Evaluative Report of the Department

1	Name of the Department	**:**	**Biogas Research and Microbiology**
2	Year of establishment	**:**	November-1993, (Biogas Research Center) June 1995 (B.Sc. Microbiology)
3	Is the Department part of a School/Faculty of the university?	**:**	University
4	Names of programmes offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., D.Sc. D.Litt., etc.) **:**	**:**	UG, PG, M.Phil., Ph.D. with Microbiology and M.Phil. (Chemistry and Physics)
5	Interdisciplinary programmes and departments involved : Biogas Research Center, Sadra	**:**	Yes
6	Courses in collaboration with other universities, industries, foreign institutions, etc.	**:**	Nil
7	Details of programmes discontinued, if any, with reasons	**:**	Nil
8	Examination System : Annual / Semester / Trimester /Choice Based Credit System	**:**	Semester

9 Participation of the department in the courses offered by other departments : Yes

It is in the various areas such as renewable energy, composting, waste water treatment, environment education and sanitation etc. topics are taught in master of Rural management course Randheja and in M.D. Gramseva Mahavidyalaya, Sadra, Dist. Gandhinagar .

10 Number of teaching posts sanctioned, filled and actual (Professors/Associate Professors/Asst. Professors /Others) **:**

	Sanctioned	**Filled**	**Actual (Including CAS & MPS)**
Professor	00	00	02 (Direct)
Associate Professor	01	01	01 (Direct) + 03 (CAS) = 04
Asst. Professor	08	08	3 (Direct)
Others	05	03	03

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

Name	Qualification	Desig-nation	Specialization	No.of yeas of experi-ence	NO. of Ph.D./ M.Phil. Studs guided for the last 4 years
Dr. Pradipkumar B. Acharya	M.Sc. Ph.D.	Asso. Professor	(1) Microbiology (2) Biogas Technology	30	07 M.Phil. +2 Ph.D. (Co-Guide)
Dr. Nikhil S. Bhatt	M.Sc. Ph.D.	Professor Through CAS	(1)Biochemistry (2)Bioremediation (3)Environmental Biotechnology	22	13 M. Phil + 2 Ph.D. (Co-Guide) + 1 Ph.D. Guide Working at Present
Dr. Shrinivas M Duggirala	M.Sc. Ph.D.	Professor Through CAS	(1) Microbiology (2) Anaerobic digestion (3) Environmental Biotechnology	22	04 M. Phil Students + 1 Ph.D. (Co-Guide) + 1 Ph.D. Working at Present (Guide)
Smt. Pritiben K. Shukla	M.Sc. M.Phil.	Associate Professor Through CAS	(1) Microbiology (2) Fermentation Technology	19	--
Dr. Mayur C. Shah	M.Sc. Ph.D.	Associate Professor Through CAS	Chemistry	17	--
Dr. Niraj T. Sheth	M.Sc. Ph.D.	Associate Professor Through CAS	(1) Microbiology (2) Environmental Biotechnology	17	--
Dr. Prateek G. Shilpkar	M.Sc. Ph.D.	Asst. Professor	(1) Microbiology (2) Biogas Technology (3) Soil Science	13 Yrs	03 M. Phil. + 02 Ph.D. Students Working at Present
Shri Arvindbhai B. Dungrechiya	M.Sc. Net Exam. Clear	Asst. Professor	(1) Microbiology	5 Yrs	--
Dr. Kaushik R. Patel	M.Sc. Ph.D.	Asst. Professor	(1) Physics	4 Yrs	01 M.Phil. Students Working at Present

12 List of senior Visiting Fellows, adjunct faculty, emeritus professors :
List of Senior Visiting Fellows is as under

(1) Dr. Madamvar Datta, Professor, Department of Microbiology, S.P.

University, V.V. Nagar

(2) Dr. S.R. Dave, Professor & Head, Department of Microbiology, Gujarat University, Ahmedabad

(3) Dr. H.A. Modi, Asso. Professor, Department of Life Sciences, Gujarat University, Ahmedabad

(4) Dr. Pranav Srivatsav, Asso. Professor, Department of Chemistry, Gujarat University, Ahmedabad

(5) Dr. Swarnajit Sinh Dy. Director, IMTech., Chandigadh,

(6) Dr. B.V. Raol, Professor & Head, Department of Microbiology, Science College kalol, Dist. Mehsana

(7) Dr. Jignesh Dave, Co-ordinator, Mediplanet, Ahmedabad

(8) Mr. Shrutikant, Dy. Manager, Hester Vaccine Industry, Thol, Ta. Kalol

(9) Prof. D.V. Prajapati, Gujarat College, Gujarat University, Ahmedabad

(10) Prof. Piyushbhai Pandya, Gujarat College, Gujarat University, Ahmedabad

(11) Prof. Mrugesh Shukla, M.G.Science College, Gujarat University, Ahmedabad

Mr. Edwin Pithawala, Gujarat University, Ahmedabad

13 Percentage of classes taken by temporary faculty – programme-wise information **:** Yes

For B.Sc. Programme 4.35 %

For M.Sc. Programme -

14 Programme-wise Student Teacher Ratio : PG 16:1

UG 20.1

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

	Sanctioned	**Filled**	**Actual**
Technical Staff	05	03	03 + 02 Contract Base
Administrative staff	02	02	02
Accountant	00	00	
Driver	00	00	

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

- Biogas Technology
- Environmental Microbiology and Biotechnology

- Vermicomposting
- Biofertilizers
- Biodegradation of various waste materials
- Bioremediation
- Organic Farming
- Soil, water and food analysis

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 :

Year	National	Inter national	Funding Agency	Grants Received	Title
2014 -15	Yes	--	Govt. of India, Ministry of Science & Technology, Department of Biotechnology, New Delhi, India	37 Lakh	" Bio prospecting of Crop Residues by Solid State Fermentation To Enhance Nutrient Utilization and Feed Efficiency In Ruminants"
2013 -14	Yes	--	GUJCOST-MRP-2014	7.00 lakh	"Enzymatic Deconstruction of Agro-Residues for Bio fermentation and Biofuel Production"
2013 -14	Yes	--	GSBTM-FAP-2014	18.81 Lakh	"Exploring Bio-remediation Strategies for Treatment of Chromophore Linked Contaminated Waste-water Using Sequential Anaerobic-Micro-aerophilic Reactors"
2011 - 2012	Yes	--	GAIC Gujarat Agro Industries Corpo, Ahmedabad	2.41 lakhs	1. Biogas purification 2. Different Models construction of biogas plants
	Yes	--	GSBTM, Gandhinagar	14.48 lakhs	Degradation of Tannery waste and Phenoloc Compounds by Novel Anaerobic Tannin Degrading Bacterial Isolate in Pure and Mixed Culture
	Yes	--	Gujcost, Gandhinagar	19000/-	Isolation and Metabolic Characterization of SRB from Mangrove Ecosystem
	Yes	--	Gujcost, Gandhinagar	16000/	Metabolic Characterization of Anaerobic Bacteria
2009 -10	Yes	--	CEE, Ahmedabad	1.00 lakhs	Treatment of sewage wastewater by ASP-Green College Campus

