

## EVALUATIVE REPORT OF THE DEPARTMENT OF APPLIED SCIENCES & HUMANITIES

1. Name of the Department - **Applied Sciences & Humanities**  
 2. Year of establishment - **1996**  
 3. Is the Department part of a School/Faculty of the university?

**Faculty of Engineering of the University**

4. Names of Programmes / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.)

S. No.	Name of the Programme	Type of the Programme	Annual Intake
1.	Ph.D.	Physics, Chemistry, Mathematics, Electronics Science & Social Science	Seats vary Subjected to the availability of Supervisors
2.	M.Sc. Electronics	Full Time	30

5. Interdisciplinary courses and departments involved None  
 6. Courses in collaboration with other universities, industries, foreign institutions, etc  
 Ph. D. programmes are generally having collaboration with institutes like JNU, DU, and National Physical Laboratories etc.  
 7. Details of programmes / courses discontinued, if any, with reasons None  
 8. Annual/ Semester/Choice Based Credit System

S. No	Name of the Programme	Examination System
1.	M.Sc. Electronics	Semester System

9. Participation of the department in the courses offered by other departments
- B.Tech:- Civil Engg. Mechanical Engg. Electrical Engg. Computer Engg. and Electronics & Communication Engg.
  - B.E.:- Civil Engg. Mechanical Engg. Electrical Engg. Computer Engg. and Electronics & Communication Engg.
  - M.Tech. Mechanical and Environmental
10. Number of teaching posts sanctioned and filled (Professors/Associate Professors/Asst. Professors)

Posts	Sanctioned	Filled	Actual Position including CAS& MPS
Professor	NIL	NIL	05
Associate Professors	01	00	01
Asst. Professors	04	02	00

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

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Name	Qualification	Desig.	Specialization	No. of Years of Experience	No. of Ph.D. students guided for the last 4 years	
					Guided	Pursuing
Dr. W A Siddiqui	Ph.D./ M.PHIL	Prof.	Analytical Chemistry	27	07	05
Dr. Masood Alam	Ph.D./ M.PHIL	Prof.	Analytical Chemistry	27	03	02
Dr. M. Rafat	Ph.D.	Prof.	High Energy Physics	27	01	01
Dr. S. S. Islam	Ph.D./ M.PHIL	Prof.	Semi conductor Physics	22	06	06
Dr. M. I Qureshi	Ph.D./M .PHIL	Prof.	Special Functions, Multiple hypergeometric functions & Integral Transforms	26	05	02
Dr. Ch. Wali Mohammad	Ph.D.	Prof.	Multiple Hypergeometric functions fractional calculus & Ramanujan Mathematics	24	03	03
Dr. Musheer Ahmad	Ph.D.	Prof.	Fuzzy Algebra	12	02	03
Dr. Ata-ur- Rehman	Ph.D./ M.PHIL	Prof.	Social Psychology & Education	22	01	NIL
Dr. Zishan Husain Khan	Ph.D.	Asso. Prof.	Nano Science	16	01	05
Dr. M. Mudassir Husain	Ph.D.	Asso. Prof.	Spectroscopy Molecular Modeling	16	01	01
Dr. M P Singh	Ph.D.	Asst Prof.	Optical Web Guides	18	NIL	03
Rajesh B. Jadhao	M.Sc.	Asstt. Prof.	Polymer Chemistry	15	NIL	NIL
Dr. Fehmeeda Khatoon	M.Sc.	Asstt. Prof.	Polymer Chemistry	07	02	04
Mr. Satya Prakash Prasad	M.A.	Asstt. Prof.	ELT Indian Writing in English & Lit. Theory	1 Year 5 Months	NIL	03

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

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Dr. Kamlendu Sengupta, Former Scientist, Sensors and actuators Division, CGCRI, Kolkata, West Bengal (Adjunct Faculty in Department of Applied Sciences & Humanities – 2010-2013)

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

S. No.	Program	Name of Temporary Faculty	Remarks
1.	M.Sc. Electronics	40%	Only 2 permanent Faculty Members
2.	B. Tech.	20%	-----

### 14. Student Teacher Ratio –

S. No.	Program	Ratio
1.	M.Sc. Electronics	30:1
2.	B. Tech.	30:1

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

S. No.	Post	Sanctioned	Filled	Actual
1.	STA	01	01	01
2.	TA	02	02	02
3.	Lab Attendant	02	02	02
4.	Store Keeper	01	01	01
5.	Stenographer	01	NIL	01
6.	Peon	02	02	02
7.	Computer Operator (OutSourcing)	01	01	01
8.	Lab Attendant (OutSourcing)	01	01	01

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

- Nanotechnology
- Semiconductor Physics
- Laser Spectroscopy
- Nano-simulation
- Solid State Electronics
- High Energy Physics
- Environmental Chemistry
- Polymer Chemistry
- Applied Mathematics; Ramanujan's Mathematics, Fuzzy Logics
- Computer Applications and Data Structures
- Social Sciences
- Applied English

### 17. Number of faculty with ongoing projects from a) national b) international funding agencies and c)

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Total grants received. Give the names of the funding agencies, project title, duration and grants received project-wise.

a) Ongoing Projects (National) = 05

S. No.	Title	PI	Duration (Yrs)	Amount (Lacs)	Funding Agency
1.	Investigation of optical properties of CNT composite films for the application of optical detector	Prof. S.S. Islam	3	10.258	UGC
2.	Synthesis and Characterization of graphene nanocomposite for environmental application	Prof. W A Siddiqui	3	8.85	UGC
3.	Synthesis and Characterization of nanomaterials for the extraction of toxic metals from groundwater near industrial area	Prof. W A Siddiqui	3	5.968	UGC
4.	Enhanced & Tunable Photoluminescence from metal doped Alq <sub>3</sub> nanowires for opto electronic devices	Dr. Zishan H. Khan	3	14.618	UGC
5.	Phytochemical analysis of bioactive Constituents of commonly used plants and development of antimicrobial activities thereof	Dr. Fehmeeda Khatoon	3	4.43	UGC

b) Ongoing Projects (International) = NIL

a) Completed Projects (National) = 06

S. No	Title	PI	Completed on	Amount (Lacs)	Funding Agency
1.	Raman and photoluminescence investigation of nano structured porous silicon for sensing presence of chemical and biological species	Prof. S.S. Islam	2010	104.2	MIT
2.	Spectroscopic investigation of semiconductor nanostructure fabricated by laser-induced electrochemical etching	Prof. S.S. Islam	2010	17.42	DST

