Quantification of Manpower and Financial Resources Devoted to R & D in Science & Technology from Higher Education Sector

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Acknowledgement

It is a pleasure to write this acknowledgement to express my feeling of gratitude towards all those who have contributed to the successful completion of this project. It was indeed an opportunity for me to get associated with this project. The work involved in the project was of such a magnitude that no one would have been singularly able to handle it to its logical end. In all respect it was teamwork involving a large number of contributors. I am sure, I will be missing quite a few people, who really deserve a special mention. I hope I shall be excused for such omissions.

The first and foremost I must gratefully mention the NSTMIS Division of Department of Science and Technology, for showing confidence in me, right from the time of Brain Storming Session (BSS) that I was asked to organise. At the outset I would like to thank Prof. D. V. Singh, Chairman PAC. It was his inaugural speech at Roorkee BSS that really gave a clear idea about the project and what is expected out of this exercise. I also thank him for accepting our invitation and being present for the project-monitoring meeting at Pune. I would like to put on record my sincere thanks to Dr. A. N. N. Murthy, the then Advisor and Head of NSTMIS Division, who initiated the process of organising the BSS and thereby developing the national level database on R & D personnel as well as financial resources of Higher Education Sector. The work of implementation of the project started uner the able leadership of Dr. Laxman Prasad, the present Head and Advisor NSTMIS Division. Indeed it was his keen interest in the project work and spiriti of commitment that led us all through the project work to its successful completion. Mr. Parveen Arora, Principal Scientific Officer NSTMIS Div. Who attended the meeting of investigators at Roorkee and PAC meeting at Pune, needs to be thanked for the valuable input he gave during the drafting of questionnaire also revising the same after the pilot survey. Dr. G. J. Samathanam, Director and Scientiest "F", NSTMIS Div. Was very much part of the investing team. If we the inverstigators were also zonal co-ordinators, I suppose Dr. Samathanam will have to be considered a 'national co-ordinator' of this project. He has been painstakingly following the project in all respect. His contributions during various meetings of investigators or those of local advisory committee were constant source of encouragement. His methodical and meticulous approach towards the work deserves appreciation. Whenever I had any difficulty whether it was writing letters of appeal to the heads of institutes or letters of

appreciation to institutional co-ordinators just a phone call was sufficient to make the thing move. I also appreciate his combining the work of different and totally unrelated projects, whenever he could, during his visits to Pune. The sincerity and zeal with which he works certainly have impressed me a lot. I thank him for all the help he has extended to us in this period. From NSTMIS division I must mention at least one more person and that Mr. Rajadurai. He was rather the person to be relied upon for any kind of help we required.

I consider that it was fortunate that the project started in the period while Dr. Vasantrao Gowarikar was the Vice Chancellor of our university. Dr. Gowarikar, who was earlier Secretary DST, was the source of inspiration right from the time when we organised the "Brain Storming Session" in January 1998. When I approached Dr. Gowarikar with a request to permit us to hold the session, he no only gave us green signal but also assured all the support for the same. His inaugural speech at the BSS practically outlined the aims of the project. I am indebted to him for his guidance and encouragement I received.

Subsequently Professor Nigvekar, joined as the Vice Chancellor of University of Pune. He was fully convinced of the need of such a database and hence naturally he took keen interest in the project work. Whenever I approached him in connection with the project work I received all the encouragement and guidance from him. I would like to put on record my sincere thanks to him. Professor Kolaskar, present Vice Chancellor of University of Pune, helped me a lot particularly in the later stage of the project. I extend my sincere thanks to him for all the help and guidance. I would be failing in my duty if I do not mention the help I received from Dr. Chuare, Dr. Sonavane both the former Pro Vice Chancellors of the University. Professor Palsane, Principal Wagh former Directors of Board of College and University Development were always ready to help me in the odd situations.

The members of Local Project Advisory Committee (L-PAC) need a special mention. It would have been practically impossible for me to carry out the work without the support of all the members of the L-PAC. While all of the members have contributed to the discussions during the meetings. I must make a mention of Professor S. C. Gupte, Former Vice Chancellor, University of Pune, Dr. M. G. Lande, Director (Research)

Maharashtra Council of Agricultural Research and Education, Prin. V. K. Wagh, Professor B. K. Kale and Shri. Bhagwanrao Joshi. Dr. Lande accompanied me in the work of data collection from the agricultural universities from Maharashtra. Dr. Lande, being actively engaged in the review of research in the agricultural universities was the proper person to seek advice on the process of quantification. The discussions we had during the tour helped me a lot in analysing the data and reaching some sort of common indices. Professor Gupte, my teacher, has always been a person whom we have been approaching for any difficulty. His vast experience in the field of higher education, and his methodical approach to every small details of the work always guarded me against possible deviations from the objectives of the project. I am deeply indebted to all the members of LPAC.

Professor B. K. Kale, former Head of Department of Statistics, University of Pune also helped us in this project as subject expert along with Dr. (Ms) Rajeshwari, former Advisor and Head of NSTMIS Div of DST. The amount of time these two senior statisticians have spared for this project has no parallel. I consider that it was an opportunity for me to learn a lot from these two during a number of meetings we had. We were the beneficiaries of the vast experience of Dr. Rajeshwari in the field of quantification. She painstakingly went through the draft tables prepared by the project staff. Even while pointing out mistakes he approach was that of a true teacher. She never let any of the junior staff member ever feel left out of the discussions. At times she would stop the seniors and give a patience hearing to the difficulties faced by programmers or field assistants. Professor Kale was always guiding us against enthusiastic use of various statistical methods. He practically worked with the junior staff members as soon as the pilot survey data started becoming available. It was he who gave us the necessary direction for the analysis of the data collected. I am totally indebted to these two seniors from whom I feel I have personally been benefited a lot.

Ever since we started preparing for the project we always were somewhat dubious about the response we may get from the faculty members. The methodology adopted for the project heavily depended on the questionnaire survey and getting adequate response was a big question. However, thanks to the work put in by all the institutional co-ordinators this became possible. It would not be possible for me to

mention all the institutional co-ordinators individually but it was an experience in itself to interact with the senior faculty members of different universities and colleges.

Right from the time of BSS I have received all the co-operation from Professor S. B. Sawant, the former Head of the Department. He agreed to work as the joint co-ordinator during the BSS and subsequently as the Chairman of Local Advisory Committee. The present Head, Professor Jayamala Diddee a special mention. She has been keeping track of the progress of the project even while she was yet to take the charge as the Head. For any difficulty she was always there to help me. I extend my sincere thanks to her. The work of the project would not have been possible without the constant support and the help I received from my fellow colleagues in the department. Also a mention must be made of the wholehearted support I received in the form of secretarial assistance from the non-teaching staff of the department, office of the FAO and the GGMS accounts section.

This acknowledgement will remain incomplete if I do not make mention of Professor Victor Rajamanickam, Head, Department of Earth Sciences, Tamil University, Thanjavur. It was he who first informed me about this subject. I really had no idea about the type of the work Professor Victor was talking about. However looking back I feel it was rather a great opportunity which I got because of him. I do not know what made him to suggest my name as on of the co-ordinators. I only hope that I have lived to his expectations. I would like to put on record my sincere thanks to him.

At the end let me make it very clear that the credit of the work done should go to the members of the investingating team. I do not know what I would have done had not been for the unsparing and wholehearted support by the team. Initially, it was Vidya, Subhada, Anargha and Nikhil who joined the project. Later Sanjay, Chetan and Alpha took up the work. I remember Vidya and Shubhada giving their input in statistical analysis and the programming, or Nikhil and Anargha practically taking up the entire burden from maintaining the accounts to arranging and executing the field visits. It was always Anargha's organisation and Nikhil's execution that helped us a lot in the work of data collection. Chetan after formally joining the project became a dependable asset for the computer programming. Sanjay meticulously maintained the correspondence and track of data collection account. Alpha, rather last to join the project, continued to help

me till the logical end of the project work. She and Chetan had to shoulder the burden of completion of the report. I must say I really enjoyed working with these youngsters. I offer my sincere thanks to all of them.

I consider that if this work has any merit and reason for appreciation the credit for that should go to those mentioned above and many others whom I could not mention, particularly the respondent fellow faculty members from various universities and colleges. I can only be the claimant of the mistakes, errors and omissions. I take all the responsibility for the drawbacks that may have remained in the present work.

SRJog.

Investigating Team

The Team Members who were involved in the present study – from commencement to conclusion and their designation are as follows ;

Sr. No.	Member Name	Designation
1.	Prof. S. R. Jog	Principal Investigator
2.	Mrs. Vidya Yerneni	Senior Research Fellow
3.	Ms. Shubhada Shevade	Programmer
4.	Ms. Anargha Wakhare	Field Assistant
5.	Mr. Nikhil Shejawalkar	Field Assistant
6.	Mr. Chetan Natu	Programmer
7.	Mr. Sanjay Sangale	Field Assistant
8.	Ms. Alpha Dash	Field Assistant

Executive Summary

The quantification process for any kind of resources basically starts with identification of various properties associated with the given resources and translation of these into numeric language. In the present study the resources under consideration are 'manpower' and 'finances'. While most of the information on 'finances' is in numeric language for manpower resources it is necessary to identify various properties pertaining to the activity in which the manpower is to be quantified. The scope of this study is well defined in the sense that it attempts quantification of manpower and financial resources devoted to R & D activity in Science and Technology from Higher Education Sector. The quantification of manpower has been achieved through collection of data – predominantly primary data – from a large number of faculty members from different institutes of higher education. The data collection was carried out through questionnaire survey. Most of the information sought relates to input-output indicators of R & D activity. The quantification of financial resources has been attempted mainly on the basis of data supplied by institutes through the budget documents. The data on manpower relates to the period of three years extending from 1995-1998 and that of financial resources relates to 1997-98 fiscal year. Some of the major findings of the study are as follows.

Manpower resources: Information from as many as 35 universities / institutes and 13 colleges was collected for this at three different levels such as institute – department and individual. These institutes and department belong to four different field of scienes such as Agriculture – Engineering – Medicine and Natural Sciences. By and large the response from institutes from Medical sciences was not satisfactory.

Financial Resources

It is observed that in the Western Zone (Gujarat, Maharashtra, Madhya Pradeash, Rajasthan, and Goa) as a whole the annual total expenditure on higher education sector is of the order of Rs. 907.17 Crores. However, this value relates to estimation obtained on the basis of 35 universities and 13 colleges. While we have taken colleges on sample basis, we had planned for census survey for universities. If we

consider only university level institution then for 35 institutes we have total expenditure on higher education of the order of Rs. 799 Crores.

The expenditures on S & T amounts to Rs. 536.46 Crores which is 67% of the total expenditure. The expenditure of the university/institutes belonging to Natural sciences has been apportion on the basis of S & T and Non S & T departments in different universities. If we add the available data from colleges the component of S & T expenditure in the total amounts to 70%.

The R & D expenditure is arrived at by apportioning part of S & T expenditure on the basis of ratio of research scholars to the total students. This for university level institutions is 38.1% of S & T expenditure and 25.6% of total expenditure. For the West Zone considering the available data these proportions are 27.35% of total expenditure and 38.56% of S & T expenditure.

Of the total expenditure the share by State and Central Government is to the tune of 72% on an average. This is much higher in case of institutes of Agriculture Science (around 80%). The institutes own contribution ranges from 6.6% (Medical Sciences) to 66.3% (Engineering Sciences). However, this higher value of Engineering is due to the unique case of BITS Pilani, which is managed solely as a self-supporting institute. Generally, institute's own share ranges around 25%. This is manly contributed by the student population basically in the form of fees paid. The attempt by institutes to raise funds by way of donations, contribution from industries etc. independently appears to yield a very small proportion of about 3% (in most cases less than 3%). This clearly indicates a low level of interaction between industries and academic institutes.

Manpower

The manpower data are available for 3,622 individual faculty members. One of the major task in the present exercise was to arrive at Full Time Equivalent for research of this number. This was ascertained on the basis of time spent on research by faculty members. However, this value varies according to the field of science and also per said that senior faculty members spend more time on research – despite the fact that they also have to shoulder the administrative responsibilities. If one considers the field of

sciences it is the agriculture that tops the list with an average of around 40% and personnel from field of Medical Sciences have a score around 30% out of 3622 respondent we get about 1277 R & D personnel amounting to little over 1/3rd of total respondents. The R & D personnel or FTE calculated according to designation reveals that these with designation of professors add up to 44.5% and for lecturers this value is about 34%.

As far as the time spent of various activities is concerned it may be observed that about 350 respondents spent more than 60% of time on research whereas about 170 respondents required to devote more than half of the time on administration.

Analysis of R & D activity

In order to analyse the R & D activity in higher education sector the weightages based on certain input - output indicators were assigned to the institutes. Details of these are given in tables 24-41. Some of the salient features are spelled out in this summary. All the indicators are placed on % scale to make them comparable. The % of respondents involved in the activity to total respondents was used for output indicators.

It may be observed that the range of R & D expenditure as % of the total (or S & T) expenditure spreads from 5% to around 55%. Participation of faculty in activities like research supervision, publication, participation in Research For a shows fairly well conditions. However, the participation in some of the activities leaves much room for improvement. These include indicators like Awards, Patents and Participation in advisory committees and development of technologies.

INTRODUCTION

In the beginning of the 20th century there existed a general belief that the materialistic natural resources, such as land and water or raw materials – minerals, etc. would form the limiting factors for the prosperity and growth of a nation. A number of wars were fought to gain the possession of prime, economically rich areas. However towards the end of the century it is now realised and proven beyond doubt that the limiting factor does not go with the materialistic resources; on the contrary, the ability of the people and their attitude towards science and technology will be the decisive factor determining futuristic trends of nation's economy and thereby the growth and prosperity. Any neglect towards science and technology will prove damaging to the nation. We should look at the statement quoted above by Pt. Jawaharlal Nehru* in this context. The paucity of funds and overall low level of economy in the early period of our existence as a nation were not allowed by our leaders to be an excuse for not doing scientific research.

In the present era of liberalisation and globalisation, market forces are increasingly governing the industry. Efficiency, productivity and competitiveness are the prerequisites for survival in the free market economy. *Information technology is no longer just a resource, it is an environment.* (Goyal, 2000)

The need for collecting information

With the advent of computational facilities, enhancing the ability to collect, store and manage the information, the information has reached a level of getting identified as a prime resource. It does not mean that before the information technology was developed, information was not a resource. It has always been a resource ever since man started observations of phenomenon and he could think of relating them to understand the natural processes. However, the scope and collection of natural resources was restricted. Hence the information remained a source only for those who could generate, collect and hold it. In the present era of information technology, people at large have realised the importance of information as a resource and hence they want to have an access to the information. They realize that the decision-makers base their

decision on the information available. Therefore they feel that to have an access to the information on the basis of which their fate is being decided is their right.

There always exists a controversy regarding the role of information in the process of decision-making. It is generally accepted that greater and better information will always help the planners and decision makers to adopt the best possible strategies. However, there are some who hold an opinion that in most of the cases the information is collected not for helping the process of decision-making but for justifying the decision made by policy makers. Whatever may be the controversy, there is no doubt that for any kind of planning process, the necessary and essential input is information. Moreover, it may be generally said that requirement of the quality and quantity of information keeps on increasing at different levels of the planning from local to national. This is because the higher the planning level, the larger is the population affected by a decision. Hence, it is more than necessary that we should collect information, store and process it with modern technology and make it available to the policy makers, the planners and the decision makers. It is in this context one needs to look at the present exercise.

The information technology has three components such as collection, storage and management. The information technology is heavily dependent on the technological development in the field of software engineering. Certainly it is possible to acquire, import these programmes and purchase the hardware required for using these programmes. So technology per se would not become a problem. But generation of information and collection of it from places wherever it is available becomes a Herculean task for a society like ours where diversity in all walks of life is a diagnostic characteristic. The complexity and multifaceted nature of the problems makes it all the more necessary to collect authentic and up to date information. Unless the information is generated with all seriousness and sincerity any kind of planning process would lead to limited success or at times dangerous situations. Hence, careful and dedicated studies must be taken up to generate authentic, dependable and most up to date information about various aspects. The present work is one such an attempt to fill the gap, which unfortunately still exists with respect to the manpower resources.

Need of information on science and technology

The overall economic development of a country heavily depends on the technological advancement achieved by its people. There can be no scope of difference ofopinion regarding the role of science and technology in the stability of the state's economy. Moreover, the globalisation, free trade economy and ever increasing competition have made the science education as well as research in basic science much more relevant than ever before. The international competitiveness in economic markets is responsible for a spur in the pace of research.

About half a century ago there was a general optimism and world at large was considering that R & D in science and technology would solve almost all socio-economic problems. However, the complexity of the nature of problems, diversity of the achievement of the technological advancement by different countries and availability of adequate manpower to carry out research have been responsible for a condition of skewed development with developing countries striving hard to achieve a minimal level of economic development through technological advancement. From 40's to 60's a large number of colonial areas achieved political freedom from their masters. However, the level of education in general and in science in particular, in these areas was crippling at a very low pace and was at a very low level due to the strained economic conditions and overall backwardness of the population at large. Though these countries achieved freedom in political sense, they continued to depend in the fields of education, trade & commerce and technological development on one or the other developed countries. Some of the countries chose to accept import technologies and technical manpower as an easy answer for the development instead of choosing the hard path of promoting education as well as research and development in the field of science and technology. It's only last few decades most of the countries have realized that the importance of self-reliance and need for development of indigenous S & T.

It cannot be ignored that science has helped to make us healthy and wealthy to a degree that could not have been imagined a few centuries ago. It is through science and technology that the principle ingredients of healthy and safer state are found. The scientific research can identify the links between multifaceted problems and hope to give us remedies for that. The creation of wealth has always been linked to science,

accumulation of knowledge, its translation into technology and its application in the field of production.

Research and Development in academic sector

A pursuit of knowledge is carried out by a number of organisations covering industrial sector, various research organization, established national laboratories and also a large number of institutions of higher education. It is being carried out by individual scientists or more often by a group of scientists. The performers of research, may be in any field, are considered to be the cream of society. It is therefore necessary for any country to have full information about its scientists, their areas of interest and their capabilities as manifested through the work they carry out. It is this information that helps understanding the countries potentials so far as the research activity is concerned.

Amongst all the academicians, working as *teacher-scientists* in various universities and other institutes of higher learning, form a distinct group of research performers. Universities have a free atmosphere, wherein, there is a combination of research and teaching, thus not only maintaining contact with fresh young minds, but also creating a proper academic atmosphere for serious and sustained work.

