. Bajaj participated in NME-ICT program (SAKSHAM) in association with Microsoft on June 10, 2013 to June 20, 2013.

ii) Dr. Pratibha Sharma attended 'Users Meeting' at CDRI, Lucknow on January 10, 2011 and Workshop at IIT, Indore on February 22-23, 2013.

iii) Faculty members of the School are doing collaborative research with national institutes and various international universities.

28. Student projects

- percentage of students who have done in-house projects including inter-departmental projects : 20%
- percentage of students doing projects in collaboration with other universities /industry / institute : 80%

29. Awards / recognitions received at the national and international level by

<u>Faculty</u>

(1) Prof. K.K. Pandey has been awarded prestigious Alexander von Humboldt fellowship and he is regularly availing this opportunity to visit Germany.

(2) Prof. Ashok Kumar has been awarded by Indo –Hungarian exchange fellowoship (Nov.2008-Feb.2009)

(3) Prof. Pratibha Sharma (in Teacher Category) has been awarded by "Best Science Research Award of MPCST in 2010"

(4) Prof. Ashok Kumar (in Teacher Category) has been awarded by "Best Science Research Award of MPCST in 2012"

(5) Dr. Pratibha Sharma received "D.R.D.E. Award - 2012" (Shri K. M. Rao Award for Entomological Sciences) for the best publication in Parasitology Research

Students

(1) Ms.Vinita Sahu (in Student Category) has been awarded by "Best Science Research Award of MPCST in 2010"

(2) Mr. Pankaj Patidar (in Student Category) has been awarded by "Best Science Research Award of MPCST in 2012"

(3) Mr. Prabal Bandyopadhyay received Third Prize in Poster Presentation in "International Conference on Chemistry for Mankind (ICCM-2011)", held at Nagpur, India during Feb.09-11, , 2011.

(4) Ms.Sheenu Bhadoriya awarded in 2nd Bhartiya Vigyan Sammelan held during Dec.1-9,2009

(5) Dr. Atul Moghe (an alumnus of the deptt.1996-1998) has received "Young Pharmaceutical Analyst Award 2010"

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

1. The faculty of the school supported the academic programme of National Conference of "Shanti Swaroop Bhatanagar Award Winners" held on 8-10 March, 2007 and 17-19 July, 2009. Eminent Shanti Swaroop Bhatnagar awardees in Chemical Sciences and related areas were as follows-

   (1) Dr. A. Ajayghosh
   National Institute for Inter-disciplinary Science, Thiruvanthapuram
   (2) Dr. Amalendu Chandra
   IIT, Kanpur
   (3) Dr. Srikanth Sastry
   Jawaharlal Nehru Center for Advanced Scientific Research, Bangalore
   (4) Dr. Anil Bharadwaj
   Vikram Sarabhai Space Centre, Thiruvanthapuram
   (5) Dr. G.P.S.Raghava
   Institute of Microbial Technology, Chandigarh
   (6) Dr.B.S. Murty
   IIT Madras, Chennai
   (7) Prof A.K. Ghatak
   Emeritus Professor I.I.T. Delhi

2. The school organized a National Seminar on the theme entitled "Emerging Trends in Chemical Sciences" in 2012 on 20th March 2012. Faculty members have interacted with eminent scientists. Following eminent persons were invited to deliver their scientific talks:
   (1) Prof. B. Vishwanathan, IIT, Madras, Chennai
   (2) Prof. Deepak Gupta, IIT, Kanpur
   (3) Prof. P. Yogeeshwari, BITS, Pilani, (Hyderabad Campus)
   (4) Prof. Akhilesh Verma, University of Delhi, Delhi
3. The School organized a seminar on March, 4, 2013 on the occasion of "National Fire safety day which was very well attended by faculty members, students, research scholars of different schools of the university.

31. Code of ethics for research followed by the departments

- In order to foster excellence in research and maintain a research environment of intellectual integrity, as well as scholarly and scientific rigour, our school follows the principles of code of research ethics.
- School works in an environment governed by regulations and policies which must be followed within a core of ethical principles.
- School obeys the tanets of ethical principles in its day to day research activities viz., honesty, accuracy, efficiency, objectivity, with strong concern for conserving the environment.