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3.	Development of Carbon Nanotube Based Gas Sensor	Prof. S.S. Islam	2013	452.70	DIT
4.	Raman Investigation of CNT for gas sensing	Prof. S.S. Islam	2013	20	DRDO
5.	Investigation of Photo luminescence quenching mechanism in functionalized porous silicon for organic vapour sensing	Prof. S. S. Islam	2013	38	DST
06.	Physico-Chemical and Toxicological studies of industrial effluents	Prof. Masood Alam	2009	7.5	AICTE

- b) Completed Projects (International) Nil
- c) Total Grant Received : 6.83 Crores
18. Inter-institutional collaborative projects and associated grants received
- (a) National collaboration: - NIL
- (b) International: NIL
19. Departmental projects funded by DST-FIST; UGC-SAP/CAS, DPE; DBT, ICSSR, AICTE etc.; total grants received.

S. No	Title	PI	Period	Amount (Lacs)	Funding Agency
1.	DST-FIST for post graduate teaching & research level – I	Prof. S. S. Islam	2010-2015	89.00	FIST

20. Research facility / centre with
- Nano-sensor & Electron Microscopy Laboratory established by Dr S. S. Islam has received National recognition.
  - National Recognition: Indian patents out of the work done in these labs. have been registered.
  - International Recognition: US patents out of the work done in these labs. have been registered.
21. Special research laboratories sponsored by / created by industry or corporate bodies – None
22. Publications: 2007 - 2014

Table for Research Publications of the Department

S. No.	Item	Total Numbers
1	Number of papers published in peer reviewed journals (national / international)	264
2	Number of papers published in conferences	150

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3	Monographs	-----
4	Chapters in Books	01
5	Edited Books	01
6	Laboratory Manuals	02
7	Articles in Magazines	
8	Editorials	05
9	Books with ISBN with details of publishers	05
10	Number listed in International Database (For e.g. Web of Science, Scopus, Humanities International Complete, Dare Database - International Social Sciences Directory, EBSCO host, etc.)	205
11	Citation Index – range / average	0-642
12	SNIP - range	0-1.627
13	SJR – range	0-1.312
14	Impact Factor – range / average	0-4.4
15	h-index – range	0-16
16	i-10 index – range	0-24

S.No.	Name of the Writer	Title (Books)	ISBN
1.	Prof. Masood Alam	Removal of heavy metals and ground water pollution in Delhi, India. Publisher VDM Verlag,	ISBN-13-9783639373332, ISBN: 3639373332, 2011.
2.	Prof. M. Rafat & Mudassir M. Husain	Physics Through Laboratory Exercises Cadplan Publishers, New Delhi	81-86829-14-8
3.	Prof. M. Rafat & Mudassir M. Husain	Interplay of Skills and Concepts: An approach to Physics Cosmos Publishers, New Delhi	81-7996-008-0
4.	Prof. S. S. Islam	Semiconductor Physics & Devices	019567729-3
5.	Prof. Musheer Ahmad	A Text Book on Differential Calculus	1403 929017
6.	Prof. Musheer Ahmad	Refereshner Course for Engg. Mathematics	
7.	Dr. Zishan Husain Khan	Advances in Nanotechnology and Renewable Energy	

S.No.	Name of the Faculty	No. of Publications	h-Index	Citations	Impact Factor
1.	Prof. Weqar A. Siddiqui	24	4	67	0 - 4.805

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2.	Prof. Masood Alam	23	6	60	0 - 4.805
3.	Prof. M. Rafat	15	2	10	0 – 3.656
4.	Prof. S. S. Islam	47	7	189	0 – 3.979
5.	Prof. M. I Qureshi	26	0	0	0 – 3
6.	Prof. Ch. Wali Mohammad	11	0	0	0
7.	Prof. Musheer Ahmad	11	3	0	0 – 0.90
8.	Dr. Ata-Ur- Rahmad Khan	09	N.A.	N.A.	N.A.
9.	Dr. Zishan Husain Khan	56	16	642	0 – 5.234
10	Dr. M. Mudassir Husain	18	1	45	0 – 2.147
11	Dr. Mukesh Pratap Singh	0	0	0	0 – 0
12	Mr. Rajesh B. Jadhao	05	0	0	0
13	Dr. Fehmeeda Khatoon	14	1	6	0 – 2
14	Mr. Satya Prakash Prasad	05	N.A.	N.A.	N.A.

Table for Research Publications of Individuals -Annexure – 22 Enclosed

23. Details of patents and income generated.

S.No.	Inventor	Patent Awarding Agency	Patent/ Application No.	Title	Status (Awarded /Applied)	Brief	Awarding /Applied Year
1	Prabhash Mishra, S.S. Islam, K. Sengupta	US Patent	3505/DEL /2012 dated 12.11.2012.	A Process For Making Alumina Gas Indicator Using Single Wall Carbon Naotubes/Alumina Composite Thick Film	Published	-	2013
2	Prabhash Mishra, S.S. Islam	Indian Patent	LSD/CVD 13023/081 92/2013.	A process for making MWCNTs based NH3/NO2 gas sensor made thereof”	Published	-	2013
3	Prabhash Mishra, S.S.	Indian Patent	3457/DEL /2013	Design and Development of	Published	-	2013

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	Islam			thermal reactor for rapid growth of carbon			
4	Saakshi Dhanekar, S.S. Islam, Harsh	Indian Patent	2459/DEL /2012, dated 07/08/2012	An improved process for the preparation of functionalized porous silicon exhibiting highly sensitive and selective response to moisture'	Published	-	2014

24. Areas of consultancy and income generated. - None

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

S.No.	Name	Laboratory /Institute Visited	Year
1	PROF. S. S. Islam	NTNU, Hsinchu, Taiwan	2010
2	DR. Zishan Husain Khan	Centre of Nanotechnology, King Abdul Aziz University, Jeddah, Saudi Arabia	2007-2012

26. Faculty serving in

- a) National committees b) International committees c) Editorial Boards d) any other (please specify).