18 Inter-institutional collaborative projects and associated Grants received :

Year	National	Inter national	Funding Agency	Grants Received	Title
2014-15	Yes	--	Govt. of India, Ministry of Science & Technology, Department of Biotechnology, New Delhi, India	Multi Institute	" Bioprospecting of Crop Residues by Solid State Fermentation To Enhance Nutrient Utilization and Feed Efficiency In Ruminants"
2011-2012	Yes	--	ICAR, New Delhi	Multi Institute	Niche Area of Excellence "Metagenomic Analysis of Ruminal Microbes"

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

20 Research facility / centre with **:**

- National recognition: Biogas Research Center, Funded by UGC during 10th Plan , 9th Plan, and 8th Plan is Rs. 89 Lakh, 81 Lakh, and 74 Lakh respectively.
- List of Research Equipment: - as attachment.

No.	Name of the Instrument	Make & model	Date of Purchase	Supplier	Price	D.S. No.
1	Heavy duty Refrigerator Centrifuge	REMI K 70	4/10/1994	Max enterprise	1,03672=00	B.R.C./E11/94-95
2	Hydrogen gas generator	chemito-HG_200	10/9/1999	Labtronik	2,44,400=00	B.R.C./G.V./88/99-2000
3	Microprocessor Controlled gas chromatograph	Chemito	7/30/2002	Labtronik, Ashramroad, A'bad		B.R.C./G.V./176/2002-03
	Basic Unit Chemito 7610				1,20,000-00	
	Dual packed column Inj port				32,000=00	
	Start Up-kit				12,000=00	
	Single flame Ionisation Detector with Amplifier				35,000=00	
	Thermal conductivity Detector				58,000=00	
	S.S. packed columm				45,000=00	
4	Research Microscope CX-41	Olympus CX-41	2004-05	Olympus		B.R.C./G.V./210/2004-05
5	U.V.Visible Spectrophotometer, SL-159	Elico Sl-159	1/16/2008	Elico Limited, A'bad	1,06,178=00	B.R.C./G.V./229/2007-08
6	Automatic nitrogen Analyzer-	PELICAN- ELITE-EX, KEL PLUS	25/3/2009	Pelican equipment ltd. Chennai	2,90,509=00	B.R.C./G.V./272/2008-09
7	Anaerobic Glove Box	Don-Whitley-Compact TG	25/3/09	Shriji sales	18,29,650=00	B.R.C./G.V./273/2008-09
8	H.P.L.C.(Quaternary Manual H.P.L.C.system)	Perkin Elmer-SERIES 200 - UV-VIS DETECTOR	31/03/09	Perkin Elmer Singapore pvt. Ltd., Singapore	21505US$	B.R.C./G.V./279/2008-09

9	PCR with UPS	BioRad - C 1000 THERMAL CYCLER	31/03/09	BioRad		B.R.C./G.V./280/2008-09 (PCR), B.R.C./G.V./280 A/2008-09 (UPS)
10	GEL DOCUMENTATION SYSTEM, With computer, printer and UPS	BioRad (GEL DOC -XR)	31/03/09	BioRad		B.R.C./G.V./281/2008-09(GEL DOC), B.R.C./G.V./281a/2008-09(printer), B.R.C./G.V./281b/2008-09(PC), B.R.C./G.V./281c/2008-09(UPS)
11	Electrophoresis unit	BioRad	31/03/09	BioRad		B.R.C./G.V./282A/2008-09, B.R.C./G.V./282A/2008-09
12	Micro plate reader	Thermo fisher Scientific -Multiscan EX	30/09/2011	Operon Biotech, Baroda	154116=00	BRC/GV/342/2011-12, GSBTM Project, D.S. Murty.
13	HPTLC (Planner chromatograpy system manager, sample application device, chromatography development device, post chromatography photorecording system, Quantitative measurement & data handling)	Camag (LINOMAT 5, SCANNER 4)	31/08/2012	ANACHROM Enterprise (I)P.ltd.	24,24,000=00	BRC/GV/396/2012-13

14	Atomic Absorption Spectrophotometer (with oil free air compressor, Acetylene gas cylinder, Regulator, lamps for Cd, Cu, Fe, Pb, Ni, Zn, Mn; Exhaust hood vent assembly)	ECI	4/10/2012	Electronics corporation of India Limited	9,64,678=00 (7,89,884.00 +59,644.00+80,150. 00+35,000.00)	BRC/GV/397/2012-13
15	Ultrasonicator	Sonics- VIBRA CELL 750	30/03/2013	Inkarp corporation	$ 7,000=00	BRC/GV/400/2012-13

Equipments purchased under different project

Sr. No.	Name of Instrument	Price of the Instrument (Lakh)	Funding Agency & Year
1	Anaerobic-Biphasic (01) Reactor	0.96	GSBTM-2014-15
2	Master Flex L/S dual channel pumps	1.41	GSBTM-2015-16
3	Oil free air compressor (02) 1.1 HP	0.63	GSBTM-2015-16
4	Micro-aerophilic reactor (02)	0.96	GSBTM-2015-16
5	Andel Biopo D3 Autoclavable Bio fermentor (01)	3.09	GSBTM-2015-16
6	UV-VIS spectrophotometer	6.96	GSBTM-2015-16

Sr. No.	Name of Instrument	Price of the Instrument (Lakh)	Funding Agency & Year
1	Computer Printer	30.000	GSBTM-2010-13
2	Refrigerator	25.000	GSBTM-2010-13
3	Plate Reader	1.50.000	GSBTM-2010-13
4	Biphasic reactor	80.000	GSBTM-2010-13
5	50 lit Glass Reactor with distillation	1,10.000	GSBTM-2010-13

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

22 Publications:

- Number of papers published in peer reviewed journals (national / international) **:** National 22 International 59