"The process of science evading into economic growth passes through long chain of innovation, it starts with conceiving an idea, trying its feasibility in a laboratory, and then it passes in a field of applied research to convert the idea into process or product. The product or process thus identified then goes to pilot plan production to test the feasibility of the prototype production into mass production. Finally, it goes to industrialization or industrial production ultimately passing into marketing sales and services. The university centres are the places where the first few steps of the links of the chain described above are being developed. It is a dialogue between student and experienced teachers that take place only in the institutes of higher learning. Therefore, it is necessary that any database that is being attempted of R & D personnel, it is essential that the researchers from the academic field form an essential part of it". (Bhide V.G. 1998)

The scope for the contribution from University centres towards R & D in S & T is widening and as such, these centres should not be looked upon merely as the centres of learning but as an important sector with potential R & D component. Taking in to consideration all these points and pressing demand from the various funding and non-funding agencies for generating the manpower data base involved in R & D from this

sector the present exercise has been taken up by Department of Science and Technology (DST) to make available the information regarding the potentials that exist in the country for research and development in Science and Technology. The NSTMIS Division of the Department of Science and Technology has been engaged for quite sometime in collection and management of information on Science and Technology. Over the years it has been collecting information and has been attempting to widen the scope of information collection so as to include every component wherever S & T activity is taking place. By launching the current exercise NSTMIS Division is attempting to cover the thus far left over component of R & D in academic sector. The academic sector is considered as one of the prime sectors of S & T so far as the research performance is concerned. It becomes the prime sector due to the fact that it is this sector which provide manpower for any kind of S & T activity being carried out in any other sectors, whether in industries or at national laboratories. However, it is one of the most difficult sectors so far as the process of collection of information is concerned. This is so due to the fact that the faculty in the academic sector is engaged in two fold activities namely teaching and research, with teaching as its first duty.

METHODOLOGY

Process of Quantification

Collection of information about an object or event necessarily follows a process of quantification. The process of quantification involves identification of various properties of an object and representing them by a set of numbers. These numbers can further be subjected to rigorous statistical analysis to find the associations between various properties or attempt inferences regarding the objects represented by the properties. It cannot be just an act of simple enumeration. The very purpose of quantification is to generate information, which can lead us to knowledge. When one attempts quantification of physical objects the things are rather easy for the simple reason that the measures can be well defined and the objects do not normally object to the process of quantification. In the present exercise we are attempting quantification of manpower resources and when it comes to quantification of an activity by individuals it is still more difficult. However, our scope of manpower quantification is limited at a very small segment of society, which is supposed to be forming an elite class. A great care has to be taken in quantification of those properties, which do not fall within the physical dimensions. The performance of an activity needs to be measured on the basis of its outcome. Hence in the entire process it was found to be the most difficult task to identify input as well output indicators (measures) of R & D activity being performed by individuals.

Brain Storming Sessions (BSS)

However thanks to the discussions during different Brain Storming Sessions (BSS) and contributions by many stalwarts some guidelines on the input – output indicators was available. In order to debate the methodology for quantification of manpower and financial resources, DST conducted for BSSs in different zones. These sessions were held at Thanjavur (Tamil University, October 1997), Pune (University of Pune, January 1998), Guwahati (University of Guwahati, January 1998) and Lucknow (Birbal Sahai Institute, March 1998). For these sessions Vice Chancellor, Directors, Deans of Faculty, Principals of Colleges as well as Registrars and Finance Officers from Universities were invited. Besides these, representatives of funding agencies were also requested to participate in these sessions.

Scope of the Study.

At all these sessions there was a general unanimity regarding the need of national level database and almost all the participating dignitaries congratulated DST for taking up this exercise. There was a general agreement on scope of the exercise and it was decided that the data should be collected on census basis and not on sample basis. However in order to make it manageable it was also decided that while faculty from all the universities and institutes of national importance should be covered on census basis, and information at college level should be collected on sample basis. It was thought appropriate to limit the number of colleges to a maximum of 50 in each zone. Moreover, it was also decided that only those colleges, which have P. G. Department and give P. G. Degree by research should be covered in this exercise. It was further decided to consider the years from 1995 to 1998 as the period for which data collection. It was suggested during BSS that before undertaking the census surveys it would be desirable to conduct pilot survey choosing a few university institutes. This will help the investigators to get an idea about the responses and will also facilitate testing of the questionnaires.

Area under consideration

The West Zone comprised of Five states, namely, Goa, Gujarat, MadhyaPradesh, Maharashtra and Rajasthan. There are as many as 63 Universities/Institutes within this zone. Out of these 48 Universities/Institutes have been included in the present exercise. The following Table gives the distribution of all 63 universities classified according to the state and faculty.

State	Agriculture	Conventional	Institutes of National Importance	Institutes Considered	Others *	Total
Maharashtra	04	13	03	20	05	25
Gujarat	01	08	-	09	02	11
Madhya Pradesh	02	08	-	10	07	17
Rajasthan	02	05	01	08	03	11
Total	09	34	04	47	17	64

*others include Open Universities and universities exclusively for non-S & T faculties, which have not been included in the present exercise

The following table details the Response Status of various University/Institutes and Colleges

Sr. no.		Questionnaire - I			Questionnaire - II			Questionnaire - III			Total		
	University/Institute Name												
	Agriculture Science												
1	Central Institute of Fisheries Education, Mumbai	1	0	0.00	1	1	100.00	35	22	62.86	37	23	62
2	Gujarat Agriculture Univerisy, Anand	12	4	33.33	204	68	33.33	1147	304	26.50	1363	376	28
3	Indira Gandhi Krishi Vishwavidyalaya, Raipur	1	0	0.00	40	1	2.50	281	25	8.90	322	26	8
4	Jawaharlal Nehru Krishi vishwavidyalaya, Jabalpur	1	0	0.00	80	42	52.50	630	175	27.78	711	217	31
5	Konkan Krishi Vidyapeeth, Dapoli	1	1	100.00	30	0	0.00	200	3	1.50	231	4	2
6	Mahatma Phule Krishi Vidyapeeth, Rahuri	1	0	0.00	35	0	0.00	350	3	0.86	386	3	1
7	Marathwada Krishi Vidyapeeth, Parbhani	1	1	100.00	40	10	25.00	240	95	39.58	281	106	38
8	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	1	0	0.00	60	32	53.33	450	435	96.67	511	467	91
9	Rajashtan Agriculture University, Bikaner	1	1	100.00	50	6	12.00	26	38	146.15	77	45	58
10	Rajashtan Agriculture University, Udaipur	1	0	0.00	55	22	40.00	240	107	44.58	296	129	44
	Total (Agriculture Science)	21	7	33.33	595	182	30.59	3599	1207	33.54	4215	1396	33
	Engineering Science												
11	Birla Institute of Technology and Science, Pilani	1	1	100.00	14	3	21.43	152	80	52.63	167	84	50
12	Dr. Babasaheb Ambedkar Technological University, Lonere	1	0	0.00	16	9	56.25	85	49	57.65	102	58	57
13	Indian Institute of Technology, Mumbai	1	0	0.00	26	1	3.85	335	109	32.54	362	110	30
	Total (Engineering Science)	3	1	33.33	56	13	23.21	572	238	41.61	631	252	40
	Medical Science												
14	Gujarat Ayurved University, Jamnagar	1	1	100.00	12	10	83.33	178	94	52.81	191	105	55
	Total (Medical Science)	1	1	100.00	12	10	83.33	178	94	52.81	191	105	55
	Natural Science												
15	Amravati University, Amravati	1	1	100.00	11	10	90.91	33	33	100.00	45	44	98
16	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	1	1	100.00	5	1	20.00	25	14	56.00	31	16	52
17	Banasthali vidyapeteh, Banasthali	1	0	0.00	7	3	42.86	71	48	67.61	79	51	65
18	Barkatullah Vishwavidyalaya	1	0	0.00	6	0	0.00	44	5	11.36	51	5	10
19	Bharati Vidyapeeth, Pune	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0
20	Bhavnagar University, Bhavnagar	1	1	100.00	6	3	50.00	26	21	80.77	33	25	76
21	Deccan College Post Graduate and Research Institute, Pune	1	0	0.00	9	0	0.00	9	6	66.67	19	6	32
22	Devi Ahilya Vishwavidyalaya, Indore	1	0	0.00	9	1	11.11	64	8	12.50	74	9	12
23	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	1	1	100.00	9	5	55.56	79	23	29.11	89	29	33
24	Dr. Harisingh Gour Vishwavidyalaya, Sagar	1	1	100.00	12	4	33.33	114	40	35.09	127	45	35
25	Goa University, Panjim	1	1	100.00	7	6	85.71	75	54	72.00	83	61	73
26	Gujarat University, Ahmedabad	1	1	100.00	11	4	36.36	61	10	16.39	73	15	21
27	Indira Gandhi Institute of Development Research, Mumbai	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0
28	Jai Narain Vyas University, Jodhpur	1	0	0.00	14	0	0.00	234	3	1.28	249	3	1
29	Jiwaji University, Gwalior	1	0	0.00	9	6	66.67	50	34	68.00	60	40	67

30	Maharaja Sayajirao University, Vadodara	1	0	0.00	15	7	46.67	164	139	84.76	180	146	81
31	Maharshi Dayanand Saraswati University, Ajmer	1	0	0.00	9	3	33.33	65	4	6.15	75	7	9
32	Mohanlal Sukhadia University, Udaipur	1	0	0.00	9	0	0.00	85	63	74.12	95	63	66
33	Mumbai University, Mumbai	1	0	0.00	8	5	62.50	140	48	34.29	149	53	36
34	Nagpur University, Nagpur	1	1	100.00	16	11	68.75	67	50	74.63	84	62	74
35	North Gujarat University, Patan	1	1	100.00	4	4	100.00	17	15	88.24	22	20	91
36	North Maharashtra University, Jalgaon	1	0	0.00	6	5	83.33	36	22	61.11	43	27	63
37	Pt. Ravishankar Shukla Vishwavidyalaya, Raipur	1	0	0.00	13	9	69.23	47	43	91.49	61	52	85
38	Pune University, Pune *	1	0	0.00	14	0	0.00	85	74	87.06	100	74	74
39	Rajasthan University, Rajasthan	1	0	0.00	9	2	22.22	145	28	19.31	155	30	19
40	Rani Durgavati Vishwavidyalaya, Jabalpur	1	1	100.00	5	5	100.00	48	39	81.25	54	45	83
41	Sardar Patel University, Vallabh Vidyanagar	1	0	0.00	27	3	11.11	132	31	23.48	160	34	21
42	Saurashtra University, Rajkot	1	1	100.00	9	9	100.00	68	65	95.59	78	75	96
43	Shivaji University, Kolhapur	1	0	0.00	14	10	71.43	101	73	72.28	116	83	72
44	South Gujarat University, Surat	1	1	100.00	4	2	50.00	39	23	58.97	44	26	59
45	Swami Ramanand Teerth Marathwada University, Nanded	1	1	100.00	4	3	75.00	32	24	75.00	37	28	76
46	Vikram University, Ujjain	1	0	0.00	8	4	50.00	53	4	7.55	62	8	13
	Total (Natural Science)	30	13	43.33	289	125	43.25	2209	1044	47.26	2528	1182	47
	Total for Universitites	55	22	40.00	952	330	34.66	6558	2583	39.39	7565	2935	39
Colleges													
	Agriculture Science												
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities												
	Engineering Science												
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	1	1	100.00	5	5	100.00	96	60	62.50	102	66	65
2	Goa Engineering College, Farmagudi	1	1	100.00	7	4	57.14	95	50	52.63	103	55	53
3	Government Engineering College, Ujjain	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0
4	LD Engineering, Ahmedabad	1	0	0.00	9	6	66.67	91	69	75.82	101	75	74
5	Malaviya Regional Engineering College, Jaipur	1	1	100.00	12	5	41.67	95	70	73.68	108	76	70
6	Maulana Azad Regional Engineering College, Bhopal	1	0	0.00	16	1	6.25	125	5	4.00	142	6	4
7	Padre Engineering College, Ponda	1	0	0.00	10	6	60.00	55	48	87.27	66	54	82
8	Shri G. S. Institute of Science and Technology, Indore	1	1	100.00	12	10	83.33	80	75	93.75	93	86	92
9	Walchand Engineering College, Sangli	1	0	0.00	7	3	42.86	50	21	42.00	58	24	41
	Total (Engineering)	8	4	50.00	78	40	51.28	687	398	57.93	773	442	57
	Medical Science												
10	Goa Medical College, Panjim	1	0	0.00	13	5	38.46	100	55	55.00	114	60	53
	Government Medical College, Surat	1	0	0.00	10	0	0.00	65	0	0.00	76	0	0

11													
12	J.L.N. Medical College, Ajmer	1	1	100.00	25	10	40.00	146	118	80.82	172	129	75
13	Medical College, Rewa	1	0	0.00	21	11	52.38	70	21	30.00	92	32	35
14	MG Medical College, Indore	1	0	0.00	14	12	85.71	80	55	68.75	95	67	71
15	S.P. Medical College, Bikaner *	1	1	100.00	13	11	84.62	65	43	66.15	79	55	70
	Total (Medical)	6	2	33.33	96	49	51.04	526	292	55.51	628	343	55
	Natural Science												
16	Government Girls College, Bhopal	1	0	0.00	3	0	0.00	25	0	0.00	29	0	0
17	Government Girls College, Rewa	1	0	0.00	4	0	0.00	20	16	80.00	25	16	64
18	Government College, Ajmer	1	0	0.00	4	0	0.00	28	0	0.00	33	0	0
19	Government College, Bhilwara	1	0	0.00	5	0	0.00	30	0	0.00	36	0	0
20	H & HB Kotak Institute of Science	1	0	0.00	3	0	0.00	10	6	60.00	14	6	43
21	Insitute of Science, Nagpur	1	1	100.00	10	6	60.00	57	50	87.72	68	57	84
22	Kelkar-Vaze College, Mumbai	1	0	0.00	5	4	80.00	40	22	55.00	46	26	57
23	Madhav Science College, Ujjain	0	0	0.00	0	0	0.00	0	0	0.00	0	0	0
24	Model Government College, Rewa	1	0	0.00	7	1	14.29	57	13	22.81	65	14	22
25	M.G. Science College, Ahmedabad	1	0	0.00	5	2	40.00	40	27	67.50	46	29	63
26	N.M Science College, Patan	1	0	0.00	1	1	100.00	10	8	80.00	12	9	75
27	Nagar college, Ahmednagar	1	1	100.00	8	8	100.00	51	50	98.04	60	59	98
28	Pratap College, Amalner	1	0	0.00	5	0	0.00	45	22	48.89	51	22	43
29	P.T. Sarvajanik College, Surat	1	0	0	6	0	0	40	0	0	47	0	0
30	Rajshri College, Alwar	1	0	0.00	3	1	33.33	26	14	53.85	30	15	50
31	Ramnarain Ruia College, Mumbai	1	1	100.00	4	4	100.00	50	33	66.00	55	38	69
32	S. P. College, Pune *	1	0	0.00	2	0	0.00	26	21	80.77	29	21	72
33	St. Xavier's College, Mumbai	1	1	100.00	10	8	80.00	83	44	53.01	94	53	56
34	Y.C. College, Karad	1	1	100.00	10	9	90.00	50	43	86.00	61	53	87
35	Y.C. Institute of Science, Satara	1	0	0.00	8	8	100.00	70	68	97.14	79	76	96
	Total (Natural Science)	18	5	27.78	100	52	52.00	733	437	59.62	851	494	58
	Total for Colleges	32	11	34.38	274	141	51.46	1946	1127	57.91	2252	1279	57
	Grand Total	87	33	37.93	1226	471	38.42	8504	3710	43.63	9817	4214	43

Another important decision that was taken at these sessions was that the data collection should be carried out through questionnaire survey. The data, should be collected at three different levels such as 1) the institutes 2) P. G. departments and 3) individual faculty members. While designing the project proposal it was realised that we should have a contact person at each institute through whom the data can be collected and contacts can be established with the faculty at large. DST approached the Vice Chancellors and Directors with a request to identify such persons. Such persons, preferably senior faculty member, have been designated as "*institutional co-ordinators*". The questionnaire surveys need a good deal of follow up action and personal contacts. It was thought appropriate to have support of *institutional co-ordinators* in this work. It is obvious that it would have been impossible for the PIs to establish personal contact with each and every member of faculty from different institutes. Hence the role of institutional coordinators became very crucial in the entire exercise.

The Questionnaires

The first and most important work of the project before any other activity could be taken up was to design questionnaires for the survey. Three sets of questionnaires were drafted and the same were discussed at Lucknow BSS as well as at subsequent meetings of the PI's.

Questionnaire I (Q1) meant for institute as a whole sought information about institute's status, total manpower and details of financial resources & heads of expenditure. Considering the differences in the functioning of PG Colleges and university institutes it was decided to have separate questionnaires (Q1) for these two units. Moreover for the faculty of medicine a separate questionnaire (Q1) was designed.

Questionnaire II (Q2) was meant for the P. G. department. The purpose of this questionnaire was to obtain information of infra-structural facilities available with the department and the level of research performance achieved by the faculty as a whole. This also covers queries such as intake capacity, mode of selection of students at PG as well as research levels.

Questionnaire III (Q3) was meant for individual faculty members. Besides personal information it covers various aspects pertaining to input and output indicators of research. The queries included in this set can be

basically grouped into two categories such as input indicators and out put indicators. The output indicators can further be grouped into 3 categories, such as 1) Research work done. 2) Research atmosphere at the institute (as expressed by the participation by faculty in professional and other bodies) 3) research recognition (as displayed by the achievements of the faculty through awards, patents etc.). In all about 20 queries relate to output indicators.

The work component of the project was carried out in four phases.

- *Phase I: Preparatory work*: This included the appointment of institutional co-ordinators, finalization of faculty list. Designing of questionnaires
- *Phase II: Pilot survey*: This also included analysis of data obtained through pilot survey, revision of questionnaires and preparation of computer programme for data entry.
- *Phase III: Census survey*. This covered data collection – data entry – writing of programme for data analysis – finalization of output tables.
- *Phase IV: Data Analysis:* and report writing.

Methodology for data analysis

The data collected basically relates to two aspects such as i) financial resources and ii) manpower resources. The methodology for analysis was finalized in a meeting of PI's of South and West Zone along with experts in the field.

Calculation of Financial Resources

For calculation of Financial Resources, two questions were designed to be answered at institute level (Q1), namely, Q1 = q3.1 and q3.2. The q3.1 requested the institutes to provide the total expenditure incurred by the institute as a whole under various budget-heads, such as, Building, Staff Salary, Equipment, etc along with the sources of grant such as central government, state government, donations etc. The q3.2 sought information on departmental break-up wherein each department in Science and Technology field was required to furnish details about their departmental expenditure under sub-heads such as, laboratory, maintenance, contingency, salary, etc. in two categories, i.e., Intra-mural and Extra-mural.