S.No.	Name	Committees	National/ International committee/Editorial Boards	Year
1	Prof. Ch. Wali Mohammad	<b>Subject Expert</b> Deptt. of Mathematics, University of Rajasthan, Jaipur	National	2010-2012
		<b>Subject Expert</b> Applied Mathematics Z.H. college of engineering and Technology A.M.U Aligarh.	National	2014- till date
		<b>Subject Expert</b> Greater Noida Institute of	National	2010-2011



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		Technology, Noida  <b>Subject Expert</b> Mewat Engineering College, Nouh	National	2010- 2012
2.	Prof. Masood Alam	<b>Member:</b> Academic Council, Al-Falah University, Dhauj, Faridabad  <b>Member BOS:</b> Deptt. of Applied Chemistry, AMU	National  National	2014- till date  2013- till date
3.	Prof. Weqar A. Siddiqui	<b>Member:</b> Academic Council, Al-Falah University, Dhauj, Faridabad  <b>Member BOS:</b> Deptt. of Chemistry, AMU	National  National	2014- till date  2013- till date
4.	Prof. M. I. Qureshi	<b>Life member</b> of the Indian society for technical education (I.S.T.E), I.I.T., Delhi.  <b>Life member</b> of Indian society of mathematics and mathematical sciences, sunshine publication, Basharatpur, Gorakhpur , U.P.  <b>Life member</b> of Rajasthan Ganita Parishad , department of mathematics, govt. College Ajmer Rajasthan  <b>Life member</b> of Rajasthan academy of physical sciences, department of mathematics,	National  National  National	

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		<p>university of Rajasthan, jaipur-302004.</p> <p><b>Founder and life member</b> of Indian society of industrial and applied mathematics (I.S.I.A.M), department of mathematics, A.M.U, Aligarh -202002.</p> <p><b>Life member</b> of Indian society of information theory and application (I.S.I.T.A),C-766,N.F.C., New Delhi -110065.</p> <p><b>Founder and life member</b> of society of special factions and their applications (SSFA), department of mathematics, A.M.U., Aligarh -202002.</p> <p><b>Member BOS:</b> Applied Mathematics Z.H. college of engineering and technology A.M.U Aligarh.</p>	<p>National</p> <p>National</p> <p>National</p> <p>National</p>	
5	Prof. Musheer Ahmad	<p><b>Subject Expert</b> YMCA University of Science &amp; Technology, Fridabad</p> <p><b>Subject Expert</b> DIT, Greater Noida</p> <p><b>Subject Expert</b> Jamia Hamdard, Delhi</p> <p><b>Member BOS</b> Deptt. of Applied Science &amp; Humanities, YMCA University of Science &amp; Technology, Fridabad</p>	<p>National</p> <p>National</p> <p>National</p> <p>National</p>	<p>2014-till date</p> <p>2014-till date</p> <p>2014-till date</p> <p>2014-till date</p>

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6	Dr. Zishan Husain Khan	<p><b>Life Member;</b> Semiconductor Society of India</p>	National	2000
		<p><b>Life Member;</b> Society for Disordered Materials (India)</p>	National	1999
		<p><b>Member;</b> American Nanosciety, USA</p>	International	2008
		<p><b>External Member;</b> BOS, Department of Physics, Al-Falah University, DHAUJ (HARYANA)</p>	National	2014
		<p><b>Subject Expert;</b> MJ Rohilkhand University Bareilly (UP)</p>	International	2008
		<p><b>Member of scientific committee</b> of International Conference on Nanotechnology organized by Center of Nanotechnology, King Abdul Aziz University, Jeddah, Saudi Arabia (June 17-19, 2008).</p>	International	2008
		<p><b>Member of organizing committee</b> of Workshop on Nanotechnology; Opportunities and Challenges organized by Center of Nanotechnology, King Abdul Aziz University, Jeddah, Saudi Arabia (June 14-16, 2008).</p>	National	2014
		<p><b>Convener,</b> National Conference on Nanotechnology and Renewable Energy (NCNRE-14) organized by Department of Applied Sciences &amp; Humanities,</p>	International	2009 2009 2009

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		Jamia Millia Islamia, New Delhi-110025 (April 28-29, 2014).		2014
		<b>Guest Editor</b> of the following journals ; International Journal of Nanoparticles (UK) International Journal of Nano-Biomaterials (UK) International Journal of Nanomanufacturing (UK) Advanced Science Letters (USA)	International  International  International	2015
		<b>Editor-in-Chief</b> International Science & Engineering Journal (USA)	International	

### 27. Faculty recharging strategies -

- Faculty members are encouraged to attend the staff development programmes organized within Department/University and all over India.
- Faculty members are encouraged to attend the Conference at National and International level -and interact with experts.
- Department organized three National Conferences during 2007-2014 in different areas of sciences.

S. No.	Name of the Faculty	Conference/Seminar	Year	Organized by
1.	Weqar A. Siddiqui	15th International workshop on the Physics of semiconductor Devices	2009	solid state physics laboratory, and Jamia Millia Islamia,
		Recent Advances in Chemistry	2010	Dept. of Chemistry Jamia Millia Islamia
		Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
		15th International workshop on the Physics of semiconductor	2009	solid state physics laboratory, and Jamia Millia Islamia,

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2.	Masood Alam	Devices		
		Recent Advances in Chemistry	2010	Dept. of Chemistry Jamia Millia Islamia
		Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
3.	M. Rafat	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
4.	S. S. Islam	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
5.	M I Qureshi	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
6.	Ch. Wali Mohd.	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
7.	Musheer Ahamd	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia

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		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
8.	M A R Khan	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
9.	Zishan H. Khan	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		International Workshop on the Physics of Semiconductor Devices	2013	Amity University, Noida
		International Conference of Nanotechnology (ICON008)	2008	Center of Nanotechnology, King Abdul Aziz University, Jeddah, Saudi Arabia,
		Workshop on Nanotechnology organized by Center of Nanotechnology	2008	King Abdul Aziz University, Jeddah, Saudi Arabia
		International Workshop on Physics of Semiconductor Devices	2007	Indian Institute Technology, Mumbai, India.
10.	M. Mudassir Husain	3rd International conference on current developments in Atomic, Molecular, Optical and Nano Physics with Applications,	2011	Deptt. of Physics and Astrophysics, University of Delhi.
		Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
		simulation of nanomaterials and nanodevices,	2011	Singapore
		International symposium on Material chemistry,	2014	IIT Mumbai
		International workshop on Computational material Science,	2014	ABV-IIIM, Gwalior