List of Publications

1. Pradip B. Acharya and Prateek Shilpkar (2015) Solanum tuberosam supplementation for biogas production *Current World Environment* Vol. 10(1), 285-287 (2015)
2. Aghera Payal, Balapure Kshama, D. Srinivas, Sheth N., and Bhatt Nikhil (2015) Exploring the potential of enriched bacterial consortium KN to degrade chromophore linked azo dye. "Advances in Environmental Sciences and Technology:A Way Forward to Clean and Green Environment". Vallabh Vidyanagar, Anand. 28th February, 2015.
3. Sandhya Makwana, Dharmesh Adhyaru, Nikhil Bhatt. (2015) Xylanase production mediated by Aspergillus sp. SPDN1 using agro-residues under solid state fermentation and its application. National Seminar on "Advances in Environmental Science & Technology: A way Forward to Clean and Green Environment" P.G. Department of Environmental Science & Technology (EST). Institute of Science & Technology for Advanced Studies & Research (ISTAR). 28th Feb. 2015.
4. Adhyaru, D.N., Bhatt, N.S., Modi, H.A. (2015) Saccharification potential of xylanase produced by *A. tubingensis* FDHN1 under solid state fermentation (Poster). National Conference (UGC Sponsored), "Latest Developments in Basic and Applied Sciences", 10th Feb. 2015. M.B. Patel Science College, Anand, Gujarat, India.
5. Misha V. Patel, Prateek Shilpkar and Arvind Dungrechia, (2015) Optimized alkaline protease production by *Bacillus thuringiensis. Journal of Pure and Applied Microbiology*, Vol. 9(1): 791-795.
6. Kinnari A. Prajapati, Prateek Shilpkar and Arvind Dungrechia, (2015) Alkaline protease production from *Sorghum vulgare* by *Staphylococcus sciuri*, *Journal of Pure and Applied Microbiology*, Vol.9(1): 441-447.
7. Subhash Godadara, Prateek Shilpkar and Arvind Dungrechia, (2015) Optimized production of cellulase by *Aspergillus niger* using *Ricinus communis* seed coat waste. *Journal of Pure and Applied Microbiology*, Vol. 9(1): 623-629.

8. Komal P. Acharya and Prateek Shilpkar, Bacterial Production of Xylanase using *Nichotina tabaccum* Leaf Dust as Substrate, *Journal of Pure and Applied Microbiology*, Vol. 8 Special Edition: 491-498, Nov. 2014

9. Pradip B. Acharya and Prateek Shilpkar, Anaerobic digestion of cooked rice along with buffalo dung for biogas production. *International Journal of Current Research and Academic Review*, Vol. 2(11): 70-73, November-2014

10. Pradip B. Acharya and Prateek Shilpkar, Effect of *Bhakhri* supplementation on biogas production. *International Journal of Current Research and Academic Review*, Vol. 2(11): 66-69, November-2014

11. Arti Thummar, Prateek Shilpkar and Arvind Dungrechia, Fermentative microbial enzyme production from *Medicago sativa* L. plant stem. *Bioscience Guardian*, Volume- 4(2): 201-212, December 2014.

12. Mayur C. Shah, Chirag R. Patel and Prateek G Shilpkar, Water extracts of *Hibiscus rosa sinensis* L. flower: Eco-friendly acid-base indicator. *Bioscience Guardian*, Volume- 4(2): 197-200, December 2014.

13. Rajendra Prajapati, Pratik Shilpkar, Raol BV and Vaidya Ritesh, Studies on the comparative performance of various types of fertilizers and their combinations on the growth of *Vigna sinensis* var. *Pusa falgun* (cow pea). *Bioscience Guardian*, Volume- 4(2): 163-169, December 2014.

14. Mayur C. Shah, Gunjan K. Sakhiya and Prateek G. Shilpkar, Study to find out suitability of water extract of *Catharanthus roseus* flowers as indicator for acid-base titrations. *Ultra Chemistry*, Vol. 10 (3) 141-144, 2014

15. Pradip B. Acharya and Prateek Shilpkar (2014) Anaerobic Co-Digestion of Mixed Kitchen Wastes and Buffalo Dung *Current World Environment* Vol. 9(3), 980-982 (2014)

16. Mayur C. Shah, Chirag R. Patel and Prateek G Shilpkar, Water extracts of *Hibiscus rosa sinensis* L. flower: Eco-friendly acid-base indicator. *Bioscience Guardian*, Volume- 4(2): 197-200, December 2014.

17. Kaushik R Patel, Optical analysis of zirconium sulphoselenide single crystls, *International journal of physics and mathematical sciences (ISSN* No. 2277-2111) Vol 4(4) 100-110, 2014

18. C. A. Patel, Kaushik Patel and K. D. Patel, Optical analysis of WSe_2 single crystals, *international journal of physics and applications (*ISSN NO. 0974-3103) Vol. 6(2) 115-130, 2014

19. Duggirala Srinivas M, Sheth Niraj .T, Bhatt Nikhil S., and Vanjani Unnati .N (2013) Remediation of Textile Reactive Dyes Using Anaerobic Rumen Consortium. *International Journal of Recent Scientific Research* (ISSN: 0976-3031)*Vol. 4, Issue, 9,1400- 1405.*

20. Duggirala Srinivas M., Patel Himanshu, Koradiya Manoj and Bhatt Nikhil S. (2013) Characterization of Bacillus sp. And Protease Production in SSF. *International Journal of Scientific Research* (ISSN 2777-8179) Issue:9,(Vol: 2) 22-24.

21. Duggirala Srinivas M., Sheth Niraj T., Pawar Ashruti U. and Bhatt Nikhil S. (2013) Isolation and Characterization of Bacteria from Dye Wastewater Treating Down Flow Fixed Film Reactor (DFFR). *International Journal of Engineering Research & Technology* (IJERT) Vol. 2 Issue 10, October - 2013 ISSN: 2278-0181.

22. Vipul R. Patel, Nikhil S. Bhatt, H. B` Bhatt (2013) Involvement of ligninolytic enzymes of Myceliophthora vellerea HQ871747 in decolorization and complete mineralization of Reactive Blue 220. *Chemical Engineering Journal*. Vol:233 November 1385-8947.

23. Kaushik R Patel. Structural and optical properties of vanadium disulphide single crystals. International Journal of Physics and Mathematical Sciences 2013, 3(3) 74-80

24. Acharya Pradip., Shah A.J., Acharya D.K., Chabhadiya S., Modi H.A., Manganeze Peroxidase Production by Trichoderma pseudokoningii under SSF. The microbes: Online Int. J. Microbiol. 2013, Vol.-I, 18-29

25. Bhatt Nikhil S, Vaghasiya Harsha M. and D. Srinivas Murty. (2012) Biodegradation study on reactive dye 222 by bacterial consortium. *Bioscience Guardian*. 2(1): 137-150.