32. Student profile programme-wise:

Name of the Course	Applications received	Selected		Pass percentage (in U.G.)			
		Male	Female	Male		Female	
M.Sc. (Chemistry, Pharm. Chem., Applied Chem.): for 20 seats each in 2012- 2013 (Admitted in I Semester)	352	32	27	Max.	Min.	Max.	Min.
				76.25%	52.11%	81.70%	65.42%

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
M.Sc. (Chemistry, Pharm. Chem., Applied Chem.) : 20 seats for each in 2012- 2013	85	12	3	Nil

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

1. Mr.Pushpendra Kushwah has qualified State Civil Services examination in 2010 and appointed as Assitant Commissionar, Cooperative Societies in Govt. of M.P.
2. Mr. Narain Rawal has been selected for Sub-inspector of police by state level test organized by Vyapam.
3. Following students have been qualified for NET/ GATE during last four years. Faculty members are taking tutorials to assist weak students for their learning and to help good students for their preparation in NET/GATE examinations.
    (1) Pankaj Patidar UGC-NET (OBC) [2009]
    (2) Vinita Sahu CSIR-NET (OBC) [2009]
    (3) Premansh Dudhe CSIR-NET (OBC) [2010]
    (4) Anil Yadav CSIR-NET (OBC) [2011]
    (5) Pankaj Baria CSIR-NET, JRF (ST) [2012]
    (6) Monika Ahuja GATE(UR) [2011]
    (7) Pramod Kumar Gavel GATE (OBC) [2012]
    (8) Kuber Singh Rawat GATE (OBC) [2012]
    (9) Sunil Kumar Patidar GATE (OBC) [2011]

35. Student progression Analysis of progression and trends for the last four years.

Student Progression	%
UG to PG*	Nil
PG to M.Phil.*	Nil
PG to Ph.D. 2012-13 2011-12 2010-11 2009-10	 10% 02% 04% 10%
Ph.D. to Post-Doctoral	Nil
Employed • Campus selection • Other than campus recruitment	No Official Record

36. Diversity of staff

Percentage of faculty who are graduates	
of the same university	25
from other universities within the State	25
from universities from other States	50
from universities outside the country	Nil

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

38. Present details of departmental infrastructural facilities with regard to

a) Library

Departmental library: Books of Rs. 5 lakhs from being purchased through central library.

Total No. of Titles procured out of UGC XI plan = 112

Total No. of Books in Central Library for Chemical Sciences= 643

Total No. of Titles (Books, Volumes, and Theses) in Departmental Library:

Volumes =966

Titles =710 Total area of the library (in Sq. Mts.): 240 Sq. Mts. (Adequate area is available for intake of 60 seats)

Besides Departmental library, in the close vicinity there is availability of enriched University Central Library, University IT Centre, NMEICT ultrahigh bandwidth connectivity which is being frequently used by students and faculty members.

b) Internet facilities for staff and students: All rooms of teachers are equipped with computer and internet connections with following details

No. of Internet connections : 12

No of Desktops : 20

No. of Printers : 10

No. of Scanners : 03

c) Total number of class rooms : 04

d) Class rooms with ICT facility : 04

e) Students' laboratories : 01

f) Sophisticated Instrument's Lab : 01

g) Research laboratories : 08

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

	Post doctoral	Doctoral awarded=12	Doctoral Pursuing =21
(a) From the host institution/ university	Dr. Reena Dwivedi	• Dr. Purti Bilgaiyan (2011) • Dr. Rajendra Chokhare(2012) • Dr.Abhilasha Bakshi (2013)	• Pankaj Patidar (Submitted) • Jitendra Singh (Submitted) • Prabal Bandopadhyay • Pawan Sharma • Prerna Kumari • Anju Pathak • Priti Shrivastava • Annapurna Mehta • Prabhakar Sharma • Sapna Joshi • Monika Ahuja • Ujla Daswani • Sunil Patidar • Rahul Singh Jhala

(b) From other institutions/ universities		• Dr. Siya Upadhyay (2008) • Dr. Rajeev Dixit (2009) • Dr. Samidha Saxena (2010) • Dr. Anju Das Manikpuri (2010) • Dr. S. V. Mahajan (2010) • Dr. Sumit Bhatiya (2011) • Dr. Lal Kumar(2011) • Dr. Vinita Sahu(2011) • Dr. Bhagwan Lal Kalal(2012)	• Jaswant Carpenter • Teena Pareek • Akrati Verma • Premansh Dudhe • Nitin Dubey • Jagat Singh Kirar • Pankaj Bariya

40. Number of post graduate students getting financial assistance from the university.
    1. Ph.D. students getting scholarship: 04
    2. Research fellowships are provided to few research students under different projects
    3. NET/ GATE qualified students are getting their own fellowships
    4. Students are getting assistance from SC/ST cell as well.SC/ST/OBC students are getting scholarship from state government. The total number of such students is 40 (2012-13).