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	International Conference on Sustainable Technologies	2013	Jamia Millia Islamia, New Delhi
	Symposium on Nanotechnology: Interdisciplinary Aspects;	2012	YMCA Univ. of Science and Technology, Faridabad
	International School on “Quantum and Nano Computing Systems and Applications (QANSAS)”	2012	DEI, Agra
	Workshop on “Scientific Applications of the IUAC HPC Facility	2012	Inter University Accelerator Centre New Delhi -12
	JES-IUCAA Workshop on Teaching and Research Using Small Telescopes,	2011	Aurangabad Maharastra
	4 <sup>th</sup> Indian INUP Familiarization Workshop Winter School on Nano-scale Materials and Devices	2010	, IIT Bombay.
	National Workshop on Computational Science ,	2010	University of Delhi, N. Delhi.
	3 <sup>rd</sup> National Symposium For Material Research Scholars (MR-10) Department of Metallurgical Engineering and Material Science,	2010	IIT Bombay.
	International Conference on Chemoinformatics, Chemogenomics and Computational Chemistry Approaches in	2009	Drug Discovery, Ernaculum (Kerela)
	Participated in <b>1-weeks QIP</b> short term training on Nanomaterials: Synthesis and Characterization , sponsored by AICTE,	2009	IIT Roorkee (Uttranchal)
	DAE-BRNS Symposium on Atomic Molecular and Optical Physics	2009	, NSC, New Delhi.
	Applications of Advanced Nanostructured Materials Workshop,	2008	Amman, (Jordan )

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		4-weeks training on “Chemical Synthesis of Semiconducting and Metallic nano particles” DST nanoscience unit	2008	IIT, Chennai (Tamil Nadu) .
		Participated in “Topical Conference on Atomic, Molecular and Optical Physics” (TC-2008) organized by Department of Physics,	2008	Sardar Patel University, Anand (Gujrat).
		Participated in Conference on High Resolution Spectroscopy,	2007	Dijon, (France).
		Participated in 2-weeks QIP on Computational Chemistry Tools for Materials Science Research sponsored by AICTE, at	2007	IIT Chennai (Tamil Nadu)
		Presented paper in 1st Asian international conference on spectroscopy and biospectroscopy,	2007	IISc. Bangalore (Karnataka)
		Participated in Workshop on Overview of Existing Fluorescence Lifetime Acquisition Techniques,	2007	IISc. Bangalore (Karnataka)
		Presented progress report of DST-research project,	2007	BITS Pilani Goa campus,(Goa).
		4 <sup>th</sup> Indian INUP Familiarization Workshop Winter School on Nano-scale Materials and Devices,	2007	IIT Bombay.
		Practical education in Photonics	2012	Delhi Technological University
11.	Mukesh P. Singh	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
12.	Rajesh B. Jadhoo	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia



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		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
13.	Fehmeeda Khatoon	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		Polymer Science And Technology-Vision And Scenario.	2008	Asian Polymer Association
14.	Stya P. Prasad	Naotechnology And Renewable Energy	2014	Jamia Millia Islamia
		Advanced Trends In Nanoscience And Nanotechnology	2013	Jamia Millia Islamia
		International Seminar: Decolonising the stage: Paradigm, Practice and Politics, Department of English,	2011	B.H.U. Varanasi (UP)
		International Seminar on Alternative Modernities :Views from Pre-Colonial India, Faculty of Arts,	2010	B.H.U. Varanasi (UP)
		International Seminar: Theory at Work: Text, History and Culture, Department of English,	2010	B.H.U. Varanasi (UP)
		International Seminar: Imagining India: Discourse of the Nation, Department of English,	2010	B.H.U. Varanasi (UP)
		International Conference on Translation and Multilingualism, Department of English,	2009	B.H.U. Varanasi (UP)
		International conference, Department of English in Collaboration with Indian association of commonwealth Literature	2009	B.H.U. Varanasi (UP)
		International Seminar: Decolonising the stage: Paradigm, Practice and Politics, Department of English,	2007	B.H.U. Varanasi (UP)
		Orientation Course in Women	2010	B.H.U. Varanasi (UP)

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	Studies, Faculty of Social Sciences, B.H.U. Varanasi (UP)		
	National Seminar: Many Faces of Feminism, faculty of Social Science, B.H.U. Varanasi	2009	B.H.U. Varanasi (UP)
	13 <sup>th</sup> three week UGC sponsored Refresher Course in English, Academic Staff College,	2013	Jamia Millia Islamia, New Delhi
	11 <sup>th</sup> Orientation Course on Women's Studies, CWSD, Faculty of Social Sciences,	2010	B.H.U. Varanasi (UP).
	National Workshop on Writing research Proposal, Department of Mass Communication and Journalism	2008	, B.H.U. Varanasi (UP).

### 28. Student projects

- Percentage of students who have done in-house projects including inter-departmental projects – 50%
- Percentage of students doing projects in collaboration with other universities / industry / institute – 50%

S. No.	Name of the Student	Title of Project	Industry/Institution
1.	Faisal Iqbal	Industrial Vacuum System	Prominent Scientific & Engg. Industry
2.	Hasan Ziauddin	Automation	Sofcon India Ltd.
3.	Himanshu Jain	Miniaturization of Gas Path & Data acquisition using Microcontrollers	SSPL, DRDO, Ministry of Defense
4.	Kirti Verma	Automated Mail Sorting System	Infrastructure Logistics (Airport Logistics) Siemens India Ltd.
5.	Mansi Rastagi	Postal Automation System	Siemens India Ltd.
6.	Mohd. Abdullah	Embedded System	Sukrit Infotech
7.	Mohd. Aftab Farooqui	Embedded System	Sukrit Infotech
8.	Nikita Vij	Network Operations	Tikona Infinet Ltd.
9.	Vijay Kumar	Unmanned Auto Railway Crossing	Commercial Progressive Pvt. Ltd.