26. Bhatt Nikhil S., Adhyaru Dharmesh N. and Thakor priti (2012). Production of xylanase by *Aspergillus flavus* FPDN1 on *Pearl millet bran*: Optimization of culture conditions and application in bioethanol production. *International Journal of Research in Chemistry and Environment*. Vol:2; Issue:3; 204-210: ISSN:2248-9649.

27. Bhatt Nikhil S., Thummar Sapna and Balapure Kshama. (2012). Biodegradation of Reactive Red M8B By Bacterial Consortium. Indian

Journal of Science and Technology. Vol:5; No:7; 3047-3053. ISSN: 0974-6846.

28. Anand M Dave, Vishal A. Mevada, Nikhil S Bhatt, Pradip B. Acharaya, and Rajesh K. Patel. (2012) Virtual Screening of Heterobased Ligand Library For protein Kinase For Anticancer Activity. *International Journal of Pharmacy and Pharmaceutical Sciences*. Vol:4; Issue:4; 390-397: ISSN: 0975-1491.

29. Bhatt, N. S., Vagadiya D. R. and Junnarkar, N. S. (2012) Decolorization, Degradation and Azo dye-reductase study by bacterial transformation. *International Journal of Research in Biosciences* (ISSN 2248-9649) Vol. 1 Issue 1 July: 29-49.

30. Murty Srinivas, Patel, S. Soni, R. and Bhatt, N. S. (2012) Isolation and Identification of Bacterial Culture For Azo dye Degrading Capability. *International Journal of Research in Chemistry and Environment* (ISSN 2248-9649) Vol. 2 Issue 3 July: 204-210.

31. D. Srinivas Murty, Bhatt Nikhil, Junnarkar Nishant S., and Chauhan Divyesh. (2012) Antibacterial Activity of Certain Commonly Used Spices Against Opportunistic Pathogenic Bacteria. *Bioscience Guardian An International Journal* (ISSN 2277-9493) 2(1): 167-170.

32. Kaushik Patel. Thermoelectric Power Measurements of Zirconium Sulphoselenide Single Crystals. International Journal of Physics and Mathematical Sciences, 2012 2(1) 74-85

33. P. R. Patel, Kaushik R. Patel and V. M. Pathak. Growth and characterizations of WSe_2 single crystals. Journal of advances in Developmental Research, 2012 3(1) 127-132.

34. M. S. Dave, K. R. Patel and R. D. Vaidya Structural characterizations of NbS_2 single crystals International Journal of Physics and Mathematical Sciences, 2012 2(3) 47-51

35. C A Patel, Kaushik R Patel and K D Patel. Structural Characterization of Tungsten Diselenide Single Crystal. International Journal of Physics and Mathematical Sciences 2012 2(4) 17-26

36. Kaushik R. Patel. Anisotropic Behaviour of zirconium sulphoselenide single crystals. International Journal of Applied Physics (IJAP), 2012 3(1) 1-9

37. Modi H.A., Acharya Pradip B., Acharya D.K., Chabhadiya S.B., Shah A.J., Process Optimization For Xylanase Production by Aspergillus niger in solid state Fermentation. Int. J.Biotech. Biosci..1 (4) 423-430. 2011

38. Acharya D.K., Shilpkar Prateek., Acharya Pradip., Modi H.A., Wheat straw composting through-Aspergillus oryzae. Journal of Advances in Developmental Research..2(2) 198-204. 2011

39. Bhavsar, N. and Bhatt, N. S. (2011) Effect of Rhizobium liquid biofertilizer on soil and Cheak pea (*Cicer arjentinum*). *Bioscience Guardian* 1(2): 417-421.

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41. Bhatt, N. S., Sheratia, A., Murty, D. S. and Junnarkar, N. S. (2011) Interrelationship between alkaline phosphatase activity and soil characteristics. *Bioscience Guardian*. 1(2): 473-480.

42. K R Patel, R D Vaidya and S G Patel. Growth and Structural analysis of zirconium trisulphide single crystals . Journal of advances in Developmental Research, 2011, 2(2) 346-351

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44. K R Patel, R D Vaidya, M S Dave and S G Patel. Crystal structure and band gap measurements of vanadium diselenide single crystals. Sciencia Acta Xaveriana, 2010 1(1) 1-5

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46. Mayur C. Shah, Prateek Shilpkar, Ankita J. Acharya, Kshama H.Balapure, Ekta A. Desai, Dipika N. Patel. Study of Ground water Quality of Dahegam Taluka, Gujarat, India. Ecology, Environment and Conservations. 15(3) 2009 pp.577-584

47. Prateek Shilpkar, Mayur C. Shah, Kinjal Modi. Assessment of Microbial Diversity in Rhizoshphere of *Ficus religiosa* Tree at Different Moisture Levels. The Indian Forester, 135 (1) 2009, pp 111-116.

48. Niraj Sheth and Dave S. R. (2009) Optimisation for enhanced decolourization and degradation of Reactive Red BS C.I. 111 by *Pseudomonas aeruginosa* NGKCTS. *Biodegradation.* Vol: 20, 827-836.

49. K R Patel, R D Vaidya, M S Dave and S G Patel. Growth and high pressure studies of zirconium sulphoselenide single crystals. Pramna Journal of Physics, 2009 73 (5) 945.