Unfortunately, the response for these questions was not up to the expectation, and in many cases the data provided was appearing to be erroneous. Hence, it was decided to make use of secondary source of data, wherever possible. Therefore, budgets for a base year (1997-98) were collected from the institutes, the figures presented in the tables are the values extracted from the budgets.

The procedure adopted

To find out the total Research and Development expenditure incurred by West-Zone the following procedure was used.

Questions considered:

- Q - I) q 3.1, q 3.2 (Wherever available)
- Q - II) q 2.5 (No. of student intake in each department)
- Q - III) q 1.1.4 (Basic Pay), q 1.4.4 (Time spent)

The Questionnaire 1 was filled out with values extracted from the budget, maintaining the same budget sub-heads. From here onwards the method followed either of the two paths, depending on the Field of Science in which the institute was active.

i) *S & T expenditure for field Natural Sciences:*

An institute in Natural Science, has S & T departments as well as non-S & T departments. The total expenditure incurred by the institute therefore reflects expenses borne by non-S & T departments as well as S & T departments.

Calculation of S & T Expenditure

The maintenance expenditure of the institute takes care of the whole institute; therefore it is necessary to find out the share of S & T departments in it. This was done by finding the ratio of S & T departments against total departments in the institute, as it is thought that the amount of effort taken by the administrative staff will be equally distributed for each department. We will call this value as STExp1 for ease of reference.

From the budget documents, department level budget is extracted and it is filled in the format of q3.2. The sub-heads in this format are laboratory, salary, maintenance, contingency, seminar, etc. The total of

expenditure under these budget heads was taken as STExp2. The total S & T Expenditure is then, the addition of the two components, STExp1 and STExp2.

ii) *S & T expenditure for other fields of sciences*

In case of institutes belonging to field of science such as Agriculture, Medicine and Engineering the question of apportioning of ST expenditure from total becomes irrelevant, as these institutes do not have non-S & T departments. Hence, their total expenditure is taken as S & T Expenditure.

Calculation of R & D Expenditure

From the S & T Expenditure the budget heads other than salary are totalled and then are reduced using the ratio of research scholars against total students. This we will call as RDExp1. The justification for using the ratio is that, PG students as well as the research scholars both use the resources of the departments. We are interested in finding out the portion of resources devoted to research; hence the ratio of research scholars against total students is taken. It is assumed that both the type of students uses the resources in equal intensity. The salary component of the department is then apportioned using the average time spent on research by the faculty of that particular institute. This we will call as RDExp2. The total R & D Expenditure is the total of the two components RDExp1 and RDExp2.

Examples

Example I) University of Goa – Panjim

University of Goa, is a natural science university, based in the state of Goa. It has Science Department as well as Non-science departments. Out of the total of 17 departments 8 are from science and technology field.

The total maintenance budget of the university if Rs. 13.9 Crores, to calculate the STExp1 value, we apply the ratio of S & T Departments against

non-S & T Departments, which is 8 / 17 (S & T Department / Total Departments). Hence the value of STExp1 comes out to be Rs. 6.54 Crores.

From the internal budgets of all the S & T departments it was found that the total amount spent on various heads is as follows.

i) Laboratory – Rs. 0.20 Crores
ii) Salary – Rs. 0.42 Crores
iii) Maintenance – Rs. 0.15 Crores
iv) Contingency – Rs. 0.10 Crores
v) Seminars – Rs. 0.03 Crores
vi) Others – Rs. 0.21 Crores

The total is Rs. 1.11 Crores. This is STExp2. Therefore the total S & T Expenditure for the university of Goa is Rs. 7.65 (6.54 + 1.11) Crores.

Now, to calculate the R & D Expenditure, we take the total of all the budget-heads other than the salary and apply the student-scholar Ratio to it. The total no. PG students in University of Goa from S & T Departments, are 132 and Research Scholars are 25. Hence the ratio is 0.16 (Research Scholars / Research Scholars + PG Students). Applying this ratio we get the RDExp1 which is Rs. 1.21 Crores.

To calculate the second component, we take the salary field and apply the FTE (Research) to it.

Salary budget – Rs. 2.85 Crores

FTE (Research) – 39%

Therefore, RDExp2 is equal to Rs. 1.11 Crores. R & D Expenditure for university of Goa, therefore is, RDExp1 + RDExp2 = Rs. 1.21 Crores + Rs. 1.11 Crores = Rs. 2.32 Crores.

Example 2) Jawaharlal Nehru Krishi Vishwavidyala – Jabalpur

Jawaharlal Nehru Krishi Vishwavidyala – Jabalpur is an agriculture university catering to the needs of the state of Madhya Pradesh. Since, the University is fully S & T university, the question of calculating the S & T

Expenditure does not arise, as the Total Maintenance Expenditure of the university will be termed as S & T Expenditure.

Therefore, the S & T Expenditure for JNKV – Jabalpur is the same as its Total Maintenance Expenditure – Rs. 55.18 Crores.

While calculating it's R & D Expenditure, the ratio of student-scholar is taken into consideration.

Scholars – 65

PG Students – 59

Hence, the ratio comes out to be 0.53 (Research Scholars / Research scholars + PG Students), therefore the first component of R & D Expenditure is Rs. 14.24 Crores(RDExp1).

The Full Time Equivalent of JNKV – Jabalpur is 41%. This is applied to the salary field of the budget, which gives a total of Rs. 16.12 Crores (RDExp2).

Therefore, the total R & D Expenditure of JNKV is Rs. 14.24 Crores + Rs. 16.12 Crores = Rs. 30.36 Crores.

Calculation of Full Time Equivalent (FTE)

For the purpose of calculating the FTE the following procedure was used.

Questions taken into consideration:

Q 3 – q1.4.4

The question q1.4.4 asks the faculty member about average time spent on different activities, such as, Teaching, Research, Administrative, Extension, Training etc. The time spent on Research and Extension is considered for determining FTE. e.g., if a person spends 40% of his time on R & D then he is counted at 0.4 FTE. Thus for a department if the total number of faculty members is say 20 and the total of time spent by them averages to 40% then the total FTE of manpower in the department is said to be 8 (i.e. 40% of 20). The norms defined by UNESCO are being used in the present exercise in order to facilitate comparison. As per UNESCO norm, if an individual spends any thing over 70% on R & D then he is equated to 1 FTE. However, this seldom happens in case of academic institutions where teaching is prime activity. Only the scientists as full time research staff as well as the full time scholars are assigned FTE = 1.

The values filled against the question (q1.4.4) are stored in a table. This table holds values for all the respondents. The database is then grouped by University, with each value of time-spent accumulated as a total for the whole university. The total time-spent on different activities is then divided by hundred. This gives average time-spent in percentage on different activities. The average time-spent on Research + Extension is considered to be FTE of the university as whole. The value of FTE ascertained for a given institute is considered as the R & D personnel available with the institute.

Examples

1. For the North Gujarat University, the total number of respondents was 15, the total of time spent on research for these respondents was 603, which reduces to 6.03. Since, we can not envision R & D Personnel (FTE) in fraction, it is rounded off to nearest integer, hence the FTE / R & D Personnel for North Gujarat University comes to 6 out of total of 15 respondents.

2. For the Gujarat Agriculture University, the same procedure was used, the major difference, with respect to all the agriculture universities was that they have a modest Extension education component, therefore it also played a crucial role in FTE calculation. For Gujarat Agriculture University, the total number of respondents including all four campuses and colleges was 304. The total time spent on research by these faculty members was 10065, which was reduced to 100.65. The time spent on Extension was 2735, which was reduced to 27.35. Since FTE of research is considered to be addition of Research and extension education activity, the consolidated FTE / R & D Personnel figure for Gujarat Agriculture University comes to 128 out of a total of 304 respondents.

Similarly the FTE figure for remaining universities and other institutes including colleges was arrived at.

Procedure for Output Indicators

In order to get some quantification about the research performance by faculty members some queries as output indicators have been included in the questionnaire (Q3). Certain indicators could be considered as to be less frequently occurring while others one finds have high response. There are about 15 indicators for which generally response is quite good whereas remaining ones can be considered as indicators having

low response. At different BSS the question of an individual to be called a researcher was debated at length and a number of criteria were suggested. In the meeting of PI's, subject experts along with DST representative it was agreed upon that attempt should be made to develop "Directory of research personnel" at the national level. It was agreed upon that an individual whose positive responses add up to 15 (out of 20) may be considered for entry in the directory of R & D personnel. Moreover, it was also decided that those who have positive response against any one of the indicators with generally rare response should find a place in the proposed directory.

While presenting tables, in order to make comparison possible, the performance of respondents is given in the form of a ratio such as number / year / faculty. However, only the faculty involved in the given indicator is considered and not the total respondents. Thus for example numbers of articles published by respondents in three years are added up and the value is divided by years and the faculty involved. For indicators of rare occurrences the percentage of respondent faculty is given in a separate column.

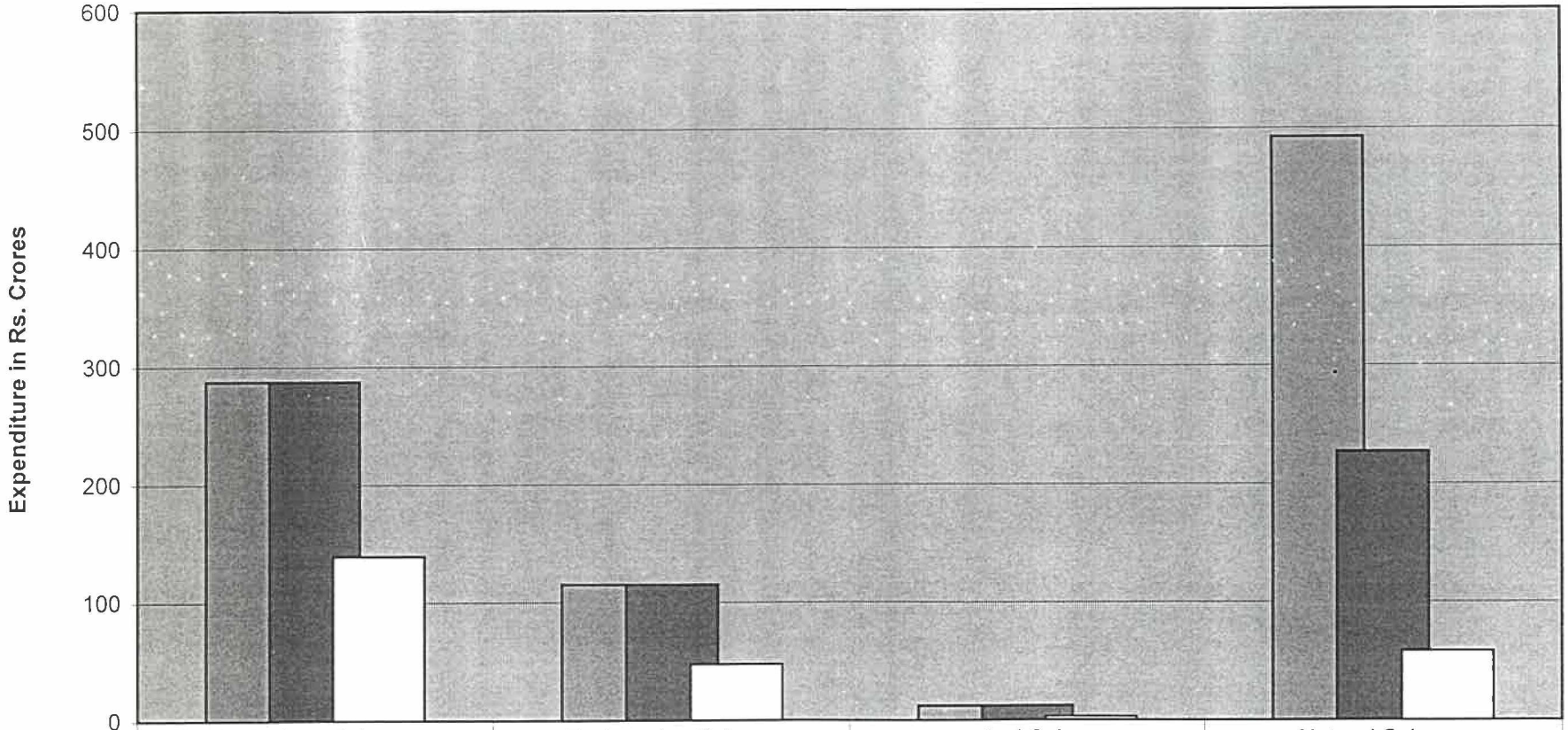
Financial Resources

For any activity certain amount of energy input is always essential. These energy inputs can be in a form of human efforts and the instrumental support for the workers to carry out the work. Either of the two individually cannot be the substitute for the other. Any instrument, equipment etc is designed and developed in order to enhance the scope of human censors and work organizations. Hence, it is essential that the inseparable two components of an activity in the form of manpower and the infra-structural facilities are required to be taken care of by the planners and the people in the think tank. This is more so in case of field of education wherein the activity is supposed to generate the manpower, which will be participating in the future in the development programme.

Time and again the education is considered to be non-productive activity or the one whose returns become available at a distant future. Maybe, because of this reason the education field and moreover within that the R & D activity, becomes the first victim of curtailment of the financial allocation under the guise of economic measures. While, it is true that the primary education should have the topmost priority in the planning process it is absolutely absurd that such priority should be thought of at the cost of R & D and higher education.

The research in Universities and Colleges, or for that matter in the academic sector by and large, is generally of basic nature and there would be no scope of difference of opinion that the basic research forms the basis of experimental or applied work. The hue and cry about dwindling number of intelligent students coming forward to the basic sciences is a common thing. The falling graph of the basic research is an alarming situation for society because unless there is any basic research there would be hardly anything available to be applied and experimented with and transferred into the technology. Therefore, there is a dire need of making extra effort to attract good students towards the basic sciences and also to see to it that the manpower engaged in the higher education sector does not just end up in the teaching activity but carry out some research however little it may be, in order to develop the research ethos in the Institute. In the present survey, emphasis was given on three aspects such as financial resources, manpower resources and a quantitative measure of research performance by the faculty.

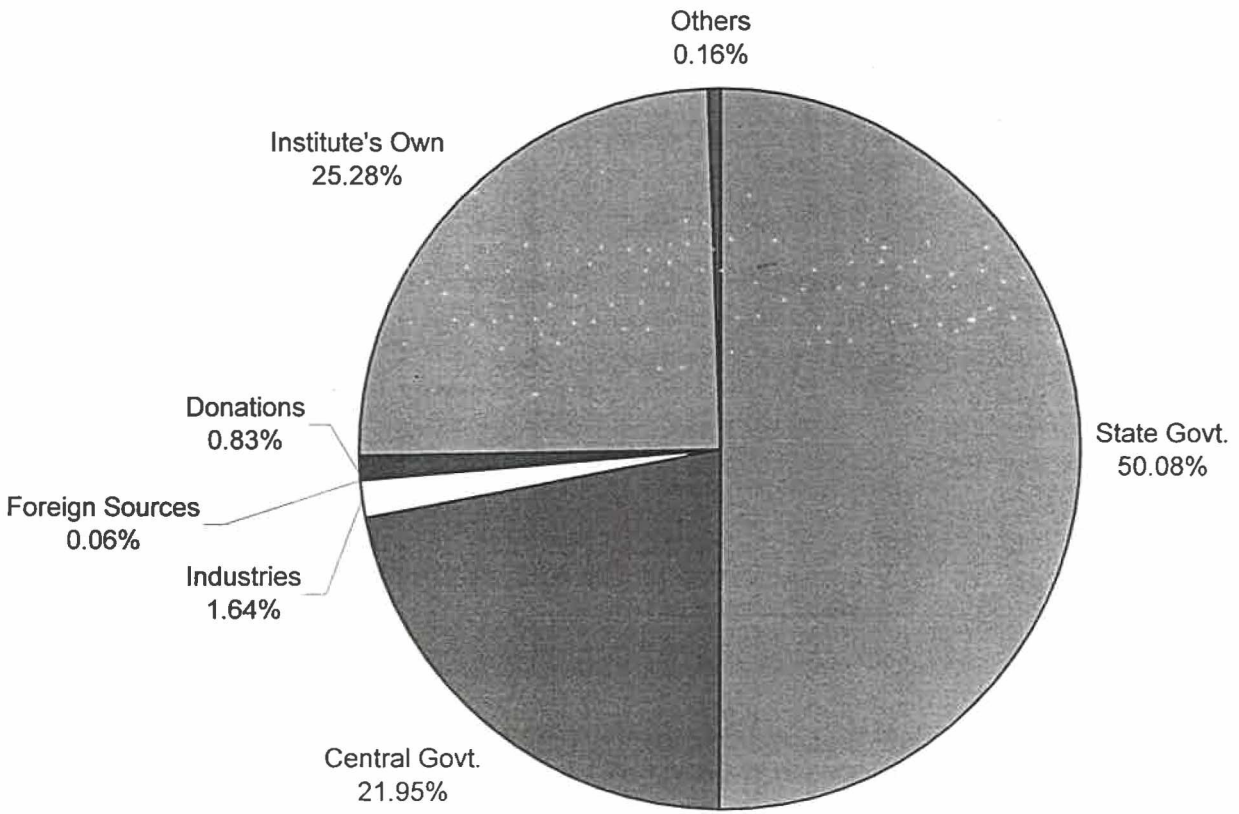
Comparison between Field of Science (Expenditure)



	Agriculture Science	Engineering Science	Medical Science	Natural Science
Total	287.61	114.96	12.28	492.32
S & T	287.61	114.96	12.28	226.95
R & D	138.96	47.57	3.08	58.49

Field of Science

Expenditure Budget by Source of Grant
Rs. 907.17 Crores



The financial resources for academic institutes chiefly come from the grants from Central or State governments, with a small proportion of the resources generated by the institute itself. A glance at the table – 6 clearly indicates that on an average the proportion of institute's own sources is in the range of 25%. The total expenditure of the Western Zone based on the respondent institute is little over Rs. 800 Crores. It may be seen that a good deal of proportion of this is claimed by the agricultural universities (22%). The maximum allocation in any of the universities is of the order of Rs.107 Crores in case of Dr. Panjabrao Deshmukh Krishi Vidyapeeth. Whereas, it as low as Rs. 4.35 Crores for North Gujarat University. Barring the agricultural universities which have by and large higher outlay the average budgetary provisions of Engineering, Medical or Natural Science Institutes / Universities is Rs. 18.2. However, out of this 21 Institute / University centres only 8 Universities record average budget provisions whereas rest of 20 Universities is below average conditions. The maximum budgetary outlay of non-agricultural universities is Rs. 48.6 Crores (Rajasthan University, Jaipur closely followed by University of Mumbai, Mumbai Rs. 47.55 Crores).