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10.	Rajender Prasad Tiwari	Unmanned Auto Railway Crossing	Commercial Progressive Pvt. Ltd.
11.	Sadab Ali Khan	Automation	Sofcon India Pvt. Ltd.
12.	Shahid Alam	Industrial Vacuum System	Prominent Scientific & Engg. Industry
13.	Tripti Chawla	Calibration of Electro Technical Equipments & Standards	Electronics Regional Test Laboratory (North)
14.	Vipin Tomar	Cell Phone Based Voting System	Maharaja Agarsain Institute
15.	Shahnawaz	Cell Phone Based Voting System	Maharaja Agarsain Institute

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

- Faculty- NIL
- Doctoral / post doctoral fellows – NIL
- Students - NIL

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

S. No	Name of the conference / seminar /workshop	Funding & sponsoring authorities	Year	Remarks
1	Naotechnology And Renewable Energy	Jamia Millia Islamia	2014	Successfully completed.
2	Advanced Trends In Nanoscience And Nanotechnology	Jamia Millia Islamia	2013	Successfully completed.
3	Polymer Science And Technology-Vision And Scenario.	Asian Polymer Association	2008	Successfully completed.

31. Code of ethics for research followed by the departments -  
The Department follows the code of ethics for research as per the ordinance of the University.

32. Student profile program -wise:

Name of the Program (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female

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Name of the Program (refer to question no. 4)	Applications received	Selected		Pass percentage	
		Male	Female	Male	Female
M.Sc. Electronics	150	80%	20%	90%	90%

### 33. Diversity of students

S. No.	Name of the Program (refer to question no. 4)	% of students from JMI	% of students from other universities within Delhi	% of students from universities outside Delhi	% of students from other countries
1.	M.Sc. ELECTRONICS 2007-08	30%	40%	30%	NIL
2.	M.Sc. ELECTRONICS 2008-09	28%	42%	28%	NIL
3.	M.Sc. ELECTRONICS 2009-10	29%	42%	29%	NIL
4.	M.Sc. ELECTRONICS 2010-11	30%	35%	35%	NIL
5.	M.Sc. ELECTRONICS 2011-12	30%	40%	30%	NIL

34. How many students have cleared Civil Services and Defence Services examinations, NET, SET, GATE and other competitive examinations? Give details category-wise. One Third of Students in M.Sc. Electronics Cleared NET/GATE

### 35. Student progression

S. No.	Student Progression	Percentage against Enrolled
1	UG to PG	NIL
2	PG to M.Phil.	NIL
3	PG to Ph.D.	25%
4	Ph.D. to Post-Doctoral	NIL
5	Employed <ul style="list-style-type: none"> <li>• Campus selection</li> <li>• Other than campus recruitment</li> </ul>	60% 40%
6	Entrepreneurs	NIL

### 36. Diversity of staff

S. No.	Percentage of faculty who are graduates
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1	of JMI	15%
2	from other universities within Delhi	NIL
3	from universities from other States	78%
4	from universities outside the country	7%

37. Number of faculty who were awarded M Phil, Ph.D., D.Sc. and D.Litt. during the assessment period - **Most of them already have Ph.D. Degree**

S.No.	Name of Faculty	Ph.D. Topic	Awarding Year	Institution
1	Dr. Satya P. Prasad		2014	BHU

38. Present details of departmental infrastructural facilities with regard to
- Library – Common Library for Faculty of Engineering & Technology.
  - Internet facilities for staff and students - AVAILABLE
  - Total number of class rooms - 04
  - Class rooms with ICT facility - NIL
  - Students' laboratories – 06
    - Electronics Devices Laboratory
    - $\mu$ -P Laboratory
    - Opto-electronics Laboratory
    - NACP Laboratory
    - Engineering Physics Laboratory
    - Engineering Chemistry Laboratory
  - Research laboratories – 04
    - Solid State Electronics Research Laboratory
    - Environmental Science Research Laboratory
    - Analytical Chemistry Research Laboratory
    - Nanotechnology and Renewable Energy Research Laboratory

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

S.No.	Name of students	Course	Topic	Under supervision	Thesis submitted / awarded
1.	Sakshi Dhanekar	Ph.D. Electronics	Raman and photoluminescence investigation of Nanostructure porous silicon	Prof. S. S. Islam	Awarded

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			for sensing Organic Vapours		
2.	Prabhash Mishra	Ph.D. Electronics	Fabrication and Characterization of Carbon Nanotube based NH <sub>3</sub> Gas Sensor	Prof. S. S. Islam	Awarded
3.	Sakshi Sharma	Ph.D. Electronics	Chemical processing and functionalization of carbon nanotubes for optimization of gas sensing properties	Prof. S. S. Islam	Pursuing
4.	Prince Mufti Ziaul Hasan	Ph.D. Physics	Porous Silicon Based Sensor for Sensing Chemical Vapours	Pro. S. S. Islam	Awarded
5.	Sahir Hussain	Ph.D. Physics	Purification of as grown carbon Nanotubes (CNTs) and its characterization by sem AFM and Raman	Prof. S. S. Islam	Pursuing
6.	Gunjan Aggarwal	Ph.D. Electronics	Surface stability studies of porous silicon by vibrational Raman & IR Spectroscopy	Prof. S. S. Islam	Pursuing
7.	Nishant Tripathi	Ph.D. Electronics	Growth & Characterization of carbon Nanotubes by CVD system and its optimization at different parameters.	Prof. S. S. Islam	Pursuing
8.	Poonam Sherawat	Ph.D. Electronics	“Design and Development of Carbon nanotubes based Heat flow sensor and its characterization”	Prof. S. S. Islam	Pursuing
9.	Kusum Sharma	Ph.D. Electronics	“Design, Development and characterization of Humidity Sensors”.	Prof. S. S. Islam	Pursuing
10.	Payal Gulati	Ph.D. Electronics	“Carbon Based Nanomaterial for Cancer Detection”.	Prof. S. S. Islam	Pursuing
11.	Sultan Ahmad	Ph.D. Electronics	“Synthesis and Characterisation of Graphene thin Films.”.	Prof. S. S. Islam	Pursuing
12.	Anuradha Shukla	Ph.D. Chemistry	Real world on road emission of in use vehicles for different types of fuel	Prof. Masood Alam	Awarded
13.	Mohd	Ph.D. Chemistry	Physicochemical and	Prof. Masood	Awarded