50. Mayur C. Shah, Prateek Shilpkar, Paresh T. Pujara, Amit J.Shah. Extract of Clitoria ternatea L flowers: natural universal pH indicator. Bioscience Reporter. 6(2) 2008, pp.375-378

51. Mayur C. Shah, Prateek Shilpkar, Pradip B. Acharya. Ground Water Quality of Gandhinagar Taluka, Gujarat, India. E- Journal of Chemistry, 5(3) 2008 pp.435-446

52. Mayur C. Shah, Prateek Shilpkar, Pradip B. Acharya, Urjit K. Gor, Sumit R. Kansara. Statistical Analysis of Ground Water Quality Characteristics of Kalol Taluka, Gujarat for Drinking and Irrigation Purposes. Ecology, Environment and Conservations, 14(2,3) 2008, pp.393-397

53. Prateek Shilpkar, Mayur C. Shah, Pradip Acharya. Utilization of *Euphorbia nivulia* for Biogas Production. Asian Journal of Chemistry, 20(6) 2008 pp. 4287-4290

54. Prateek Shilpkar, S.C.Bhandari, Mayur C. Shah. Microbial Chelation of Iron. Ecology, Environment and Conservations. 14(2,3) 2008, pp.393-397

55. Prateek Shilpkar, Mayur C. Shah, Gaurav Gandhi, Urja Pandya. Microbial Degradation of Ficus benghalensis Tree Leaves. Asian Journal of Microbiology, Biotechnology and Environmental Sciences. 2, 2008, pp.433-437

56. Sangita Sharma, Mayur C. Shah, Dipika Dalwadi, Falguni Thakkar, J.J.Vora. Solution State Studies on Thermodynamic Parameters, Mechanism of Protonation and Complex formation of Binary Complexes of La(III), Ce(III), Pr(III) and Nd(III) with Aminopyridines. Research Journal of Chemistry and Environment, 12(4) 2008, pp. 29-34

57. Pradip B. Acharya, D.K. Acharya and H.A. Modi. Optimization for cellulase production by Aspergillus niger using saw dust as substrate. African Journal of Biotechnology, 2008 7 (22) 4147-4152

58. K R Patel, R D Vaidya, M S Dave and S G Patel Crystal growth and structural analysis of zirconium sulphoselenide single crystals. Bulletin of Material Science, 2008 31 (4) 645

- Monograph : 00
- Chapters in Books : 03

No	Name of Book	Name of Chapter	Name of Publisher	ISBN
1	Environmental Microbiology (2009)	Anaerobic Digestion and Methanogenesis for Waste Treatment: pp:	APH Publishing Corporation, New Delhi	ISBN: 978-313-0655-0
2	Industrial Microbial Enzymes (2013)	Lignocellulose and Lignocellulases: pp:41-73	Pointer Publishers, Jaipur.	ISBN:978-81-7132-744-7
3	Industrial Microbial Enzymes (2013)	Microbial Xylanases(S): Past, Present and Future: pp:74-120	Pointer Publishers, Jaipur.	ISBN:978-81-7132-744-7

Sr. No.	Title of book	Name of publisher	ISBN No.
1	Properties of zirconium sulphoselenide single crystals (2014)	Scholar press, Germany	978-3-639-71647-4
2	Properties of Tungsten diselenide single crystals (2015)	Scholar press, Germany	978-3-639-66964-0

- Books with ISBN with details of publishers : 02
- Number listed in International Database (For *e.g.* Web of Science, Scopus, Humanities International Complete, Dare Database- : 03

International Social Sciences Directory, EBSCO host, etc.)

No	Name of International Database	Listed in International Database	Remarks
1	Gene Bank-NCBI (Nucleotide)	(1) Citrobacter freundii strain BAB1687 16S ribosomal RNA gene, partial sequence. GenBank:JQ867022.1 (2) Citrobacter freundii strain BAB1685 16S ribosomal RNA gene, partial sequence. GenBank: JQ867020.1 (3) Bacillus subtilis strain BAB1686 16S ribosomal RNA gene, partial sequence. GenBank: JQ867021.1 (4) Bacillus flexus strain BAB1688 16S ribosomal RNA gene, partial sequence GenBank: JQ867023.1 (5) Citrobacter freundii strain BAB1689 16S ribosomal RNA gene, partial sequence GenBank: JQ867024.1 (6) Acinetobacter baumannii strain BAB1594_kdn1 16S ribosomal RNA gene, partial sequence GenBank: JX081421. (7) Bacillus licheniformis strain BAB1620 16S ribosomal RNA gene, partial sequence GenBank: JQ389603.1 (8) Rhodococcus ruber strain BAB1621_NV6 16S ribosomal RNA gene, partial sequence GenBank: JX081420.1 (9) Citrobacter freundii strain BAB1669 16S ribosomal RNA gene, partial sequence GenBank: JQ964019.1 (10) Bacillus cereus strain BAB1671 16S ribosomal RNA gene, partial sequence GenBank: JQ964021.1	
2	Gene Bank-NCBI (Nucleotide)	Uncultured Bacterium clone Tannin 1-22; starch1-9; Cellu 1-12;1-10 SADRAGV 16S ribosomal RNA gene, Partial sequence	22;09;12;10 Sequences
3	Gene Bank-NCBI (Nucleotide)	Pseudomonas aeruginosa strain NGKCTS 16S ribosomal RNA gene, partial sequence GenBank: FJ556919.1	1 to 1441 sequences

❖ Citation Index- range/average : 33

No	Journal Name	Impact factor	SNIP	SJR	H-Index
1	Bioresource Technology	5.00			
2	Chemical Engineering Journal	3.47			
3	Biodegradation	2.17			
4	Journal of Basic Microbiology	1.50			
5	World Journal of Microbiology and Biotechnology	1.50			
6	International Journal of Research in Chemistry and Environment	0.423			5.35
7	Journal of Science and Technology	0.456			
8	International Journal of Pharmacy and Pharmaceutical Sciences	1.57			
9	International Journal of Research in Biosciences	1.65			
10	International Journal of Recent Scientific Research	1.136			
11	International Journal of Scientific Research	0.3317			
12	International Journal of Engineering Research & Technology	1.76			
13	Bioscience Guardian An International Journal	0.58			
14	African Journal of Biotechnology	0.57			
15	Ecology, Environment and Coservation	3.50			
16	Asian Journal of Chemistry	6.7			
17	Pollution Research	3.3			
18	Bulletin of Material Science	0.584			
19	Pramna Journal of Physics	0.562			
20	Science Acta Xaveriana				
21	Journal of Advances in Developmental Research				
22	International Journal of Physics and	0.782			

	Mathematical Sciences				
23	International Journal of Applied Physics				
24	IAPT Bulletin				
25	International Molecular Biology Reports				
26	Bioscience Reporter	1.71			
27	E- Journal of Chemistry	0.48			
28	Environment and Conservations				
29	Asian Journal of Microbiology, Biotechnology and Environmental Sciences.				
30	Research Journal of Chemistry and Environment				
31	The Indian Forester				
32	Int. Journal of Biological & Chemical Sciences.				
33	The Microbes "On line Int. J. Microbiol.				