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

    Admission of the students is being done as per the notifications/guidelines of the university within the given time span. The process of admission comprises of entrance test followed by counselling. Course plan is prepared after a long series

of discussions with faculty members and getting inputs from stake holders. School has always adopted the philosophy of updating the curriculum time to time as a result new avenues of knowledge is incorporated and vibrant link is maintained with contemporary requirements.

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?

Brain storming sessions held in School of Chemical Sciences with active involvement of entire faculty. There is transparency in academic discussions and innovative practices are encouraged to ensure transformation of teaching into effective learning.

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

Feedback of the students is taken regularly for all the faculty members as well as curriculum and teaching-learning-evaluation. Students' feedback was analyzed. Overall rating of the faculty members was very good. The students are advised to provide feedback on teaching-learning to evaluate teachers on various points like

a) Ability to bring conceptual clarity and promotion of thinking ability by teacher

b) Motivation provided
c) Teacher's communication Skill
d) Teacher's regularity and punctuality
e) Teacher's subject knowledge
f) Completion and coverage of course
g) Complimenting theory with practical examples
h) Teacher's interaction and guidance outside the classroom.
i) Teacher's overall performance.

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

School of Chemical Sciences has initiated steps to build an alumni base which is expected to give inputs from different work cultures and environment for upcoming scientific talents of the department. Feedback and suggestions of alumni is properly recorded and appropriate measures are taken.

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

(1) Ms.Trupti Kulkarni, Global Project Manager, Reckit Benkiser Pharmaceuticals, Richmond VA, USA(passed out in 1988)
(2) Dr Prem lata Gupta, Head, Department of Chemistry, IPS Academy, Indore (passed out in 1991)
(3) Dr. Rama Kant Shukla, Senior Vice –President, Jubilant Life Sciences, Noida (passed out in 1991)
(4) Mr. Kapil Birthare, Director, Rankers Point (passed out in 1998)
(5) Dr. Atul Moghe, Deputy General Manager, Mylan Laboratories ltd. Hyderabad, (passed out in 1998)
(6) Mr. Kishore Malviya, Director, SMS Infrastructure Ltd., Nagpur (passed out in 1999)
(7) Dr. Ravi Sharma, Senior Research Scientist, Ranbaxy, Gurgaon (passed out in 2003)
(8) Dr Dipankar Nanda, Scientist, Raja Ramanna Centre for Advanced Technology, Department of Atomic Energy, Indore (passed out in 2004)
(9) Mr. Pushpendra Kushwaha, Asst. Commissioner, Co operative society, Govt. of M.P. (passed out in 2005)
(10) Dr. Nilesh Rane, Senior Application Scientist, Perkin Elmer Inc. Pune (passed out in 2007)

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

(1) Organized National Level Seminar on 20th March 2012 and invited eminent scientist from the institutions of national repute including IITs and BITS, Pilani.
(2) Prof. R. M. Choksey was invited to deliver a lecture on National Safety Day on March 4, 2013.

(3) Special lectures on "Fostering Excellence in Research" organized on January 15, 2013. List of Speakers is as follows:

(a) Prof. Priyankar Upadhyay UNESCO Chair Professor, Banaras Hindu University (BHU), Varanasi.

(b) Prof. V. K. Singh, Director, Indian Institute of Science Education and Research (IISER), Bhopal.

(c) Prof. H. Padh. Vice- Chancellor, Sardar Patel University, Vallabh Vidya Nagar, Gujarat.

(4) Workshop on Effective teaching and learning on May, 10, 2013.

(5) Lecture series on Mahamana Madan Mohan Malviya ji was held on 06/11/2012 and 11/12/2012 Dr.Karan Singh, Hon'ble Justice Shri Girdhar Malviya, and Mrs. Kanta Malviya were the speakers.

(6) Lecture on Swami Vivekanand's Contribution and Message to youth was held on Jan.12, 2013.

(7) Bharat Ratna Dr. A.P.J. Abdul Kalam's message to University and college students on June 12, 2013.

(8) Prof V.K. Jain, Head, Chemistry Division, Bhabha Atomic Research Centre (BARC), Mumbai delivered talk on "Peeping into Metal Catalyzed Reactions" on July 12, 2013.

(9) Dr. Alok Shrivastava, (Humboldt Fellow and DAAD Professor) Chemistry Department, Panjab University, Chanigarh delivered a special lecture on Nanoscience and Nanotechnology on July 22, 2013.