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	Aslam		toxicological studies of ground water and water bodies in rural areas of Delhi and removal of toxic elements by using different adsorbents.	Alam	
14.	Sumbul Rais	Ph.D. Chemistry	The studies of persistent organic pesticides / other pollutants in different milk and water samples of Delhi using HPLC/AAS and other techniques	Prof. Masood Alam	Awarded
15.	Shumaila	Ph.D. Chemistry	Synthesis and Characterisation of polyaniline Nanocomposites	Prof. Masood Alam	Awarded
16.	Firoz Ali Ansari	Ph.D. Chemistry	Assessment and adsorption of heavy metal ions and organic pollutants from waste water and other samples using.	Prof. Masood Alam	Pursuing
17.	Sajid Ali	Ph.D. Chemistry	“The studies and removal of pollutants of various industrial effluents of NCT Delhi using new adsorbents and their effect on seed germination and crops”.	Prof. Masood Alam	Pursuing
18.	Ruchika Gupta	Ph.D. Physics	Nano Linear effects in plasmas at high power of electromagnetic fields.	Prof. M. Rafat	Awarded
19.	Faisal Bashir	Ph.D. Physics		Prof. M. Rafat	Awarded
20.	Nikhat Niyaz	Ph.D. Chemistry	Physicochemical and toxicological studies of ground water samples of Nagloi Industrial area and removal of heavy metal by ion exchange process.	Prof. W A Siddiqui	Pursuing
21.	Mohammad Abdullah Dar	Ph.D. Chemistry	Structural and electrical properties of spinal nano and bulk ferrites	Prof. W A Siddiqui	Awarded
22.	Mohamma	Ph.D. Chemistry	Determination of Physico –	Prof. W A	Awarded

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	d Waseem		Chemical & Biological parameters for surface and Ground Water Quality in and around the town of Shamli in Muzaffar Nagar District	Siddiqui	
23.	Jyotsna	Ph.D. Chemistry	Design Synthesis and applications of calixarenes	Prof. W A Siddiqui	Awarded
24.	Rajeev Ranjan Sharma	Ph.D. Chemistry	Toxicology and Biological monitoring of heavy and trace elements of industrial effluents and its impact on ground water quality and human health in parts of Faridabad and Okhla industrial area	Prof. W A Siddiqui	Awarded
25.	Irshad Ahmad	Ph.D. Chemistry	“Synthesis and Characterization of Molecular Imprinted <u>Nanomaterial</u> for the Removal of Heavy Metals from Aqueous Solution.”	Prof. W A Siddiqui	Pursuing
26.	Zaid Ansari	Ph.D. Chemistry	“Synthesis of Graphene and Its Characterization”.	Prof. W A Siddiqui	Pursuing
27.	Sami Ullah Qadir	Ph.D. Chemistry	“Physico-chemical and Toxicological studies on Ground water and other water bodies around some industrial and rural areas of Delhi and removal of Heavy metals using different Adsorbents and ion-exchangers”.	Prof. W A Siddiqui	Pursuing
28.	Vaseem Raja	Ph.D. Chemistry	“Phytochemical and anticandidal Investigations of stem extract of Curcuma longa”.	Prof. W A Siddiqui	Pursuing
29.	Mohd. Shaid Baboo	Ph.D. Maths	“Exact Solutions of Outstanding Problems and Novel Proofs through Hypergeometric Approach”.	Prof. M I Qureshi	Pursuing
30.	Mohd.	Ph.D. Maths	“Identifying the Relevance of	Prof. M I	Pursuing



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	Shadab		Hypergeometric Approach to Certain Outstanding Problems”.	Qureshi	
31.	Izaharul Haque Khan	Ph.D. Maths	The Study of Some Generalized Gaussian Hypergeometric Functions	Prof. M I Qureshi	Awarded
32.	Ashish Arora	Ph.D. Maths	Elucidation of Theoretical And Analytic Aspects of Multivariable Hypergeometric Functions	Prof. M I Qureshi	Awarded
33.	Rahul Singh	Ph.D. Maths	Certain Investigations in the Field of Multiple Gaussian Hypergeometric Functions	Prof. M I Qureshi	Awarded
34.	Syed Ismail Azad	Ph.D. Maths	Investigation of Unexplored Aspects of Generlized Gaussian Hypergeometric Functions and Their Applications	Prof. M I Qureshi	Awarded
35.	Mehendra Pal Chaudhry	Ph.D. Maths	On certain aspects of Generalized special functions and integral operators	Prof. Ch. Wali Mohammad	Awarded
36.	Kaleem Ahmad Qureshi	Ph.D. Maths	Identification of new Theoretical Development in Multiple Gaussian Hypergeometric Functions	Prof. Ch. Wali Mohammad	Awarded
37.	Ram Pal	Ph.D. Maths	General functions and expansions of generalized special functions	Prof. Ch. Wali Mohammad	Awarded
38.	Javed Islam Ghorl	Ph.D. Maths	“Applications of Multi-Criteria Decision Making Methods in Software Requirements Elicitation Process”.	Prof. Ch. Wali Mohammad	Pursuing
39.	Mohd. Shahid	Ph.D. Maths	“Applications of Non-Linear Data Structures to Software Engineering”.	Prof. Ch. Wali Mohammad	Pursuing
40.	Shabana Khan	Ph.D. Maths	“Generating Functions and Expansions of Multivariate Gaussian Hypergeometric	Prof. Ch. Wali Mohammad	Pursuing

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			Functions”.		
41.	Deepti Gupta	Ph.D. Maths	“Mathematical Modeling of Optimal Control Problems”.	Prof. Musheer Ahmad	Pursuing
42.	Iftikhar	Ph.D. Maths	“Analysis and Development of Mathematical Foundation for Fuzzy Logic”.	Prof. Musheer Ahmad	Pursuing
43.	Chhavi Mangla	Ph.D. Maths	“Optimization Techniques for Solving Non Linear Function using Soft Computing Techniques”.	Prof. Musheer Ahmad	Pursuing
44.	Rajeev	Ph.D. Physics		Dr. Mohd. Mudassir Husain	Awarded
45.	Maneesh Kumar	Ph.D. Physics	Computation of structural electronic and thermodynamics propertied of carbon nanostructures	Dr. Mohd. Mudassir Husain	Pursuing
46.	Md. Tanweer Ashraf	Ph.D. Physics	“Studies on Selenium Rich Nano Chalcogenides”.	Dr. Z H Khan	Pursuing
47.	Pramod Kumar Gupta	Ph.D. Physics	“Studies on Carbon nanotubes”	Dr. Z H Khan	Pursuing
48.	Rahul,	Ph.D. Physics	“Synthesis and Characterization of Nanostructures of Organic Semiconductors”.	Dr. Z H Khan	Pursuing
49.	Mohammad Bilal Khan	Ph.D. Physics	“Synthesis and Characterization of Organic Semiconductor Nanostructures for Opto-electronic devices”	Dr. Z H Khan	Pursuing
50.	Mohd. Parvaz	Ph.D. Physics	“Synthesis and characterization of semiconducting nanostructures”.	Dr. Z H Khan	Pursuing
51.	Manju Pandey	Ph.D. Electronics	Development of wet film and gel cast template for gas/moisture sensor applications	Dr. M. P. Singh	Pursuing