On the other end we have the University like North Gujarat, Dr. Babasaheb Ambedkar Technological University, Rani Duragwati Jabalpur, have their annual budgets less than Rs. 5 Crores, which is much less than some of the colleges in the Western Zone. However, these Universities just mentioned are quite young in age and are still in stage of infancy so far as the infrastructure development is concerned. It may be said that University centres with budgetary allocation in the range of Rs. 5 -10 Crores are striving hard to reach an expected levels those with budgetary allocation of 10-20 may be considered as moderately established ones. The universities having budgetary allocation more than Rs. 20 Crores are fewer but are the well reflected in the proportion of the budgetary allocation towards S & T and R & D activities.

A glance at the table – 6 of sources of fund reveals that of government support for all the universities and colleges put together is in the order of 72%. University own sources account for 25% and rest others such as donations, funding from Indian or Foreign sources contribute together to a meagre proportion of 3%. This clearly indicates heavy dependence of education on government grants. The column of allocations from industries is almost blank in case of agricultural universities and is just spotted with a few

entries only in case of a few professional institutes. In the zone as a whole it amounts to about 1.6%.

A table of heads of expenditure – 5 gives some interesting figures. Of the total expenditure around 53% is spent on salaries to the staff. However, this is an average value for the zone as a whole. It ranges between 59.5 to 50.20%. The next important head of expenditure is neither equipment nor books and periodicals, but it is the maintenance. The average value for the zone as a whole is 11.0% ranging between 9.87 to 25.5%. Under the head of printing, which normally includes printing of question and answer sheets for examination apart from other sundry printing required of secretarial nature; as much as 6.9% of the total share is spent and if one considers books and equipments to be mainly academic in nature they get a share of meagre 4.20%. There is a sizable percent given to building. However, its not proper to comment on this as in many cases expenditure on building in any specific year largely depends on availability of development grants and does not form the part of annual (recurring) expenditure.

S & T and R & D Expenditure

For quantifying the R & D expenditure in S & T it was necessary to segregate S & T expenditure of various institutes out of the total expenditure. However, this was required to be worked out only in case of University, Institute / Colleges, which have faculties other than science. For the institute under the field of Science, Agricultural, Engineering and Medical the S & T expenditure is considered same as the total expenditure. This is so because these institutes are purely S & T Institutes. Therefore any expenditure incurred by these institutes has to be considered as S & T expenditure. In case of other university and institute imparting knowledge in different field of science the proportion of S & T expenditure was obtained as mentioned in previous chapter.

Table 2 records S & T expenditure of various Universites, College and Institutes. Of the institutes of natural sciences the range of percentage of S & T to total is from 68 to 28%. Some of the University centres like Swami Ramanand Teerth Marathwada University, Nanded; Amravati University, Amravati; Sardar Patel University, Vallabh Vidyanagar; have the percentage over 60. Of these Sardar Patel University of Vallabh Vidyanagar is known mainly for the S & T faculties though the other departments also exist. In case of others being the younger universities their expenditure on Science and

Technology is higher as they are in initial stage of infrastructural development. With the passage of time once the minimum required capital expenditure on Science department is incurred the differences between S & T and non S & T departments starts getting stabilised. Moreover, in case of well-established universities a considerable amount of extramural support becomes available through the project grants and hence the available allocations are then diverted to non S & T departments. Proportion S & T expenditure in such university falls down to an average level of 35-40% or in some cases even lower than this. In case of Institute of purely S & T subjects as mentioned above the question of allocation doesn't arise. However, it may be noted that the average percentage of S & T expenditure from amongst the field of natural science is 46%. If the institute of pure S & T faculties are added this gets raised to 64.5%.

R & D Expenditure

The expenditure on R & D in a way can be considered as an index of a development of an institute. The academic institute though being primarily engaged in teaching carry out a good deal of research and that too at much lower cost than many of the so called research institutes. One of the reasons that favour the research activity in the university is the average age of the incoming student. It is no wonder that many scientists prefer to be associated with the academic institutes as they get an opportunity to interact with younger people bubbling with enthusiasm and full of curiosity in mind. For a real researcher in an academic institute the lack of infrastructure may be a hurdle but more than often it is the ethos and atmosphere of the institute that makes him under rate the problems of infrastructural facilities. Moreover, these are the institutes and centers where the scientists are being developed which would be the manpower for research centers and institutes.

Unfortunately, the R & D in institutes of learning at times gets the last priority in terms of budgetary allocation. R & D activity in most of the institutes is funded by various funding agencies. The fund for research becomes available from extramural resources in the form of fellowships obtained by the research student, research projects sanctioned by the different agencies of central or state government and consultancy projects, with or without research component, financed by corporate sector. Quantification of this type of funding is rather easy and direct. Knowing the total budgetary allocation for the project the extramural funding can be ascertained. What is more difficult is the quantification of

Intramural funding. There are very few exceptional Institutes where separate allocations for research out of university fund are given in the budgetary document in the form of departmental research. It is not the amount that is important here but the provision of Intramural funds for research speaks volumes for the research ethos in the institute. Of late we find that due to the provisions for minor research project by UGC there is a general increase in terms of the research activity in the university as well as colleges and particularly amongst the young teacher scientists.

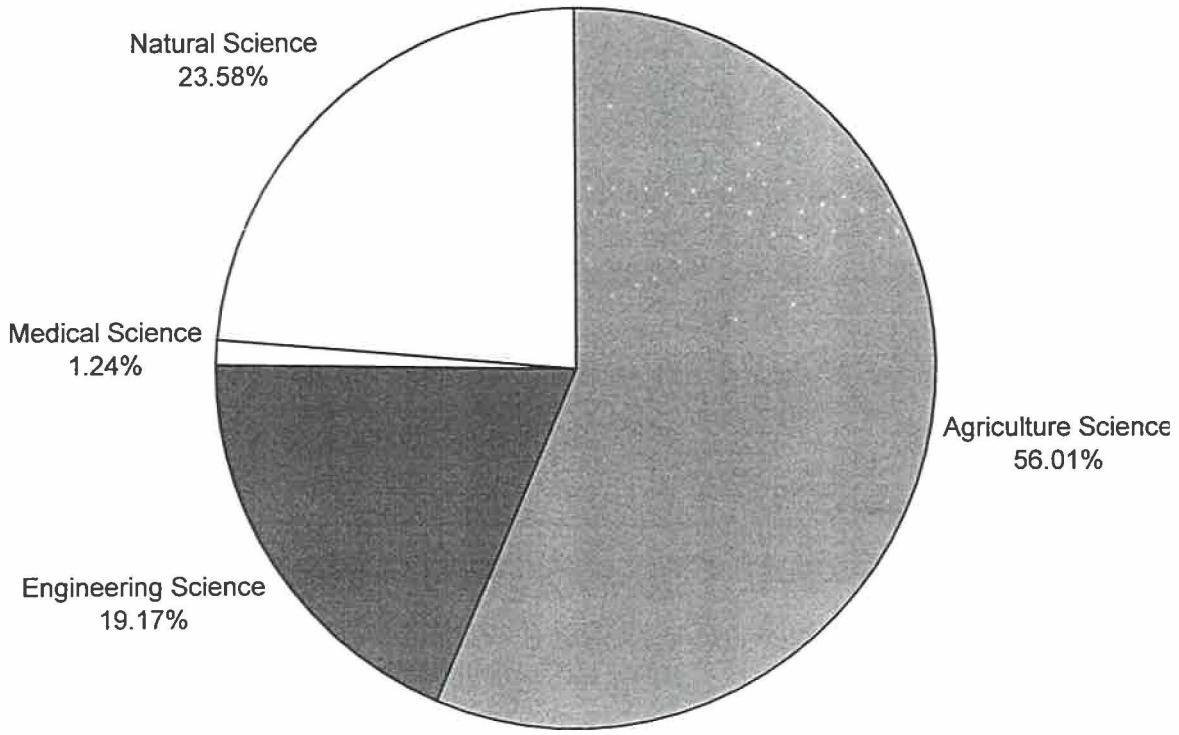
The total R & D expenditure for the West Zone is around Rs. 248.1 Crores. This expenditure is excluding extramural expenditure made available to the universities by various funding agencies particularly in case of university of natural science. This amounts to nearly 27% of the total expenditure and 38% of S & T expenditure. Taking into consideration West Zone as a whole, it may be seen from the table - 3 that almost 56% of this is contributed by agricultural sector. The range of R & D expenditure to the total expenditure is too wide with 57% in case of Gujarat Agricultural University to 5.27% in case of SRTMU, Nanded. From amongst the universities of natural sciences generally it may be said that the lower proportion of R & D expenditure is found to be associated with younger universities though it is not a general rule.

The highest percentage of R & D from natural sciences is found in case of Amravati University, though value wise it is in case of M. S University Vadodara, which, spends around Rs. 5.93 Crores on R & D activity. The proportion of R & D to S & T expenditure would be more realistic than its proportion to total expenditure. This is for the fact that R & D expenditure on other faculties is not taken into consideration hence a statement saying that a given University spends a certain amount of R & D would be erroneous.

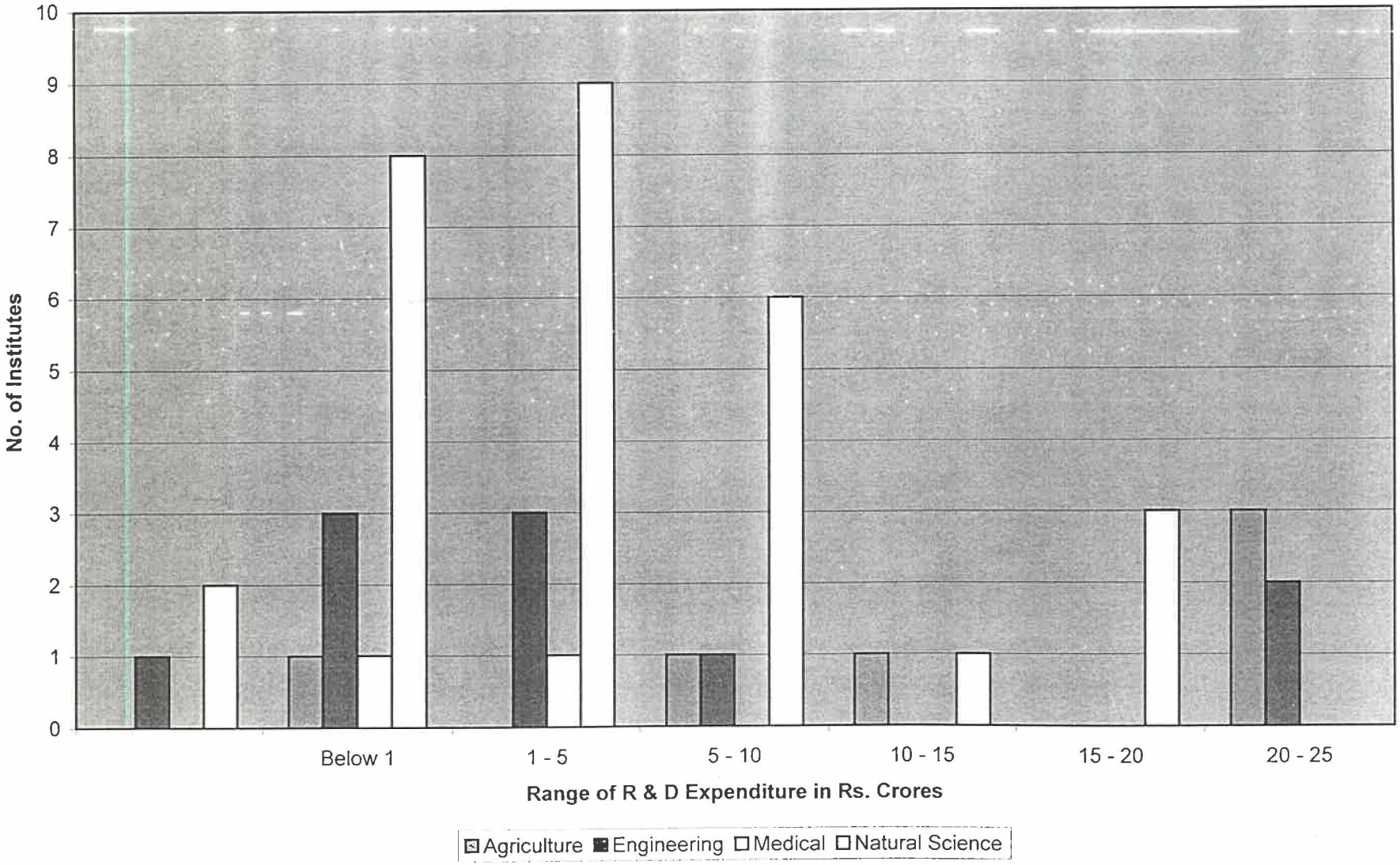
The percent of R & D with reference to S & T in case of Traditional university ranges from 7.7% to 42.3%. On an average the universities from science faculties are spending 7% of S & T expenditure on R & D activities. Almost 1/4th of the S & T expenditure of the university is devoted to R & D by the universities from the field of natural sciences. It may also be noted this is intramural expenditure.

The university from Engineering faculty comes next with 38% and agricultural universities top the list with 56%. In case of colleges, Colleges of Engineering faculty

R & D Expenditure Distribution by Field of Science
Rs. 248.1 Crores



Distribution of Institutes No. by Range of R & D Expenditure



spend around 42% of their share on R & D activity whereas, it's around 5o% for medical colleges. However, it may be clearly mentioned that the database for medical sciences in terms of universities and colleges is too small to make any statement with any certainty.

The R & D expenditure obtained has 2 components such as salary and non-salary component. Of the total Rs. 248.1 Crores the salary component is around Rs. 99.73 Crores, whereas non-salary component is Rs. 148.39 Crores. However, it may be noted that the salary component included here refers to apportioned salaries of the teachers scientists and not the total salary. These shares are different in different fields of sciences. In case of agriculture salary component is 39% for Engineering Sciences it is 32%, University of Natural Sciences has 37%. In case of Colleges the salary component is 45% and for colleges from natural sciences it is 43%. Thus, it appears that expenditure on non-salary component, which is devoted for infrastructural development is much less in case of natural sciences as compared to professional sciences. The table - 8 giving recurring and non-recurring component of expenditure also reveals the similar picture that amount available for infrastructural development are quite low such as 30% in case of agricultural, 28% in case of Engineering and 23% for Natural Sciences and even less in case of most of the colleges. This reveals the fact that resources available for infrastructural development appears to be far too less and this needs to be taken a serious note of by the funding agencies.

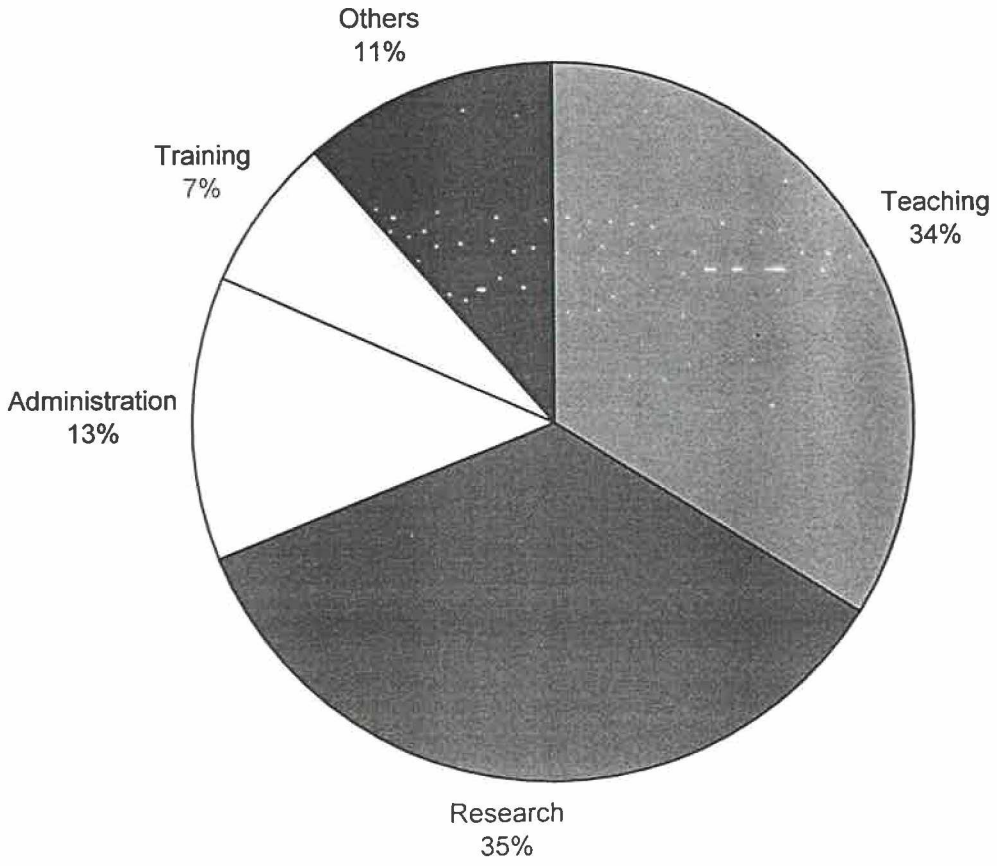
Manpower Resources

The quantification of manpower engaged in the national research institutes is relatively an easy task wherein, the persons are appointed as scientist and carrying out R & D activity is their primary duty. In the academic sector, which, are known to be the major performer of research the story is somewhat different. Here, individuals are appointed as teachers and therefore teaching becomes their first duty. However, teachers in institutes of higher learning carry out some amount of research work. A teacher, cannot be a successful teacher unless he is curious himself about the subject he is handling. In order to be in the know of latest development in the subject it is essential for the teachers not only to be acquainted with the research through the periodicals but also through carrying out research to the extent it is possible and permissible with the help of the available infrastructure. Also the young generation with whom he is constantly interacting becomes a major factor inspiring him to carry out some research. However, the fact that personnel in academic institutes have to play duel role of teaching and performing research, itself is a problematic factor in ascertaining the manpower in R & D activity.