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

Teaching done through ICT (PowerPoint) and class room board teaching. Various methods adopted are Lecture methods, interactive class room teaching, quiz, assignments, seminars, Group discussions and activity based learning.

46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

- More emphasis is given to interpret spectral exercises, which is the unique feature of the School.
- Theoretical and practical knowledge of Instrumental Techniques, Interpretation of various types of spectra(Nuclear Magnetic Resonance (NMR) Electron Spin Resonance (ESR), Infrared (IR), Ultraviolet-Visible (UV-Visible), Mossbauer, Mass Spectrometry)
- Up-to-date knowledge of broad range of disciplines of chemical sciences and keen analytical mind cultivated in a challenging environment.

- Value addition to teaching-learning process by tutorials, assignment, project work, seminars and industrial visits shall be continued.
- School has computer lab and it is being used for the teaching of basic computer/programming skills as per the need of the course curriculum of M. Sc. courses.
- Day to day updating of experimental strategies for new practical exercise will be continued.

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

Faculty members and Students of the School are involved in different extension activities. They have been actively engaged in promoting the cause of "inclusive higher education" at various opportunities such as visits to colleges, in and outside the domain of university. Many students from affiliated colleges approach our faculty members in getting their problems solved and in career path identification.

Students are encouraged to undertake plantation activity whole heartedly. They are also propagating the message of conserving the environment in different cross sections of society.

Dr. Pratibha Sharma, Professor of Chemistry, has been working as the In-Charge of University Day Care Centre since June 2011. This has been an important extension activity for the University as a whole.

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

(a) We are developing new current topics, such as reaction dynamics, quantum mechanics, and macro molecular chemistry with the objective of updating the syllabus in future.
(b) Teachers of the School supported the activities of Academic Staff College for running refresher courses
(c) Various activities of the University are supported by the faculty members
(d) Counseling of the students is done by the faculty members
(e) Weaker students are assisted by the faculty members
(f) Brilliants students are encouraged for NET preparation

49. State whether the programme/ department is accredited/ graded by other agencies? If yes, give details.

UGC team appreciated our department and we were rewarded by a big grant of Rs.50 Lakh. We were also appreciated by DST and were rewarded by FIST grant of Rs.38 lakh.

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

(1) The faculty of the School has been recognized both nationally and internationally for contributions to their specific disciplines and to maintain programmatic strengths in chemistry.
(2) We have developed new nano porous materials as catalyst for production of styrene which is a potential monomer. We have also developed generating transition state using Gaussian 09.
(3) The faculty is extremely well qualified and motivated with a strong commitment to research, which is reflected in the number of projects sponsored by Department of Science and Technology (DST) New Delhi, University Grants Commission (UGC) New Delhi, Council of Scientific and Industrial Research (CSIR) New Delhi, Defense Research and Development Organization (DRDO) New Delhi, MP council of Science and Technology (MPCST) Bhopal.
(4) School has strong connections through research collaborations.
(5) Faculty members served as referee to review research papers from national and international journals.
(6) Department has educated 1942 PG, 102 Ph.D., 02 D.Sc., since inception in 1976 who are serving the nation.
(7) Research contribution of faculty members has been widely acclaimed by the scientific community around the world and has appeared as new chapters in advanced textbooks and reference books.
(8) No. of Publication during 2008-13 in international journals = 104.

Year-wises Publications of the department (During 2008-2013):

1. Stretched σ-borane complexes of rhodium: A theoretical study
   K.K. Pandey
   Inorg. Chem. Commun. 11 (2008) 288.
   Impact Factor: 1.972

2. σ-Borane complexes of nickel, palladium and platinum. A theoretical study
   K.K. Pandey
   J. Mol. Struct. (THEOCHEM) 855 (2008) 18.
   Impact Factor: 1.288

3. Mixed-ligand Ru(II) complexes with 2,2'-bipyridine and tetradentate Schiff bases ligands: Synthesis, physico-chemical study, DFT analysis, electrochemical and Na binding properties
   L. Mishra, R. Prajapati, K.K. Pandey
   Spectrochimica Acta (A): Molecular and Bimolecular Spectroscoscopy 70 (2008) 79-85.
   Impact Factor: 1.952