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52.	Santosh Kr. Chaurasia	Ph.D. Electronics	Study and modeling of optical fiber sensor probes for gas detection	Dr. M. P. Singh	Pursuing
53.	Amit Kumar	Ph.D. Electronics	“Study on design and propagation characteristics of coaxial Bragg Fibers”.	Dr. M. P. Singh	Pursuing
54.	Anoop Kumar S	Ph.D. Chemistry	Molecular designing of conducting polymers by deliberate modification in the monomer/ polymer matrix for corrosion and EMI shielding applications	Dr. Fehmeeda Khatoon	Awarded
55.	Sheikkh Imran Ahmad	Ph.D. Chemistry	In vitro antimicrobial activity and phytochemical analysis of different plant extracts	Dr. Fehmeeda Khatoon	Thesis Submitted
56.	Mumtaz Jahan	Ph.D. Chemistry	Studies on the development of bioreceptive poly (E – caprolactone ) filament	Dr. Fehmeeda Khatoon	Awarded
57.	M. Aamir Qureshi	Ph.D. Chemistry	Extraction phytochemical analysis from commonly used plants and development of antimicrobial activities there of	Dr. Fehmeeda Khatoon	Pursuing
58.	Mohd. Sadiq Sheikh Zarger,	Ph.D. Chemistry	“Phytochemical investigation and antimicrobial activity of different plant extracts”.	Dr. Fehmeeda Khatoon	Pursuing
59.	Shiksha Sharma,	Ph.D. Chemistry	“Synthesis and Characterization of Nona Metal Oxide (zinc oxide, copper oxide) & coated onto the surface of cotton fabrics”.	Dr. Fehmeeda Khatoon	Pursuing
60.	Arbind Kumar,	Ph.D. English	“Autonarratives: A Critical Study in Dalit Subjectivity”.	Dr. Satya P. Prasad	Pursuing
61.	Maskur Ahmad Khan	Ph.D. English	“Critiquing Development through Ecofeminist Lenses: A Study of Select postcolonial Indian English Fiction”.	Dr. Satya P. Prasad	Pursuing
62.	Kaustubh	Ph.D. English	The postcolonial-Ecological	Dr. Satya P.	Pursuing

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	Ranjan		Schema in the Fictional Works of Chinua Achebe and Chimamanda Ngozi Adichie".	Prasad	
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40. Number of post graduate students getting financial assistance from the university. – **NONE**
41. Was any need assessment exercise undertaken before the development of new programme(s)? If so, highlight the methodology.
- The need of Industry and Academic advancements are discussed in the departmental meetings and with the expertise of various areas, before the development of new programme.
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? Yes.
- The Faculty members are encouraged to discuss the advancement in sciences and its applications in the departmental meetings based on which the need for new courses are discussed.
  - Department has the constitutional power to amend the curriculum through Board of Studies as and when required.
- b) Students on staff, curriculum and teaching-learning-evaluation and how does the department utilize the feedback? – Yes.
- HOD's and teachers interact with the students and with the student representatives and based on their feedback remedial action is taken.
- c) Alumni and employers on the programmes offered and how does the department utilize the feedback? - **None.**
43. List the distinguished alumni of the department (maximum 10)

S.No.	Name of Students	University /Institution
1	Bipin Kumar Joshi	Scientist, Department of Science and Technology
2	Prince Mufti Ziaul Hasan	King Abdul Aziz University, Jaddah, Saudin Arabia
3	Mohammad Aslam	King Abdul Aziz University, Jaddah, Saudin Arabia
4	Mohammad Islam Uddin	Al-Baha University, Al-Baha, Saudi Arabia
5	Prabhash Mishra	Samara State Aeronautical University, Russia
6	Sakshi Dhanekar	IIT Delhi, Delhi
7	Amita Kumar	Associate Professor in Shaheed Rajguru College of Applied Sciences for Women (Delhi University).
8	Kriti Sharma	A.R.S.D. College (Delhi University)

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9	Chavi Bhatnagar	A.R.S.D. College (Delhi University)
10	Sanjeev Sharma	Wipro
11	Sunil Kumar	LSI Corporation, Staff Engineer
12	Rohini Kumar Mishra	Aricent Technologies, Engineering Project Manager
13	Sanjeev Sharma	Mentoware, Business Development Manager
14	Sudhir Changel	Marvell Semiconductor Inc., Staff Design Engineer
15	Mohammad Atif	Wipro

44. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.  
Lectures delivered by
- i. Prof. Mohd. Yamin (Australia),
  - ii. Dr. H. A. R. Saleh (Iraq),
  - iii. Prof. H. M. Srivastava (University of Victoria, CANADA),
  - iv. Prof. Rekha Srivastava (University of Victoria, CANADA)
  - v. Prof. Sami S. Habib (King Abdul Aziz University, Jeddah, Saudi Arabia)
  - vi. Prof. N H Tai, National Tsing Hua University, Hsinchu, Taiwan
45. List the teaching methods adopted by the faculty for different programmes.  
Conventional Teaching methods and with model projection facilities:-  
Seminar: The department continuously throughout the semester evaluates the progress of B.Tech and M. Sc. students' projects through their group presentations.  
PhD: The department continuously monitors the progress of PhD scholars through their 6 monthly presentation. This presentation is scheduled biweekly and a group of 6-7 research scholars are evaluated in one long session.
46. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?
- The Curriculum is continuously revised and changes are done through BOS.
  - Workshops are organized to interact with the Industry and Academic experts and based on the outcome, course curriculum is revised by the department.
  - Continuous students' evaluation is done based on the sessional tests, assignments followed by the end semester examination.
47. Highlight the participation of students and faculty in extension activities.  
Students Regularly Participate IN SPORTS, CULTURAL EVENTS, NSS, NCC AND DEBATES
48. Give details of "beyond syllabus scholarly activities" of the department.  
NIL
49. State whether the programme/ Department is accredited/ graded by other agencies? If yes, give details. – NONE