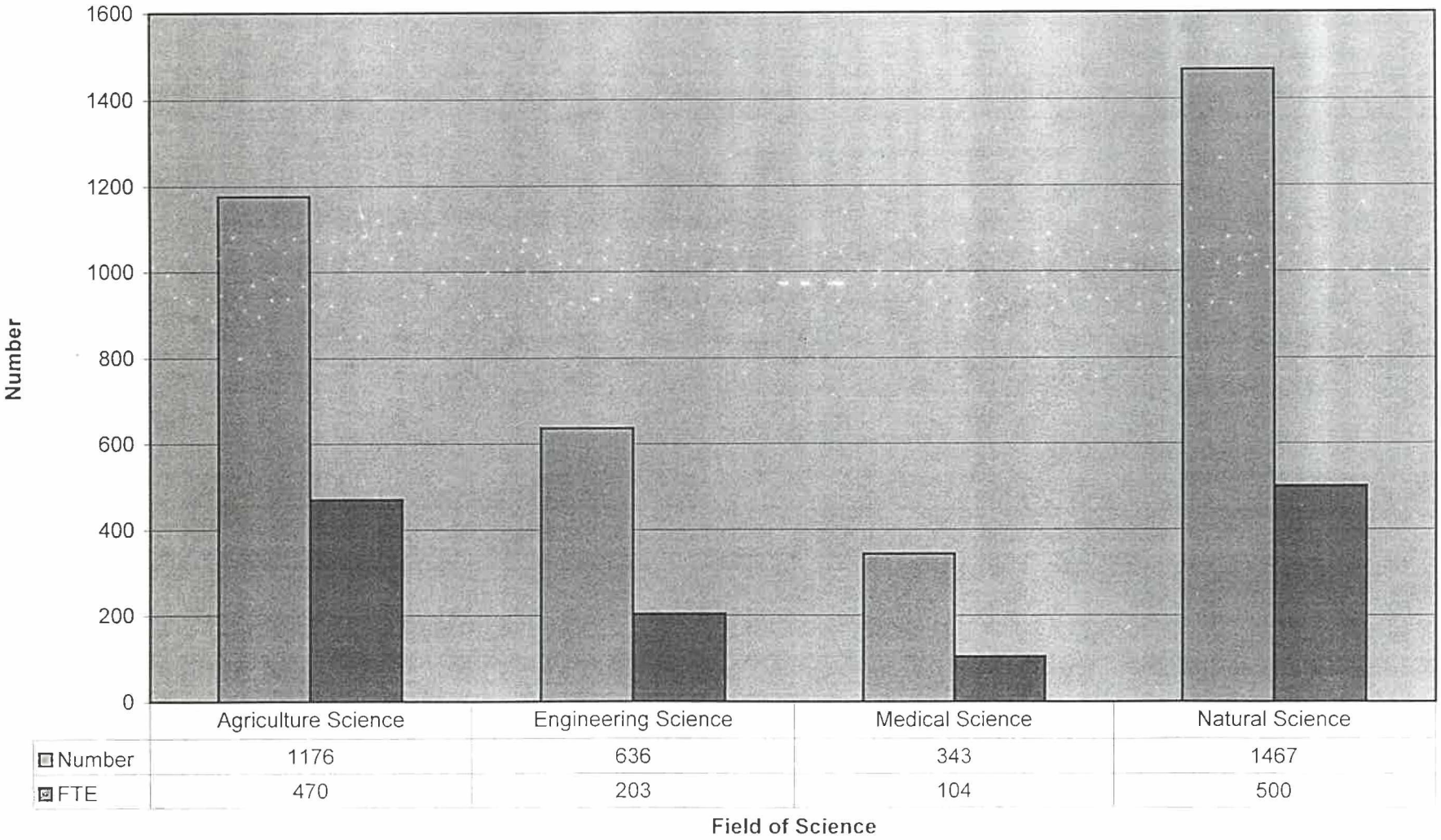
Concept of Full Time Equivalence (FTE)

While, it is true that the person carrying out research in academic sector cannot be fractionalised into these different activities it's a widely accepted practice in the process quantification of manpower to calculate FTE of the total faculty in a given institute. This is not to call an individual $1/4^{th}$ or $1/3^{rd}$ researchers. The total FTE calculated for the institute as a whole and it amounts to the total R & D manpower available with the institute. A person doing whatever little research will always be treated as a complete researcher for all practical purpose. This clarification is made here to clear the doubts in the minds of some, who consider FTE or time apportioning as an absurd idea. There are different institutes having different levels of FTE. This whole idea of present exercise is to find levels of R & D activity in different centres and hence after a good deal of discussions and despite many expressed their apprehensions about the concepts of FTE, the same has been used in the present exercise.

FTE by Activities
1277 / 3622 Respondents



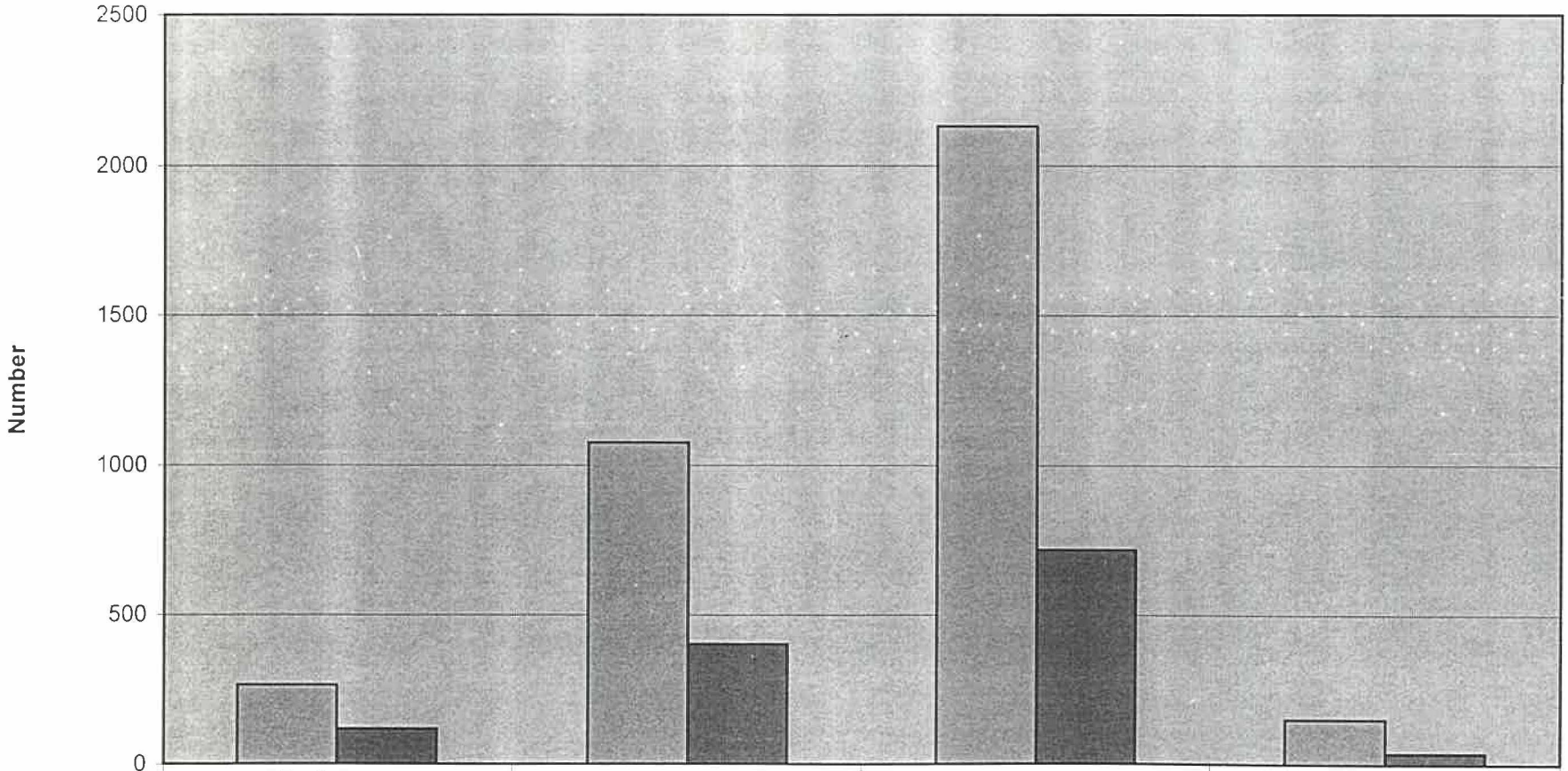
Full Time Equivalent by Field of Science
1277/3622 Respondents



	Agriculture Science	Engineering Science	Medical Science	Natural Science
Number	1176	636	343	1467
FTE	470	203	104	500

Field of Science

Full Time Equivalent by Designation
1277/3622 Respondents



	Professors	Readers	Lecturers	Others
Number	265	1076	2131	150
FTE	118	403	718	38

Designation

Questionnaire III includes a question (Q-3: q-1.4.4) seeking information on time management by an individual in different activities. The activities listed are - Teaching, Research, Extension, others and total. The respondents were required to give the values in the form of percentage. It is not surprising that greater proportion of the time is devoted to teaching but in most of the cases research stands the 2nd in sequence. The time spent on managerial responsibilities appears to have positive relationship with experience however, it seldom exceeds the limit of 20%. For the present exercise emphasize was given on the percent time spent on R & D.

The total of 3622 respondents from Western Zone amount to 1277 FTE, which is 35% - a fairly reasonable and realistic figure for academic sector. However, this of varies from institute to institute as well as amongst the different field of sciences. It is minimum in case of Medical Sciences (30.32%) and maximum in case of agricultural sciences (40.0%). Natural Sciences have this percent around 34 and Engineering has 32%.

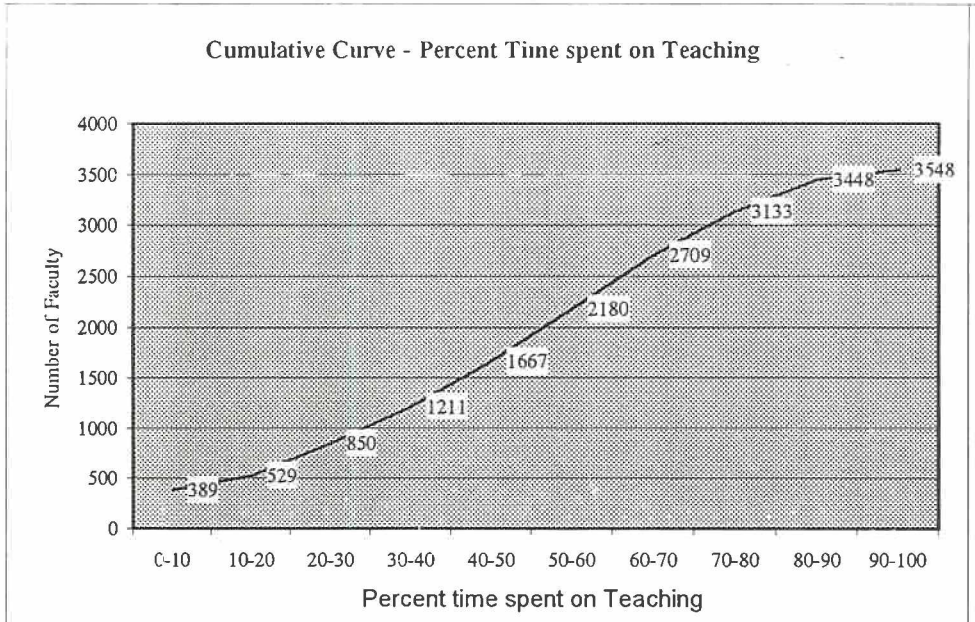
It is interesting to note from table number 14 that the FTE values range between 20.6 and 44.8. By and large it is seen that except for agriculture universities roughly the total the respondent get equated to 1/3rd FTE. It is, is an index and it in a way reflects on the R & D atmosphere of the institutes. Even amongst the colleges this number is fairly high and is in the range of 34.6%. None of the institutes records exceedingly high percent for an average condition such as anything in the range of 50+. Nor any of the institutes shows FTE less than 20%. Hence, the figures obtained based on the data from the respondent appears to be fairly dependable though there may be some variation within the lot. As has been mentioned earlier the entire exercise of FTE estimation is based on the statement made by the individuals regarding the time spent. It may be observed that (TM-3) generally the senior teachers appear to be spending more time on research as compared to the junior ones. However, the difference is not alarmingly large. Naturally, the senior faculty members such as professors are required to spend less time in teaching as against the readers or lectures. The FTE percent in case of professors in agricultural field is 51, Engineering field 40.1 in natural science 39 as against that of lecture 38 in agriculture, 32 in engineering and 31 in natural sciences. In case of colleges we do not have designated posts of professor and they are either lecturers or readers. Here also, the FTE shows similar trend except in case of Engineering faculty. What is interesting to note in case of colleges is that there is no

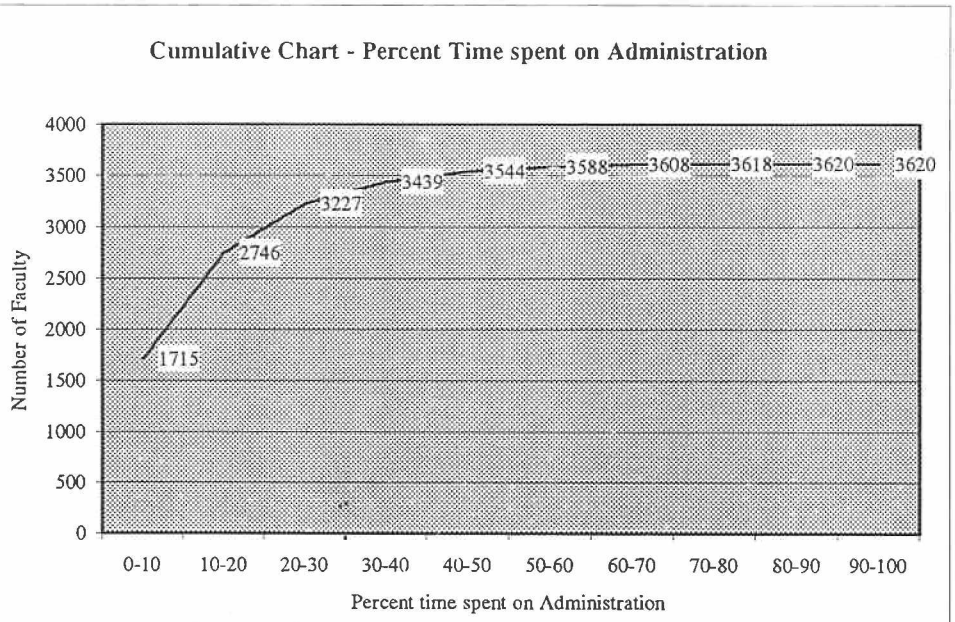
much difference between FTE of readers and lecturers. In case of university there's a difference of 10% between professor and lecturer, which in case of colleges is just of 0.3% and that too is negative.

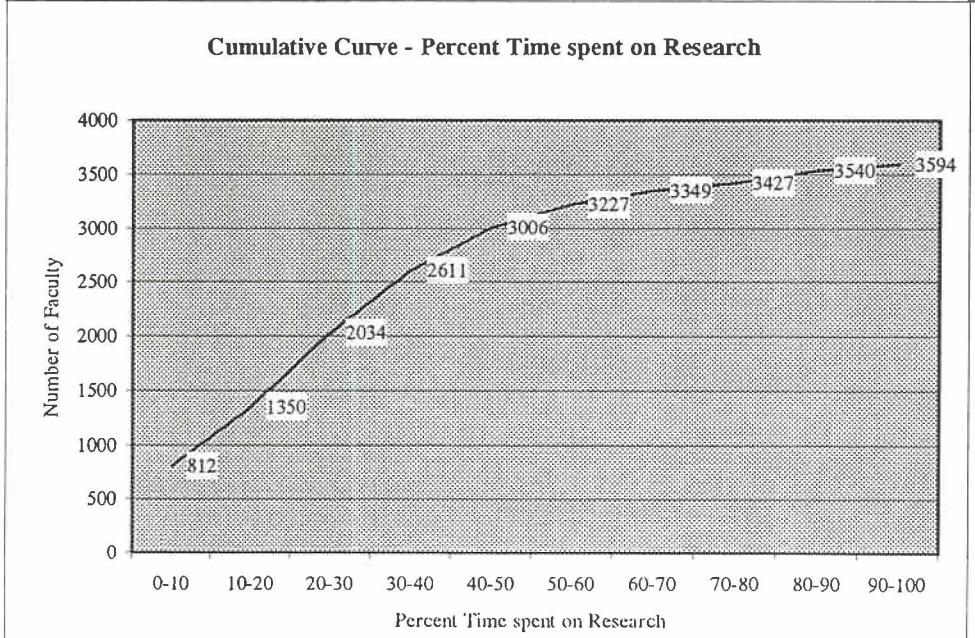
The cumulative curves drawn from the entire set of data representing various activities such as teaching, research, administration and others appear in fig (1). The total number of frequency is 3622. It is interesting to note that the shape of the curve for teaching is concavo-convex whereas in case of all other three activities it is convex towards the sky. The convex shapes of varying curvatures indicate fairly skewed distribution. The concavo-convex curve of teaching (resembling S - shape) is nearer to the normal distribution. This appears to be reasonably correct picture as all the members of the sample are actively engaged in the teaching activity and differs only in terms of time devoted to it by them. There are as less as 505 persons amounting to 14%, who have declared their teaching time less than 20%. As against this, only 467 persons amounting to 13% of the total declared that they devote 80% and above, of time in teaching. The close inspection of the questionnaires clearly indicates that those who have claimed greater percentage in teaching are by and large college teachers and on the other hand most of the Professors and particularly from the Agricultural Faculty, contribute to the lot devoting less than 20% of time for teaching. Between these 2 extremities the curve shows fairly uniform distribution. Barring the extremities on either side amounting to 27%, we have a population of around 2500 evenly distributed along the mean value.