4. Transition Metal sigma-borane complexes
   K.K. Pandey
   Coord. Chem. Revs. 253 (2009) 37.
   Impact Factor: 12.110

5. Linear M≡E-Me Versus Bent M-E-Me: Bonding Analysis in Heavier Metal-ylidyne Complexes $[(Cp)(CO)_2M{\equiv}EMe]$ and Metallo-ylidenes $[(Cp)(CO)_3M\text{-}EMe]$ (M = Cr, Mo, W; E = Si, Ge, Sn, Pb)
   Krishna K. Pandey and Agustí Lledós
   Inorg. Chem. 48 (2009) 2748-2759.
   Impact Factor: 4.601

6. The Nature of M-B Versus M=B Bonds in Cationic Terminal Borylene Complexes: Structure and Energy Analysis in the Borylene Complexes $[(\eta^5\text{-}C_5H_5)(CO)_2M\{B(\eta^5\text{-}C_5Me_5)\}]^+$, $[(\eta^5\text{-}C_5H_5)(CO)_2M(BMes)]^+$, and $[(\eta^5\text{-}C_5H_5)(CO)_2M(BNMe_2)]^+$ (M = Fe, Ru, Os)
   Krishna K. Pandey, Agusti Lledos and Feliu Maseras
   Organometallics 28 (2009) 6442-6449.
   Impact Factor: 3.963

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

Strengths

(1) Active research groups in the fields of Nanomaterials, Catalysis, Organic/ Inorganic Synthesis, stochastic formulation of chemical reactions, and theoretical chemistry
(2) Provides high quality education and training for high flying careers in Chemical Sciences.
(3) Theoretical and practical knowledge of Instrumental Techniques, Interpretation of various types of spectra. Nuclear Magnetic Resonance (NMR) Electron, Spin Resonance (ESR), Infrared (IR), Ultraviolet-Visible (UV-Visible), Mossbauer, Mass Spectrometry.
(4) Highly qualified and motivated internationally and nationally recognized faculty with a strong commitment to research.
(5) Credible approach for opportunity management for students through exhaustive support from faculty members and alumni.

Weaknesses

(1) In recent years, the availability of students with mathematics back-ground pursuing chemical sciences is very limited.
(2) Disparity in the intellectual levels of students so that learning group is indeed heterogeneous rather than composite.
(3) Inadequate infrastructure for overall academic activities
(4) Inadequate availability of support personnel for office work.
(5) Dependence on other institutes for sophisticated instrumental facility.

Opportunities

(1) New International and National level collaborations proposed to be undertaken in near future so as to enhance capacity building in knowledge creation
(2) Research skill and aptitude of the faculty and the students used for new innovations.
(3) Exploration of avenues for linkage of Science with Technology.
(4) Framing of a possible task group for feasibility evaluation of M. Tech. in emerging disciplines.
(5) Optimum use of flexibility approach to explore the unexplored domains so as to upgrade curriculum from time to time.
(6) Enhanced use of animation in class room lectures so as to build better bridge between teacher and the taught.
(7) To develop strong interface between the institute and industry.

Challenges

(1) New innovations and adaptability to emerging demands of sectors related to Chemical Sciences.
(2) Linkage of chemical sciences with technology so that excellence can be achieved at international level.
(3) Mobilization of knowledge creation with knowledge propagation.

(4) Overall upgradation of learning atmosphere for Chemistry in the entire University through enhanced interaction of University and College teachers.

(5) To develop prudent approach in the students taking NET and similar quality oriented competitive examinations.

52. Future plans of the department.

(1) Construction of separate building for Applied Chemistry and Pharmaceutical Chemistry.

(2) Creation of a few teaching posts for Applied Chemistry and Pharmaceutical Chemistry.

(3) Introduction of a few inter disciplinary courses such as stochastic theory of rates in syllabus.

(4) Rigorous use of ICT, virtual class rooms and webinars.

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

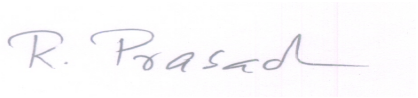
(1) Periodical meetings, discussions and organization of seminars on the current topics in chemistry to sustain quality in chemical education.
(2) Publications in top rated journals with high impact factor viz., Coordination Chemistry Reviews, Inorganic Chemistry, Journal of Physical Chemistry, Tetrahedron, Organometallics, Green Chemistry, and Bioorganic Medicinal Chemistry.
(3) Multimedia projection systems are used in all class rooms. Power point Presentations are available on the web site, which helped faculty to communicate the subject objectives and planning to students
(4) Results are declared timely.
(5) Feedback from stakeholders regularly taken, analyzed and monitored.

Declaration by the Head of the Department- C

I certify that the data included in this Self-Study Report (SSR) are 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.



Signature of the Head of the institution with seal:

Place: Indore

Date: 24.8.2013