- ❖ SNIP : -
- ❖ SJR : -
- ❖ Impact Factor – range / average : -
- ❖ h-index : -

23 Details of patents and income generated :

Number of patent generated : --

Number of patent filed : **02**

24 Areas of consultancy and income generated :

Consultancy without any monitory benefit

(1) Students of Mechanical Engineering college of L. D. College of Engineering, Ahmedabad, LDRP Gandhinagar, Govt. Engineering, College, Gandhinagar, B. H. Gardi College of Engineering & Tech. Rajkot, Merchant Institute of Technology, Piludara (Mehsana) got expert mentoring in their projects.

(2) Tribal people awareness program with World Vision, Chhota Udaipur

(3) National Institute of Mass Communication & Journalism obtained advantage of awareness about environment and biogas technology.

(4) Gujarat Knowledge Application & facilitation Centre, Confederation of Indian Industry, Ahmedabad, Gujarat for Biogas purification system of Sabar dairy.

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: 04

(1) Gujarat State School Text Book Board, Gandhinagar, Gujarat.

(2) Vidyapith Journal, Ahmedabad

(3) International Journal of Applied Physics, New Delhi

(4) International Journal of Material Science, New Delhi

(d) Other Committees: 02

(1) Tender Evaluation Committee of Gujarat Energy Development Agency, Gandhinagar

(2) Gas Stove and its Parts Selection Committee of Gujarat Agro Industries Corporation, Ahmedabad

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

No	**Year**	**UGC-ASC Refresher:**	**UGC-ASC Orientation:**	**Workshop/Training Programs:**
8	2015	0		2
7	2014	1	2	1
6	2013	1		1

5	2012		2	2
4	2011	3		3
3	2010			2
2	2009	3		2
1	2008			1

28 Student projects **:**

- percentage of students who have done in-house projects including inter-departmental projects **:** 95
- percentage of students doing projects in collaboration with other universities/industry/institute **:** 05

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

- Faculty **:** -
- Doctoral / post-doctoral fellows **:** -
- Students 01, INSPIRE Fellowship occupied by our student Shri Dharmesh Adharyu from UGC

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

Workshops: 02 (National and Regional)

(Two batches: Workshop for International students of Gandhian Thoughts on "Non-Violence and Practices in Rural Technology)

31 Code of ethics for research followed by the departments **:**

- Enrollment of student is carried out for M.Sc., M. Phil., and Ph.D. Programs as per our university norms after declaration of available seats
- Students have to complete their research work within two years and one year for M. Sc. and M. Phil.
- Students complete their research work under supervision of respective guides.
- Students have to submit their thesis which is thereafter evaluated by experts from other university of Gujarat or India followed by viva voce in presence

of exeternal referee.

- Utmost care is taken to in selection of the Subject & Title of project to avoid duplication in research.
- All care required to carry out microbial work is strictly followed.
- After completion of this process students are awarded degrees.

Research work is carried out in our laboratory and if needed in other labs or universities university under expert guidance .

32 Student profile programme-wise **:**

(A) B.Sc. (UG)

Year	**Application Received Before three Years**		**Selected Candidates Before three Years**		**Pass Candidates (%)**	
	M	**F**	**M**	**F**	**M**	**F**
2009	36	41	21	23	42.85	47.82
2010	39	51	18	29	22.22	37.93
2011	19	50	12	29	100	48.27
2012	23	34	8	20	37.50	25.0
2013	17	17	8	4	50	75.00
2014	15	18	5	13	60	38.46
2015	20	--	12	27	50	66.67

(B) M.Sc. (PG)

Year	**Application Received Before Two Years**		**Selected Candidates Before Two Years**		**Pass Candidates (%)**	
	M	**F**	**M**	**F**	**M**	**F**
2009	75	124	10	14	100	85.71
2010	29	45	6	8	83.33	100
2011	40	101	11	21	100	85.71
2012	24	110	4	29	75	89.65
2013	15	55	10	22	80	90.90
2014	15	30	10	17	80	76.47
2015	9	43	5	16	66.67	81.25

M. Phil & Ph.D.

Year	M. Phil & Ph.D. No. of Passed Candidates			
	M. Phil		Ph.D.	
	M	F	M	F
2009	4	2	-	-
2010	1	3	-	-
2011	0	1	1	-
2012	-	-	-	-
2013		-	01	-
2014	-	-	-	-

Name of the Programme (refer to question no.4)	Applications received (2009 to till date)	Selected Male Female	Pass Percentage Male Female
UG	467 (2008 to 2015)	86 132	61.60% 88.04%
PG	547 (2008 to 2015)	55 165	80.87% 95.56%
M.Phil.	12 (2008 to 2015) (Note:- After 2011-12 the procedure was carried out by University)	06 06	100% 100%
Ph.D.	(Note:- After 2011-12 the procedure was carried out by University)	04 05	50% (Cont.) Degree awarded to two students (Male)

33 Diversity of students **:**

Name of the Programme (refer to question no.4)	% 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.				
2014-15	13.64	86.36	--	--
2013-14	19.04	80.96	--	--
2012-13	19.05	80.95	--	--
2011-12	19.23	80.77	--	--
2010-11	40.63	59.38	--	--
2009-10	15.15	84.85	--	--
2008-09	28.13	71.88	--	--
M.Phil.				
2014-15	--	--	--	--
2013-14	1 (No.)	1 (No.)	--	--
2012-13	0	0	--	--
2011-12	0	0	--	--
2010-11	0	100	--	--
2009-10	75	25	--	--
2008-09	16.67	83.33	--	--
Ph.D.				
2014-15	100	0	--	--
2013-14	0	0	--	--
2012-13	100	0	--	--
2011-12	100	0	--	--
2010-11	100	0	--	--
2009-10	-	0	--	--
2008-09	2 (No.)	0	--	--

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

Year	Civil Services	Defense	NET/SLET	GATE	Others
2014-15	--	--	--	--	--
2013-14	01	--	--	--	--
2012-13	--	--	--	--	2 (Fisheries - Govt. of Guj.)
2011-12	--	--	--	--	01
2010-11	--	--	--	--	--
2009-10	--	--	--	--	--
2008-09	--	--	--	--	--

35. Student progression

Student progression	Percentage against enrolled
UG to PG	40%
PG to M. Phil	2%
PG to Ph.D.	2%
Ph.D. to Post-Doctoral	
Employed • Campus selection • Other than campus recruitment	 10% 70%
Entrepreneurs	10%

36. Diversity of staff

Percentage of faculty who are graduates	
of the same university	Nil
from other universities within the State	09
from universities from other States from	02
universities outside the country	--

37 Number of faculty who were awarded M.Phil., Ph.D., D.Sc. and D.Litt. during the assessment period : 00

YEAR	M.Phil.	Ph.D.
2014-15	--	--
2013-14	--	--
2012-13	--	--
2011-12	--	--
2010-11	--	--
2009-10	--	--
2008-09	--	--