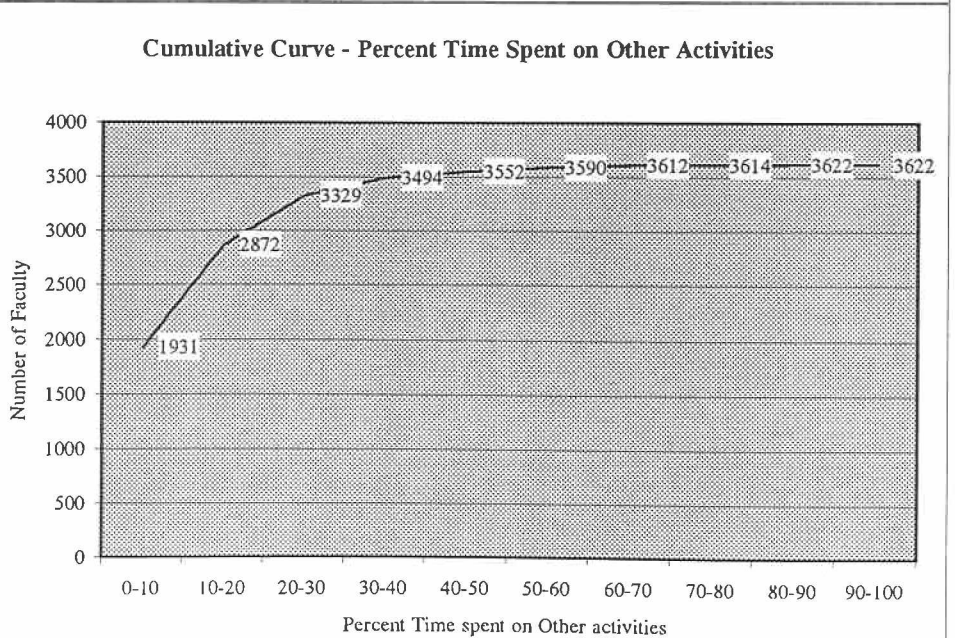
The FTE of the faculty computed in this exercise is to be considered as an index, in case of academic sector where teaching is the primary responsibility of teachers FTE in range of 30+% appears to be quiet reasonable and moderate condition. It is true that the total range observed in the Western Zone is from 20.59 to 44.86. There are quite a few institutes, which record above average FTE percent. This is more so in case of Agriculture field, but also not uncommon in case of Natural Sciences. Even the colleges, which are generally filled with heavy teaching schedule the FTE is fairly high.

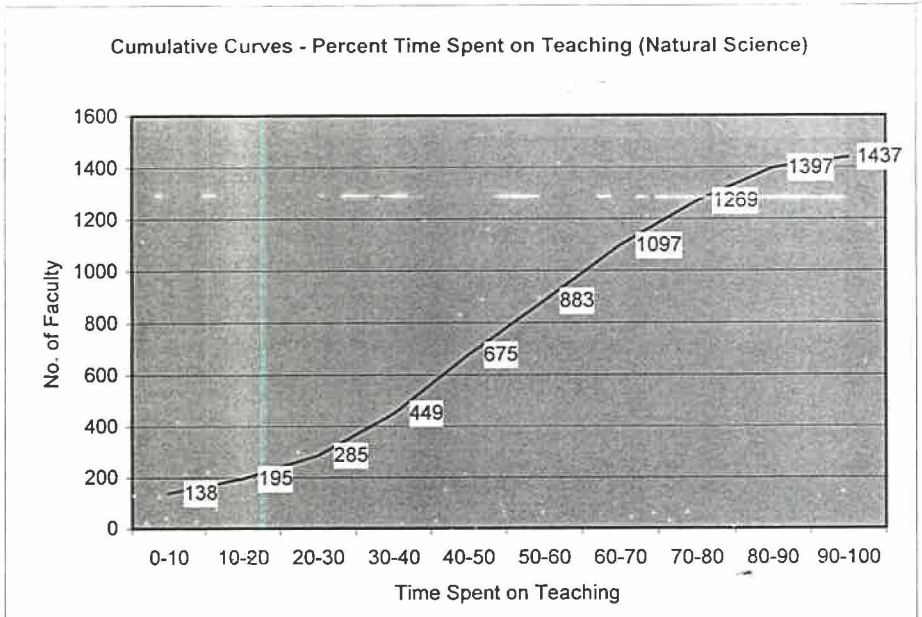
Certainly, these observations are based on the available response, but the investigators feel that the picture would not have been much different even if the response level were a little higher than what it is at present. It would not be out of place

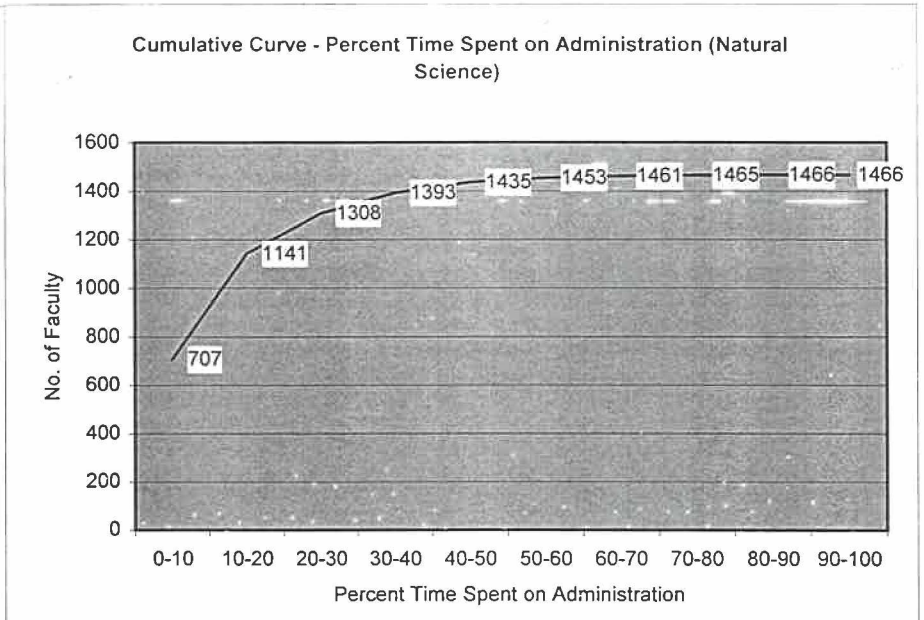

Cumulative Curve - Percent Time spent on Teaching
Number of Faculty
4000
3500
3000
2500
2000
1500
1000
500
0
389
529
850
1211
1667
2180
2709
3133
3448
3548
0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
Percent time spent on Teaching

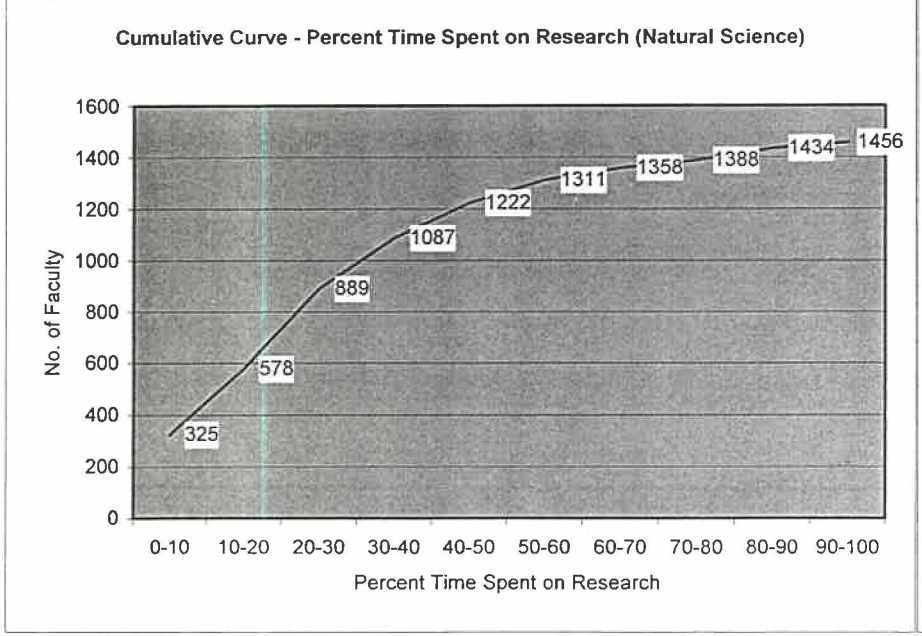

Cumulative Chart - Percent Time spent on Administration
Number of Faculty
4000
3500
3000
2500
2000
1500
1000
500
0
1715
2746
3227
3439
3544
3588
3608
3618
3620
3620
0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
Percent time spent on Administration

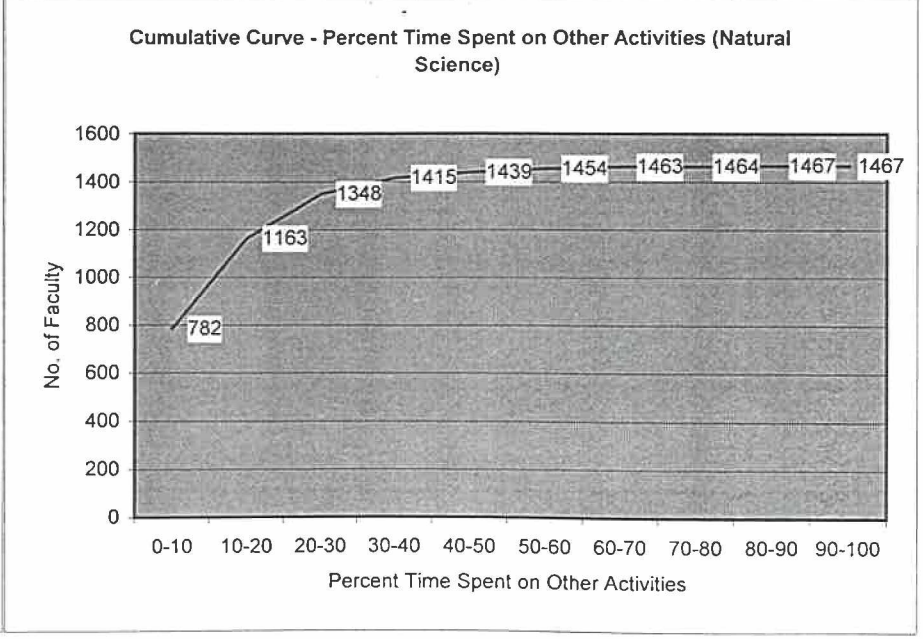

Cumulative Curve - Percent Time spent on Research
Number of Faculty
4000
3500
3000
2500
2000
1500
1000
500
0
812
1350
2034
2611
3006
3227
3349
3427
3540
3594
0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
Percent Time spent on Research


Cumulative Curve - Percent Time Spent on Other Activities
Number of Faculty
4000
3500
3000
2500
2000
1500
1000
500
0
1931
2872
3329
3494
3552
3590
3612
3614
3622
3622
0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
Percent Time spent on Other activities

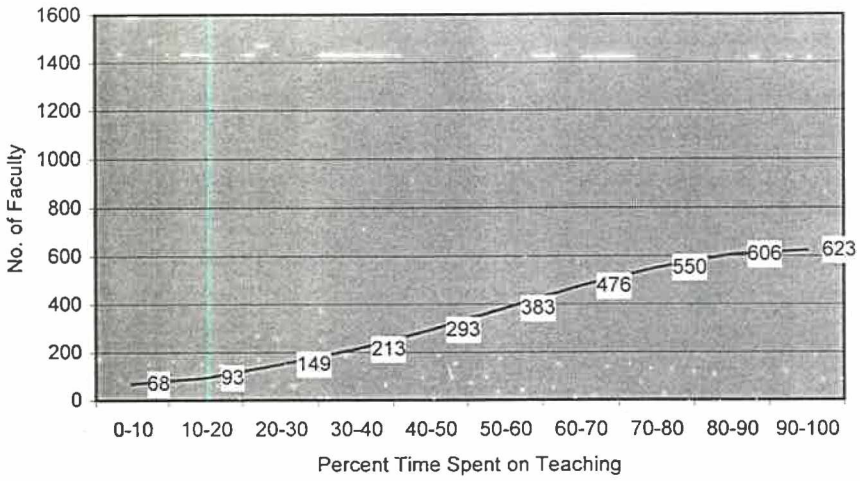

Cumulative Curves - Percent Time Spent on Teaching (Natural Science)
No. of Faculty
1600
1400
1200
1000
800
600
400
200
0
138
195
285
449
675
883
1097
1269
1397
1437
0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
Time Spent on Teaching


Cumulative Curve - Percent Time Spent on Administration (Natural Science)
No. of Faculty
1600
1400
1200
1000
800
600
400
200
0
707
1141
1308
1393
1435
1453
1461
1465
1466
1466
0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
Percent Time Spent on Administration

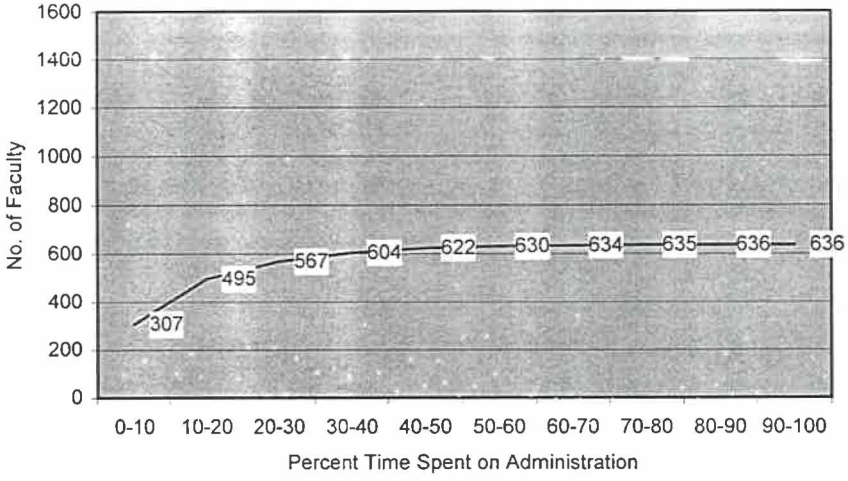

Cumulative Curve - Percent Time Spent on Research (Natural Science)
No. of Faculty
1600
1400
1200
1000
800
600
400
200
0
325
578
889
1087
1222
1311
1358
1388
1434
1456
0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
Percent Time Spent on Research


Cumulative Curve - Percent Time Spent on Other Activities (Natural Science)
No. of Faculty
1600
1400
1200
1000
800
600
400
200
0
782
1163
1348
1415
1439
1454
1463
1464
1467
1467
0-10
10-20
20-30
30-40
40-50
50-60
60-70
70-80
80-90
90-100
Percent Time Spent on Other Activities

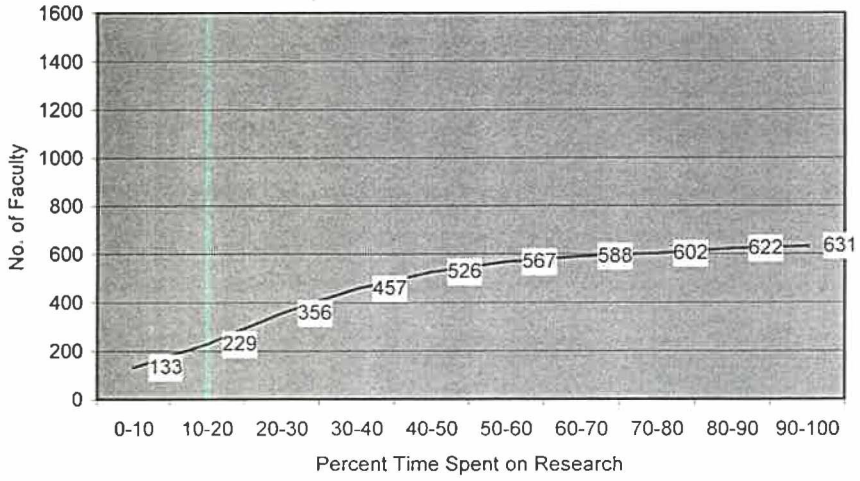
Cumulative Curve - Percent Time Spent on Teaching (Engineering Science)



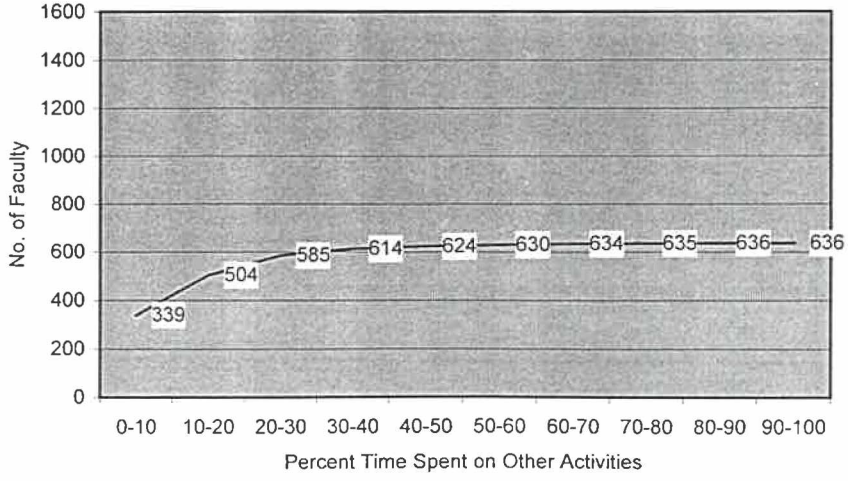
Cumulative Curve - Percent Time Spent on Administration (Engineering Science)



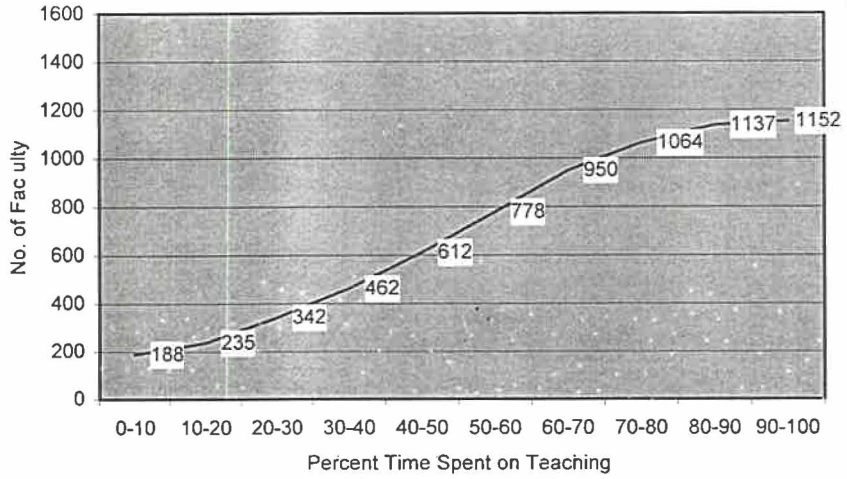
Cumulative Curve - Percent Time Spent on Research (Engineering Science)