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

- Research Projects: Department has completed the research projects listed in item no. 17.
- Nanosensors research facility has been established in the department, which has produced five patents and one transferred one technology
- Solid State electronics research laboratory has been established in the department having world class equipment.
- Nanotechnology and Renewable Energy Laboaratory developed in the Department.
- 32 PhD's have been awarded in the area of Nanotechnology, environmental chemistry, polymer chemistry, Applied Mathematics etc.

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

### Strengths

- i) Faculty members of the department have excellent academic credentials. Most of them have had bright careers and have studied in prestigious institutions. They are well motivated and have displayed genuine interest in teaching. Most of them hold Ph.D. degrees.
- ii) The department has well established teaching lab facilities meant for B. Tech. program. These are equipped to perform lab work in physics, chemistry and environmental science. The department also has lab facilities to assist teaching in the M.Sc. electronics program. To develop communication skills, a language lab has also been initiated.
- iii) The department has a consistent record of research output with the teachers paying particular attention to generation of new knowledge. The fields regarded as frontiers are being given due importance by the department i.e. nanoscience and environmental science. Most of the teachers are guiding research scholars in assigned areas whose intake has been regular throughout the last decade. The research contribution of the department is of high quality as evident from the number of published papers in reputed journals.
- iv) Teachers have contributed to corporate life of the university. One senior member has performed the duties of proctor and security advisor. Other members have participated as wardens, members of proctorial team and members of various university committees. Teachers have also involved themselves in supervision of sports, cultural activities and university events.
- v) Nano science is one of the most active fields today. Two senior members are paying particular attention to it while research interests of several others overlap this field. Lab facilities of international standards pertaining to this area are being procured and would be functional in this session. Both experimental and analytical work is being done in this field.

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### Weaknesses

- i) With greater space availability, expected in near future, the department will achieve even greater heights. Teachers would be able to actualise their potential to utmost extent. Research Scholars would also benefit from improved arrangements.
- ii) With greath lab space and facilities, UG teaching is expected to become more creative and innovative. This is relevant in the context of Physics and Chemistry labs. The aspect is of greater importance for M.Sc. Electronics labs and for maximum usage of the available research equipment.
- iii) To enhance teaching and research, equipment and facilities are the base minimum but humantalent plays crucial rule. An extension in the number of well qualified faculty members is expected to enrich the department with new field and frontiers opening continuously the need for people with relevant specialized can not be overemphasized. Similarly well qualified supporting staff would make the lab work more efficient and productive.
- iv) The university has a big library. In addition, the faculty of Engineering and Technology has a library of its own. But to meet teaching and research needs, the department needs a specialized library of its own. The library would have books on basic science and humanities in addition to books in the frontier areas; such as nano science, special functions, management, environment and operations research.
- v) The department should have an opportunity to offer electives. Appropriate space in the course structure is needed to accommodate such electives. The papers taught by the department should be given as much weightage in the scoring scheme, as the engineering papers. There is also a need to strengthen the component of basic sciences and mathematics in the Engineering program to produce graduates of better quality.

### Opportunities

- i) With more teachers and additional space, the department may initiate programs in new areas which are of contemporary relevance. These would be master's level programs in industrial chemistry, polymer science, applied physics, computational mathematics, operations research, Bio Mathematics and many others.
- ii) Engineering institutions for their comprehensive and balanced development need full fledged departments in basic sciences and humanities. This need has been explicitly recognized in major technical institutions of our country. The present department should accordingly develop into full fledged departments of physics, chemistry, mathematics, environmental science, electronic science and humanities. This would make the engineering education richer and more relevant.
- iii) The faculty members have frequently interacted with scholars in other institutions. Mostly such interaction has been informal and personal. There is need as well as opportunity for a more planned formal and structured collaboration with

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involvement of individuals as well as the respective institutions. Initiative for such collaboration may be made within the NCR and then gradually extended to institutions all over the country.

- iv) The department has developed significant expertise in environmental science and nanoscience. With more input, the facilities developed in these frontal areas may be made available to scholars from other institutions as well. The modalities for this may be worked out and may also be linked with inter institutional collaboration.
- v) Accreditation and certifications are recognized procedural requirements which serve the purpose of monitoring, confidence building and quality improvement. The possibilities in this regard are NABL, MoEF, ISO, OWSAS and others; with institutional support such certification is possible.

### **Challenges**

- i) Syllabus updating in the context of new knowledge, new demands, novel opportunities, changing contexts and dynamic perspective is a constant need of any teaching program. The department has been aware of this need and has addressed it in formal meets and specialized workshops. The challenge of incorporating new knowledge needs to be analysed and better strategies identified to meet it. Routinely the target of the department has been to undertake revisions every three years.
- ii) Teaching techniques are undergoing rapid evolution globally. Critical awareness about them has been the goal of the department, in this context. While new techniques need to be studied and selectively incorporated; the time tested approaches also need to be retained. The department has been aware of balancing the twin challenges.
- iii) One possible avenue of interaction with students is an interactive departmental website. This is a challenge which the department plans to meet. The website may be used to display syllabi, model questions, assignments, circulars, notices and suggestions. In response, students may submit their queries and suggestions.
- iv) Research facilities which presently exist are to be upgraded. The challenge is a continuous one but in particular, one needs facilities specifically geared to the M. Phil. level. They could also be utilized for M.Sc. project work. Development of such facilities is a challenge which the department needs to meet urgently.
- v) Consultancy is an important possibility. The benefits are immediate in the form of greater relevance of the departmental output and direct contact with industry. The department is aware of the need of developing consultancy opportunities. With institutional support this challenge may be met soon.

52 Future plans of the Department – New programmes of M. Tech. in various disciplines are planned to be initiated in the coming few years