38 Present details of departmental infrastructural facilities with regard to :

a. Library: : Yes

3943 Nos. Books, 25 Nos. Journals

b. Internet facilities for staff and students: : Yes

c. Total number of class rooms : 05

d. Class rooms with ICT facility : 05

e. Student's laboratories : 07

f. Research laboratories : 02

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

a) From the host institution / university : NA

No.	Reg.No. & Reg. Date	Name	Sex	DOB	CASTE SC/ST/OBC/ OPEN
1	514852 19/09/2015	Ashruti Pawar	F	17/09/1988	OPEN

2	514851 19/09/2015	Suchi Chiklit Dave	F	25/03/1991	OPEN
3	512851 16/08/2012	Himanshubhai Babulal Parmar	M	06/09/1988	SC
4	511852 26/09/2011	Kinjal Prabhubhai Prajapati	F	08/08/1989	OBC
5	511851 26/09/2011	Komal Pradipkumar Acharya	F	13/07/1988	OPEN
6	510853 23/11/2010	Kshama H. Balapure	F	31/08/1987	OPEN
7	510852 23/11/2010	Dharmesh N. Adhyaru	M	15/03/1987	OPEN
8	510851 23/11/2010	Rakeshkumar Kantilal Soni	M	22/05/1975	OPEN

b) From the other institution / universities : Nil

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

Years	**Number of PG students (MSc, MPhil and Ph.D.)**
2014-15	24
2013-14	28
2012-13	32
2011-12	52
2010-11	39
2009-10	24
2008-09	31

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

If so, highlight the methodology

Initially, The Committee under the chairmanship of Vice-Chancellor Prof. Ramlal Parikh has taken a decision to start the courses from under

Graduations to Post Graduations and so on for the need to carry out research work particularly in renewable energy generation from different types of biomass and also for the recruitment of the staff in the biogas Research Centre.

Later on, Board of Studies comprising of external members and experts & current trends were taken into account to introduce new course contents / programmes.

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 feedback from faculties are utilized as shown under.

(1) All faculties are members of board of studies, their suggestions are implemented for syllabus preparation according to their experiences in teaching subjects. These points are discussed in presence of subject experts. Then after the compiled work is kept in academic council. After the permission of council it is implemented.

(2) Internet Facility, Information and Communication technology are used as teaching aids.

(3) Internal Evaluations of students is carried out in three steps, as shown

Theoretical Evaluation

(1) 50% Marks from written examination

(2) 25% Marks from Seminar Presentation/Assignment/Project Work

(3) 25% Marks from Group discussions/Quiz, Industrial/academe visit

Practical Evaluation Based on

(1) Performance of work-skill oriented efficiency

(2) Understanding of topic related problems given to them.

(3) Decision Making & drawing the observation & conclusions after the practical work

(4) Record/journal keeping. -

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

We frequently take feedbacks from students on curricular and co-

curricular activities in general. These feedbacks are then discussed in staff meeting and thereafter they are accepted as such or in modified form. As far as, Curriculum development and students on staff matter is concern it is only restricted to activities like UDYOG, NSS Activities, PADYATRA, and Community Life etc.

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

We have alumni association of our department which meets annually. During this meeting alumni share their current job experiences and guide fresher. They also interacts with faculties and also discuss new developments in the field of microbiology. This interacts helps our students to become absorbed in various industries.

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

(1) Shri Amit Shrimali (GCRI, Civil Hospital, Ahmedabad)
(2) Shri Viral Shukal, Assistant Professor, P.M. Patel Institution of P.G. Study, Annand
(3) Shri Vikram Shetty (GSBTM, Gandhinagar)
(4) Shri Shrutikant Nair (Deputy Manager, Haster, Mehsana)
(5) Shri Jaydeep Shah (Q.C. Dept. Haster, Mehsana)
(6) Dr. Dhaval Acharya (Asst. Prof., AMCOST, V.V.Nagar)
(7) Shri Gopalsinh Raol (Asst. Prof. M.B.Patel College, Annand)
(8) Dr. Kunal Shah (Asst. Prof. P.A.Patel College, Annand)
(9) Shri Nirav Bhavsar, (Asst. Prof. M.B.Patel College, Annand)
(10) Shri Vikram Solanki (Manager, Clinical Research Lab, Ahmedabad)

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

- Orientation Course for fresher.
- Cultural and Sports activities.
- Special Program on Disaster management.
- Nursery raising training.

- Lecturers on various topics during UPASANA (both of subject topics &
- value added education)
- Science day Ccelebrations
- Allotment of Dissertation especially to final year of Post Graduate Students.
- Allotment of Project Work especially to Third year of Under Graduate
- Students.
- Workshop on Science Experimental work for primary and secondary students.
- U G Students Taking participations in state level competition of essay
- writing, Quiz, Extempore Speech, Seminar, Group Discussion
- Special Guest Lecture of subject experts are arranged every years in the department e.g.
- Swarnjit Singh (Deputy Director, IMTECH, Chandigarh)
- Jignesh Dave (Medi Planet, Ahmedabad)
- Dr. H.A. Modi (Professor & Head, Life Science Dept., Gujarat University)
- Dr. B.V.Raol (HOD, Dept. of Microbiology, Kalol)
- Dr. Viral Vaidya (Medical Officer, Ayurveda Centre, Ahmadabad)
- Dr. S.R. Dave, (EX.Head & Pro., Dept. of Mmicrobiology, Gujarat University, Ahmadabad)

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

Sr. No.	**Teaching methods adopted by the faculty**	**Note**
1	Lecture	Using various teaching-aids : Over Head Projector, Multimedia Projector (for power point presentation, showing CD and video film with good animation for particular topics)
2	Practical	in structure of curriculum, almost 40-50% credits are allotted for practical work. During the practical work faculties arrange work distribution for student in such a way that students learn by doing.