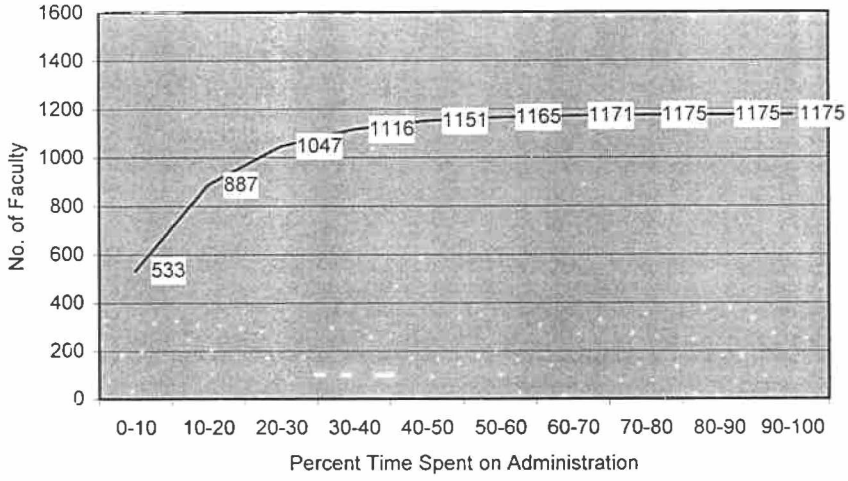
Cumulative Curve - Percent Time Spent on Other Activities (Engineering Science)



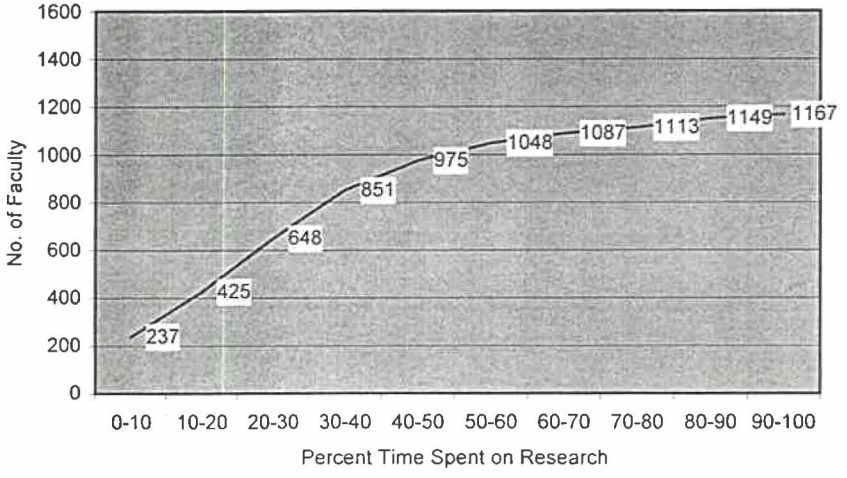
Cumulative Curve - Percent Time Spent on Teaching (Agriculture Science)



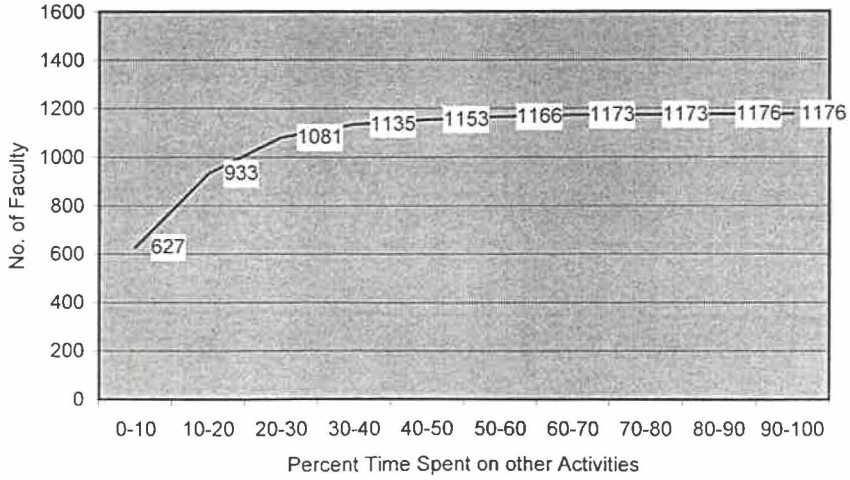
Cumulative Curve - Percent Time Spent on Administrative (Agriculture Science)



Cumulative Curve - Percent Time Spent on Research (Agriculture Science)



Cumulative Curve - Percent Time Spent on Other Activities (Agriculture Science)



to say that those who are recording FTE in the range of less than 30% have greater scope for improvement. However, it is true that this low score on FTE by the certain University / Institute may be coupled with inadequate infrastructural facilities and lack of proper research atmosphere. Getting high score in case of Agriculture is not surprising as they have separate components of research and extension.

Output Indicators

The output of research activity can be ascertained in a number of ways. May be in the form of effect of its application or in the form of publication of technical reports, monographs and articles. Besides these the number of dissertations and thesis contributed by the individuals or the institutes can also identify the research in academic sector. The aim of the present exercise is to identify the potential manpower for carrying out the research and to highlight variations in the same. For this purpose a certain specific questions were included in questionnaire (Q3) to seek information about research performance of individuals. The questions included varied to a considerable extent and for a number of questions, frequencies having positive response are too low. A table given below records the frequencies of responses to these questions.

Table (i) Frequency of Response

	Details of the query	Frequency Response (out of 3622)	Frequency Percentage
1	Research Supervision	1495	41.63
2	Research project	959	27.08
3	Research Publication Articles	2637	72.95
4	Research Publication Books etc.	253	6.81
5	External examinership	1063	30.05
6	Research Evaluation	405	11.00
7	Editorial Responsibilities	367	9.21
8	Patents filed	135	3.64
9	Technologies developed	362	9.79
1.	Fellowships awarded	433	8.57
11	Participation in research Fora	2859	75.72
12	Membership of Professional Bodies	1298	34.96
13	Visiting faculty positions held	205	5.51
14	Consultancy Projects	251	7.25
15	Participation in Advisory bodies	155	4.47
16	Administrative Responsibilities	923	26.65
17	Research Promotional activities	624	18.01

Certainly getting low response or high response to a question in a way reflects on the nature of the activity. Queries such as patents or awards are bound to have low frequencies. But sheer presence of few individuals giving positive response to such queries speaks volumes for research ethos in the institute. Though an individual is honoured by the fellowships and/or awards or seeks patents for his research, it is always the collective effort of the team working with him. Hence it the percentage, rather than the sheer number of individual, that becomes the matter of interest to us. The questionnaire also covers and gives weight-age to common indicators such as research publications and research supervision. The frequency of response to such queries is naturally much higher but there are some individuals or institutes that even against these queries the responses are leaving scope for improvement.

An attempt has been made to arrive at a common index based on the score of institute or output indicators. However this has been worked out only of the university centres and not for colleges. This is so because the data from colleges is too small. For 19 indicators (inclusive of 6 input indicators) the range of data was divided into quartiles and the institutes occurring in respective quartile classes were assigned score of 1 to 4. The sum of scores on all 19 number of queries is used as the composite index. Based on these one can identify the institutes of high potentials / excellent performances, good performance, moderate performance and low performance.

The queries regarding output indicators have been put into three sub-groups (not necessarily in the same sequence as they appear in the questionnaires), each of them representing different aspects of research activities. The first group covers queries related to supervision (Research Guided), self research (in form of projects) and presentation of the research either in the form of articles, books and monograms or present participation in research fora. Thus this relates to the actual research activity carried out by the individual or group of individuals.

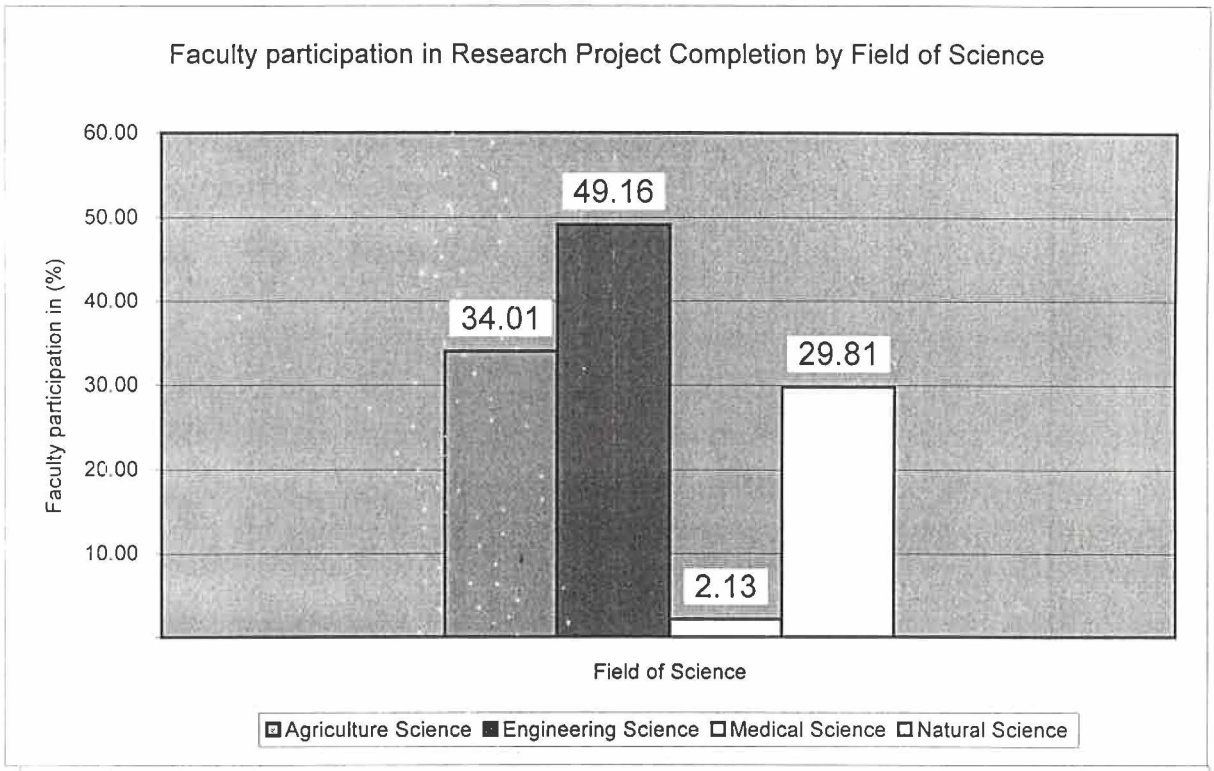
In the second group all such queries are included which may not involve direct research work but they indicate the research ethos or atmosphere in the institute. It is not without having interest in research, one gets a chance to participation in such activities, these includes external examinership, research evaluation, editorial responsibilities, visiting faculty positions and membership of professional bodies.

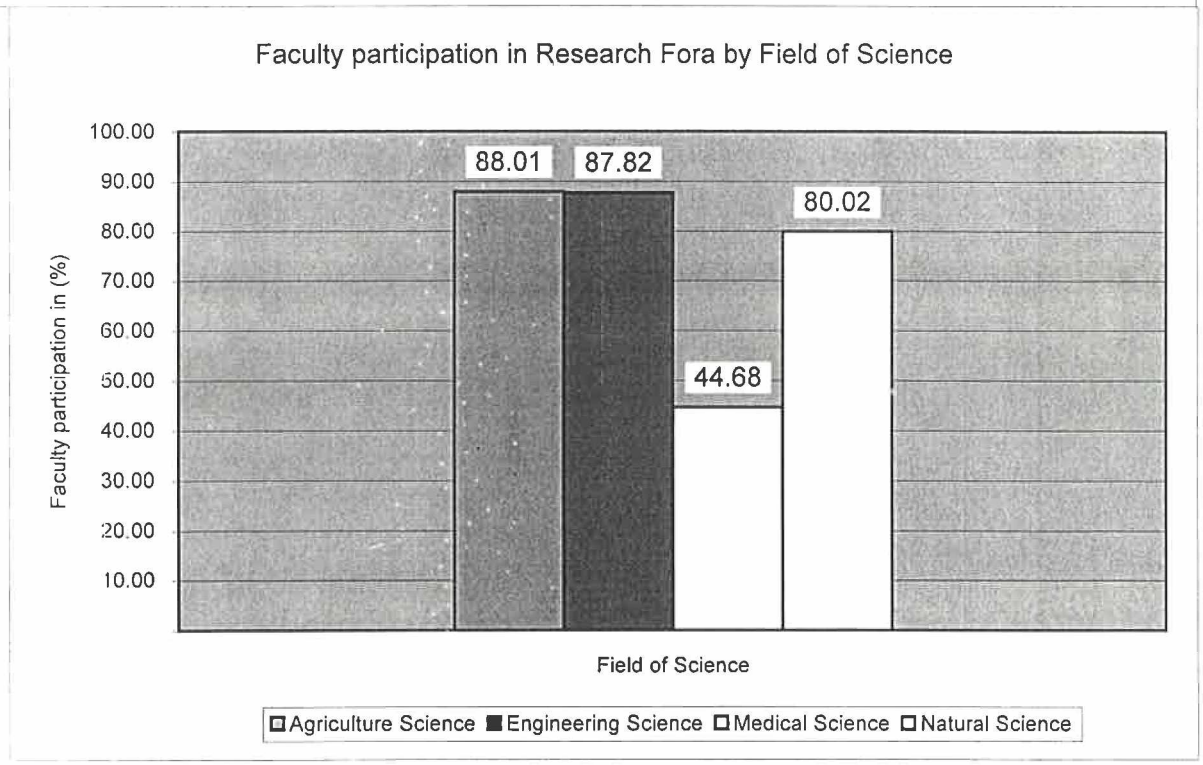
The third group covers queries regarding the recognition to the research carried this may be in the form of awards received, technology developed, fellowships conferred or patent sealed as well as participating in advisory bodies at state and national levels.It won't be an exaggeration to quote that the greater the percentage of faculty (the respondent) in group 2 and group 3 better is the research ethos of the institute.

The scores on various components of group 1 are expressed differently for some obvious reasons, for e. g., the guidance, publication of articles is expressed as per faculty whereas the books and monograms are expressed as number / year / faculty. Projects completed and participation in research are expressed in two ways such as either in numbers / faculty and number per year / faculty or proportion of respondent to the percentage of respondent involved in an activity has been completed for almost all the indicators. The purpose of finding percent of respondent involved in a given activity was to understand the overall research atmosphere of the institute, as the index / person / year would not reflect the situation adequately and moreover the variance in case such indices is considerably low. The projects are not calculated in terms of per year index whereas more frequently occurring performance, such as guidance, publication of research articles and participation in research fora are expressed in terms of number / year / faculty.

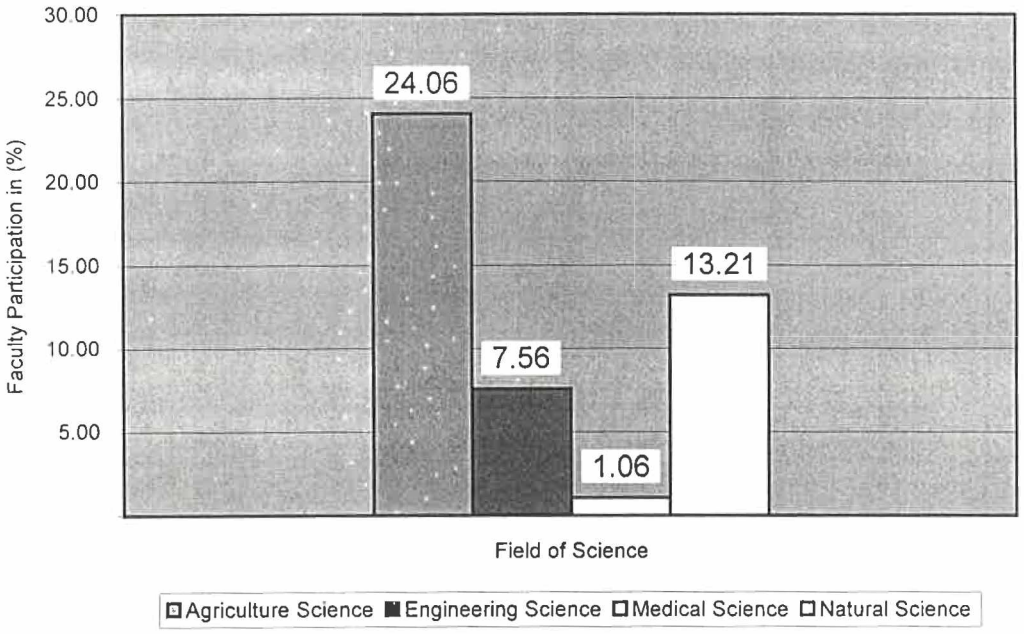
Group I *Research work done, directed and presented / published*

Research Guidance: If we look at the performance of various institutes in terms of research guidance it appears that there are as many as 1077 dissertations produced by each faculty in a year. These dissertations include, besides the Ph. D thesis, dissertations for M. Phil, and M. Tech and equivalent degrees. However, it excludes M. Sc. dissertations from Natural Sciences, which are the part of the structured syllabus. Though the overall average is 1.77 in case of most of university centres it is higher except for natural sciences university / institute – (which is 1.60 lower than overall average as well as average of university). The institute below national average is all colleges are below average condition. The highest value is recorded for Banasthali University, which is 3.26. Next to follow is Rajasthan Agriculture and Marathwada Krishi Vidyapeeth, Parbhani. The percentage of faculty in research supervision shows greater amount of variation as compared to the index number / year / faculty. Obviously it is low

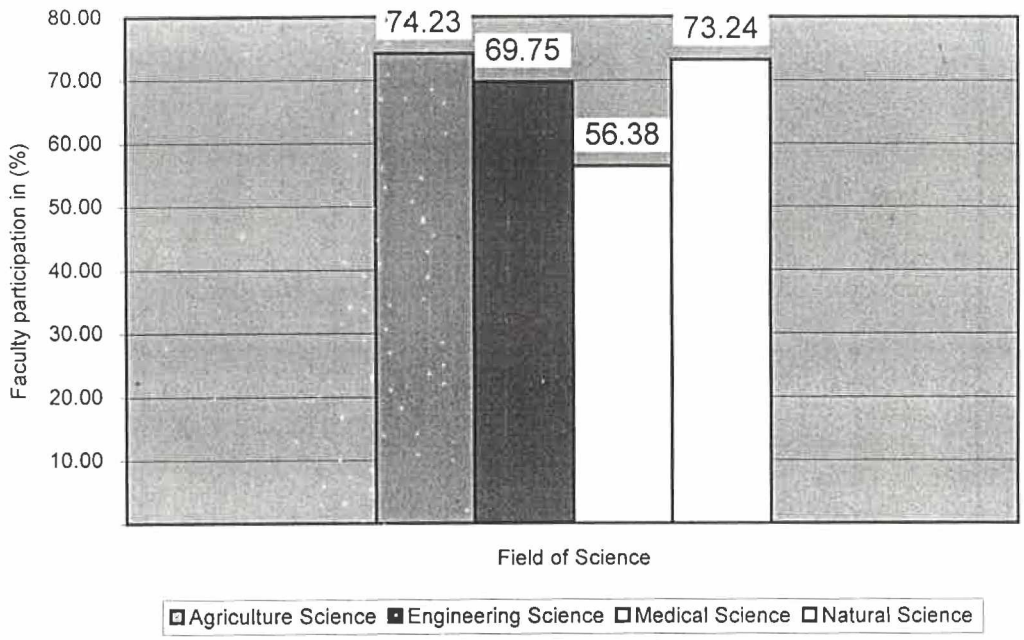

Faculty participation in Research Project Completion by Field of Science
60.00
50.00
40.00
30.00
20.00
10.00
Faculty participation in (%)
49.16
34.01
29.81
2.13
Field of Science
Agriculture Science
Engineering Science
Medical Science
Natural Science


Faculty participation in Research Fora by Field of Science
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
Faculty participation in (%)
88.01
87.82
80.02
44.68
Field of Science
Agriculture Science
Engineering Science
Medical Science
Natural Science

Faculty Participation in Technology Development by Field of Science



Faculty participation in Research Article Publication by Field of Science



in case of many colleges with quite a few of them recording less than 10% of faculty involved in research supervision. For the colleges as a whole this percentage is as low as 17%. For universities as a whole it is 52% which in some cases is as high as 80%. The guidances for M. Phil equivalent and Ph. D research is one of the normal activity in case of most of the institute and its quite in accordance with the situation that we find the percentage of faculty involved is generally higher.