3	Field Visit/ Industrial Visit	Faculties arrange field visit for getting actual experience of particular procedure/ experiment/ technique to students e.g. blood bank, community biogas plants and its application etc.
4	Survey Work	Faculties arrange small survey for practical of specific practical e.g. 1. Checking the blood group and hemoglobin for newly admitted students 2. Checking water quality of potable water of various villages near to the Sadra
5	Small Project	Faculties arrange small project for particular topic as a part of Udyog e.g. preparation of bio fertilizer, preparation of LED lamps, conversion of cotton into thread by Charkha, Waste Water Treatment.
6	Group Discussion	Faculties arrange group discussion in need based subject area e.g. composting, biogas technology, vermicomposting etc.
7	Demonstration	Demonstration of Energy & Waste Water related Technology
8	Non-Formal Education	Health, Hygiene, sanitation, Environment Education are taught through various games and group discussion

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

- The on hand training is provided to each students for the skill development, through practical work, small projects, dissertation work and field work for sample collection. This approach gives them opportunity to work in a scientific manner with sophisticated instruments, culture & media preparation etc. It becomes useful to the students when they are appointed in any companies for analytical type of work. The Dept. ensures that, the program objectives are constantly met by counselling with past students during the meeting of alumni association every year.

It is monitored by implementing small project, organizing quiz competition and learning by doing with the co-operation of senior students.

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

- Extension activity is the Social Commitment of entire Gujarat Vidyapith
- Students and faculty members are participating in various extension activities such as
  - Pre & Post-survey of biogas technology and facility of low cost sanitation unit in rural arrears. It is informed that more then 1000 Nos. of latrines have been Newly constructed in 29 villages surrounding our college campus
  - Formal & Non-formal Education during padyatra and NSS campaign and regular activities.
  - Analysis of Water and Soil samples of 4 Talukas of Gandhinagar District.
  - Awareness regarding composting at the demonstration unit SADRA

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

- Following activities carried out by the Department which is beyond the syllabus
  - Nomenclature of organic and inorganic compounds
  - Periodic Table
  - Natural indicator
  - TFM Value of soap

Effect of environmental conditions on microbial growth

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

50 Briefly highlight the contributions of the department in generating new knowledge, basic or apply :

Contribution of the department:-

(A) Applied Area:- The department has generated new knowledge which is shown as under

- Use of kitchen waste and human excreta aimed at cleanliness and energy saving. In that context 154 Nos. of biogas plants have been constructed at

The Hotels of National Highway No. 8, From Ajmer (Raj.) to malegaon (Maharashtra) & 212 Nos of biogas plants at farmers house

- Biogas purification Unit developed which results in up to 91% purification of biogas. It is used to protect the engines from the corrosion of its parts due to H_2s.
- In other research areas department has also worked such as textile Industry waste water treatment, anaerobic digestion of different types of wastes materials & cellulosic materials too.
- The applied knowledge in the subject of Microbiology in the department helped the students to take up higher studies in National Universities.
- Blood donation Camp
- Aware the people for construct & use of toilets.
- Aware people for preparing organic fertilizers from all kind of organic waste.
- We provide space to students to understand the technique to prepare marketable products.

(B) Basic Area :-

Students have learned many things during padyatra which is organized by our institute, during 29th Sept. to 2nd October every year. These are as under.

- To understand different types of problems which are faced by the rural communities & also to solve them up to some extent according to its type and other necessary inputs.
- It is useful to develop the communication skill.
- It also helps for personality development to create integrity and to understand difficulties of each other.

The faculty of microbiology has around 3 Ph.D have been awarded and another 4 Ph.D at various levels of completion in the field of Microbiology.

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

Strengths	• Ours is a residential university so it is advantageous for students and staff to carry out academic, research and extension work. after college hours. • We have well equipped laboratories for analysis of raw material as well as products produced by micro-organisms. • We have also good benefit of internet facility with WI-FI & Central Online Library. • Dedicated faculties is proud of our university. • Academic Programme for under graduate to Ph.D. Studies are available on the same campus in the same Department. • The department has been established in the rural area of Gujarat State as the sub-campus of Gujarat Vidyapeeth. The Students from poor socio-economic background are exposed to this advance subject. • The student selection is through entrance examination. • The passed out students are absorbed in renowned industries and few are joining doctoral fellows in other National Universities and abroad. • Conducting DST/ GEDA Project (Major and Minor) within Gujarat on environmental and renewable energy issues.
Weakness	• Shortage of faculty including technical and supporting staff. • Inadequate space for Laboratory room, classroom, seminar hall and Departmental Library. • Due to interior rural area the instrument repair facility is not prompt, due to this our routine and research work suffers a lot. • Being in a rural area, it is difficult to strike private or corporate partnerships and collaborations. • Access to modern facilities /extra curricular activities for the students is limited. • Vehicle for extension activities is required • Transportation facilities to nearby city is very irregular.
Opportunities	• Economically deprived group of society are approached and they get the opportunity to join in academic courses with special scholarship from our university. • Due to location of the live contact with rural societies, we can understand their local specific problems and try to find out it's possible solution ultimately it is useful to uplift their social life and their migration towards urban areas can be reduced. • Can develop good laboratories facilities in the subject Gene expression, molecular genetics and

	environmental Biotechnology. • Consistent healthy working atmosphere and cooperation among the Faculty. • A supportive administration opens new ideas for physical expansion in support of growing research. • Ample scope for different environmental research in the region. • Rich scope for special lectures / interactive sessions from Professors and scholars of other universities and institutions who come for various works to the University. • Training of faculty while attending local, national and international conferences etc. for exposure in different areas of study in the field. • Our students and teacher learn many things during the NSS camp and Padyatra organize by our institute.
Challenges	• It is great challenge for us to uplift the academically poor student who are coming from far tribal villages. • To have compulsory hostel life on the basis of Gandhian Principles, it is again a challenge for the institute to attract the good enough number of students qualitatively and quantitatively • Persuasion for funds to establish a research centre with class lab /library and infrastructure facility. • Submission of major research projects to enroll more students in the Ph.D. programme. • It is badly require to create awareness among the rural masses about health, hygiene, sanitation, renewable energy sources, water conservation and purification solid waste management etc.

52 Future plans of the Department :

1. Enhance the Quality of UG and PG Education it is planned to introduce new work experience Courses
2. To undertake research problems from renewable energy sectors and pollution/ environmental issues in industry and rural areas focusing it for remedial measures.
3. Explore renewable energy and industry tie-ups for research funding
4. Harnessing Information and Technology in the area of renewable energy and solid as well as wastewater treatment.
5. Synchronous mode of lectures from other universities

6. Endeavours to be internationally & Nationally recognized for high quality teaching, research and community services and to contribute to the ever changing technology---centred world of 21st century.
7. The department is dedicated and striving hard to evolve knowledgeable graduates and post graduates-research fellows for careers in industry, government, academic and research institutions.
8. It also aims to be amongst top five departments in the state by 2020.
9. It also aims to be amongst top ten departments in the country by 2030.