Projects (Research & Consultancy): Apart from the research guidance to the students conducting personal research with the help of extramural funding is another normal activity in the academic sector. A large number of funding agencies provide financial assistance for such research. Besides the research projects a number of university / institute take up consultancy work in the form of projects with or without research component. It is these extramural funding for the projects which has been responsible to a considerable extent for the development of infrastructural facilities in universities / institutes. The normal annual budget allocations given for science faculties prove to be too meagre to cope up with the demand of infrastructure for research. Most of the leading universities and various departments there in have been able to add to the infrastructural facilities to a considerable level after they could be cultivated proper research culture. The index for research project is obtained as number / faculty as most of the major projects run for an average period of 2-3 years. The average number of research project per faculty comes to 2.6, however, for universities it is 2.74 and for colleges it is 1.89. The minimum number of course is one with a maximum reaching 5.20. If one look at the percentage of faculty involved in research project the picture is quite different as compared to the research guidance. Here the average percentage is 27.08, colleges having a score of 14% and universities 33%.

When it comes to consultancy projects it is quite natural that the university / institutes from professional sciences have better score as compared to the institutes under the field of natural sciences. The agricultural, engineering fields have by and large higher score on both percentage faculty involved and the projects per individual. In institutes under natural sciences have good deal of variations with faculty involvement ranging from 3% to 90%. Generally, those centres, which are closer to industrial belts, appear to have better interaction with the industries and as a result they appear to have higher scores on consultancy projects.

Research Publication (articles and books or monographs etc.): The research publication of articles is the most common indicator used for research output. However, there are number of ways the research articles could be analysed by giving weightages with references to citation, impact assessment etc. for the present exercise this has not been taken into consideration and only the numbers appearing in various journals has been taken into consideration. Number of articles published in three years period has been taken into consideration to obtain the index expressing number / year of faculty for a given institution. The overall index of the same is 1.67 and it varies from institution to institution and also in terms of field of Science. The lowest value of number / year / faculty is 0.51 whereas the highest number is 5.62. The percentage of respondent faculty involved in the activity has also been calculated and its 73% for overall condition. This varies but 41% to 100%. The percentage of faculty involved in this activity shows a fairly large number, which indicates that almost 70% of people are actively engaged in conducting and communicating the research. However, this being the first exercise of its kind the investigators have restricted their scope of analysis of the numerical expressions without going in any details of types of periodicals in which the articles appear. Number of co-authors in an article and many such things, which would lead to a rigorous analysis of publications, have not been considered in the present analysis. Another reason for avoiding rigorous analysis was low level of response from a number of institutes.

The index for publications, books & monograms is also expressed as number / faculty as writing of a book or a monograph is not an annual phenomena and not many researchers like to spend time on writing a book. Hence, though the number of faculty involved appears to be in range of 1.0 to 2, the percentage of faculty involved is quite low. On an average it is 6.8%. Though, in case of some of the colleges records as high as 20-30% are not uncommon. These are mostly in the form of textbooks and not research monograms.

Research Fora: Apart from the publication of research article and book much of the research is presented at conference and symposiums. Hence, participation in research fora was included as a separate indicator. Moreover the young faculty members get a chance to present their findings and interact with the seniors in the field. Many organisations have installed "best paper presentation awards" for young scientists. Hence the participation in conferences has been one of the major activities in the

academic sector. Only in case of medical faculty the percentage of participation is relatively lower. Universities as well as colleges record quite high percentage of respondents under this activity. The maximum participation is of the order of 95.4% wherever the minimum is 27.30%. However, those below 40 are far and few cases.

Group II *Research related Activities*

The second group of output indicators does not necessarily represent the actual research work carried out by an individual. On the contrary it speaks for the overall research atmosphere at the institute. The indicators like visiting faculty positions held, editorial responsibilities, participation in research evaluation, membership of professional bodies as well as the external examinership are the factors which indicate inter-university mobility of individuals. It is through such interactions as well as participation people get to know what is happening in the field and this contributes to development of research atmosphere at an institute. The lower frequency of agricultural faculty both in external examinership and editorial responsibilities appears to have been a result of certain peculiar conditions. A large number of faculty members in the field of Agriculture are employed at research stations and normally do not like to take part in examinations. As far as editorial responsibilities are concerned it will be realized that in other fields of sciences, there are large number of professional bodies publishing periodicals with different time intervals. This is not the case for agriculture faculty. Number of periodicals devoted to agricultural faculty is far much less than those devoted to natural sciences or faculty of engineering. The other three indices such as visiting faculty, membership of professional bodies and participation research evaluation are expressed in somewhat different form because all these yield much lower frequency. Therefore, the data on these indicators are expressed in the form of percentage of faculty involved in the activity. Visiting faculty or evaluation of the research will have much lower frequency as compared to external examinership. The tables are given in appendix Table - 35 record, the percentage of respondent having 0,1,2,3 and greater than 3 events on each of these activities. It will be interesting to note that in most of the cases the percentage under zero level activity in case of each of these variables is much higher, normally over 70% in some cases even crossing 90%. Thus only 5-10% of the members appear to be getting involved in research evaluation or working as visiting faculties. The table 37 showing the distribution of visiting faculty positions held by individuals indicates that for the zone as such about 18% of individuals have been invited as visiting faculty. This

percentage is around 23 in case of field of natural sciences and much low for agricultural universities (14%). For engineering faculty it is around 20%. Membership of professional bodies by individuals appears to be surprisingly low. The average is around 35%. Just being a member of professional body though does not indicate participation in research work it certainly throws light on the awareness of faculty towards the new research that is being conducted in the field. However it must be mentioned that the range of scores on this account between different institutes is too wide. Within the university institutes it ranges from 10% to 72%. Participation is advisory body of state or central government certainly is bound to have low response. Only the senior faculty members are normally invited for such participations. The overall average is in the range of 4-5%. The highest score on this variable is by $IIT_{(M)}$ (19%) followed by Jiwaji University, Gwalior (11%) and MS university Vadodara (10%).

Group III: *Research Recognition*

The indicators under this group are bound to have very low frequencies as these include awards, fellowships, patents and technologies developed. By and large only the senior researcher and / or highly devoted individuals would be contributing to development of technologies of seeking patents for the research. Here, it is not an individual, which we are looking for because an individual have already got an award or fellowship conferred on him as recognition to his work. We are more interested in knowing the number of such individuals at a given institute. It is quite natural that the engineering and agricultural faculties should record higher percentage of faulty participation in development of technologies or securing patents than the institute of natural sciences or even the college for that matter. The overall percentage of faculty involved in technologies developed is 9.8%, which is around 11% in case of IIT, or 24% in case of agricultural universities with Rajasthan Agriculture University Udaipur, Dr. Panjabrao Deshmukh Agriculture University Akola and Gujrat Agriculture universities topping the list. Award received by an individual, though record slightly higher as compared to patents and technology development; is still much low with an overall average of 11.2%. The institutes which need to mention as they lead the list are $IIT_{(M)}$, Sardar Patel University, Vallabh Vidyanagar and Dr. Panjabrao Deshmukh Agriculture University Akola. As far as the fellowship conferred are concerned the overall average of faculty involved is 8.6%. The institutes which top the list are IIT(M), Rajasthan University, Jaipur. Rajasthan Agriculture University, Udaipur,

Analysis And Results

In order to get an overall picture of the status of R & D based on the available data it was thought appropriate to arrive at some common indicator(s). It was suggested during the BSS that some sort of an index number statistics should be worked out. However considering the response level and initial idea of collecting the data on census basis, and not on sample basis, it was pointed out by experts that as the data collected is not based on any sampling design it would not be proper to get involved in the projection and estimation. Hence the scope of statistical analysis of the data is confined to quantification of association amongst the variables and finding the consolidated scores of each institute on the basis of quartile levels.

Correlation Matrix

The coefficients correlations have been given in the following table 45. A graph of the correlations has also been attempted with space defined by S & T Expenditure and External examinership on Y and X-axis respectively. These two variables record minimum correlation value in the matrix (-0.0009). Hence these could be used for plotting other variables in the graph space. The graph shows existence of 7 clusters formed by the 21 variables. Out of 6 input variables 4 form a well-defined cluster. These include three variables related to financial resources and FTE. The other two variables namely *percentage of faculty with research degree* and *years of standing (age of) of an institute* fall out of the cluster and show better association with certain variables related output indicators. It is interesting to note that FTE is closely related to variables of financial resources. The high correlation observed amongst the variables of financial resources is not a surprise, what is more interesting that amongst these FTE shows increasingly high correlation with Total (0.6548), S&T (0.8642).and R&D (0.9223) expenditure. The values of coefficients of correlation amongst the variables of the first cluster are in the range of .6 to .9+. Other variables on the whole show moderate relationship. The lack of high correlation amongst the variables representing output indicators may be looked as a fact that the indicators defined are quite independent and hence each one of them is giving different dimension to he information on status of the research and development in the academic sector.

Another cluster with moderate correlation is by the variables listed in group III of the output indicators. There are four variables in the group such as Awards received,

fellowship conferred, patents sealed and technologies developed. These variables are considered as the variables of research recognition. The variable fellowships conferred however falls out of the cluster defined by other three variables. Amongst the three variables patents seals and technologies developed record high correlation value (0.6954). The patents sealed also records moderately high correlation with awards received. The 3rd cluster is formed by variables research guidance and research projects. The variable percentage of faculty with research degree forms a part of this cluster. This appears to be quite logical as most of the faculty engaged in the R & D work possesses research degree and are also having research projects. However it may be noted that the values of correlation are moderate are in the range of .4 to .6 The next cluster though identified as a separate one shows high degree of association with the variables of cluster 2. This includes most of the variables of group I of output indicators discussed in earlier. The variables included in this cluster are consultancy projects, publications of research articles, participation in research fora. Variables publication of books and monographs however fall out of this cluster. However the variable fellowships conferred covered as a variable of research recognition falls within this cluster. The association of the variable fellowship with the other variables of actual research work (done or directed) appears quite logical. The next three clusters have distinct locations in the graph space and include two variables in each of them. Years of standing on an institute show association with the participation in advisory committees. While publication of books and monographs goes with editorial responsibilities; the membership of professional bodies and visiting faculty positions held form a separate cluster.

It may also be observed that the variables of financial resources maintain a close relation with the variables of research recognition and fairly moderate relation with variables of group I covering indicators of research work done and directed. The variables of group II appear to have moderate relations amongst themselves except of the guidance, projects and publication of articles. The external examinership appears to record poor or insignificant relationship with most of the other variables.

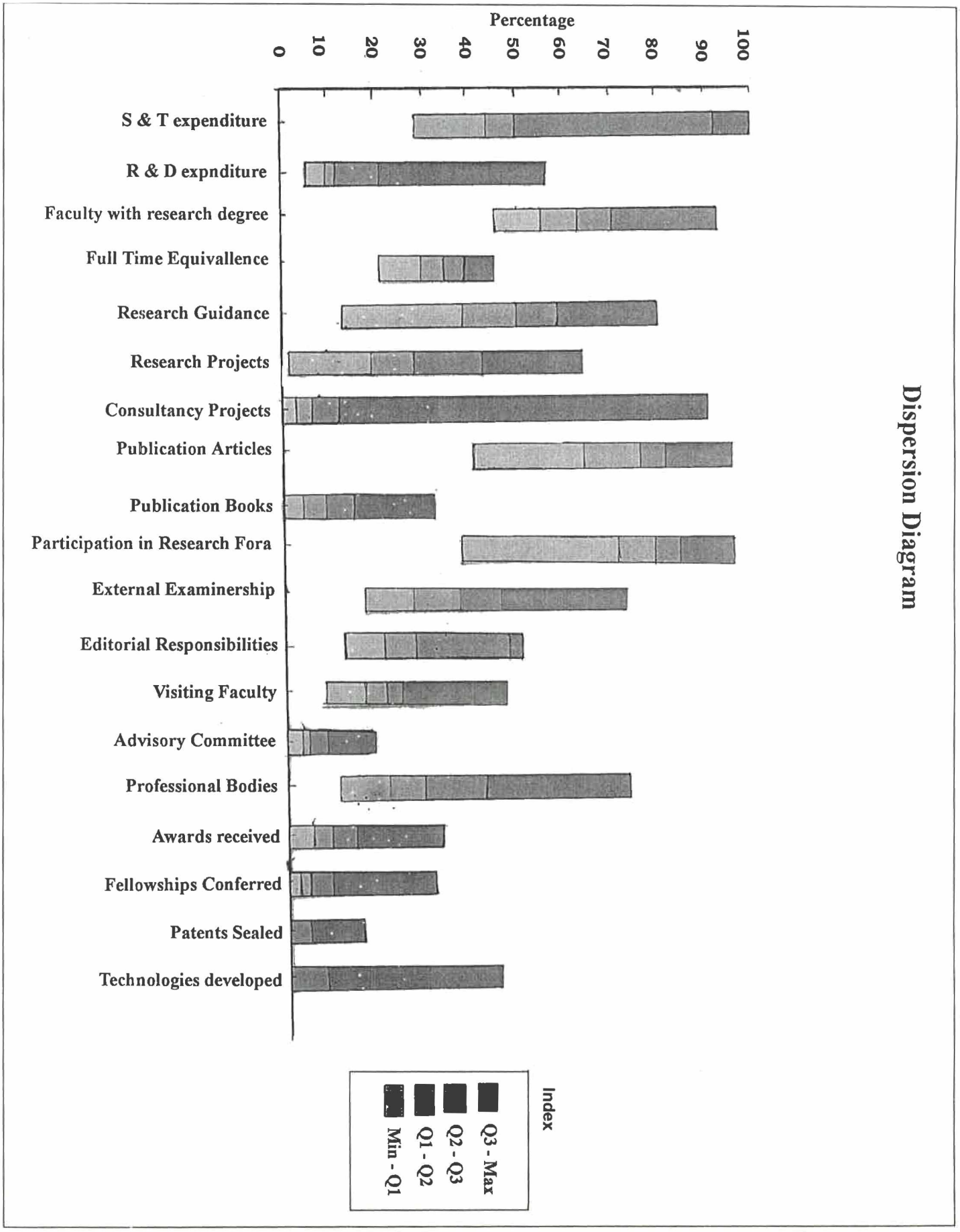
Consolidated scores.

Using various input and output indicators, considered for the correlation matrix discussed above, and to facilitate inter institute comparison; the university / institutes were assigned weightages based on their score on each indicator. Quartile values for each indicator were computed and the institutes were grouped into 4 classes. The scores, 1 to 4 were assigned to each institute depending of its position and these were added up to obtain consolidated score. All the indicators were expressed in terms of percentage of respondent faculty involved in the activity. However indicator total expenditure and years for standing were dropped, as these could not be converted into percentage form.

The following table 43 records, min, quartiles (1, 2, & 3) and max, values of all the 19 variables. In the last row of the table the range observed in the variable is also mentioned. These values are also represented in the form of a dispersion diagram in fig. **. The lower range values are generally associated with the variables for which the response is low. There are 8 variables out of 19 where the minimum value is '0'. Except of the variable, consultancy projects the range of all the other variables with min value '0' is quite low. The lower range and that too towards lower end of the scale clearly indicates that the activity represented by the indicator is rare and very few staff members from fewer institutes participate in such activities. These activities are membership of advisory body (0-19), patents sealed (0-16.5), fellowships conferred (0-32). The median values of some of these are confined to '0' value indicating that more than 50% of institutes do not have these activities. It will become obvious from the table and the diagram that there is not a single activity where the range is low but score is on higher side. This indicates that for none of the variables can be considered to have high to very high participation by faculties of all the institutes. However the variables like FTE, research guidance, publication of research articles, participation in research fora, external examinership and membership of professional bodies show somewhat higher participation by respondent faculty. However the range is quite high in most of these cases.

The dispersion diagram and quartile deviations facilitate assigning scores to individual institutes based on their locations in inter-quartile zones. The total range from min to max is divided into four classes defined by the three quartiles. The institutes

occurring in class 4 (Q3-max) are assigned score of 4 and the ones located in class 1 (min-Q1) are assigned score 1. These score values are summed up to obtain consolidated score of a given institute. The maximum value of consolidated score that can be reached by any institute will be 4 * number of variable. In the present case it will be 76 (4*19). Obviously the minimum value shall be 19 (1*19). The table 44 given below shows the values of scores of each institute in all the 19 variables. The later columns include sum of the scores, frequency of institute belonging to class 4 & class 1 and the consolidated score in percentage form (sum of scores * 100 / maximum possible scores). It may be observed from the table that there are as many as 7 institutes with score more than 75% and 10 institutes record score over 60%. Thus out of 33 university institutes about 17 institutes (just close to 50%) figure out with consolidated score of 60%.



Dispersion Diagram

Concluding Remarks.

The database related to research and development in science and technology that is being attempted through the present exercise, particularly for the resources available with the academic sector is the need of hour. This was the feeling expressed by most of the participants in all the BSSs conducted before launching the exercise. The projects conceived by investigators from all the zones, with good deal of input from NSTMIS, DST, aimed at not just collecting the data from various universities but to identify the potentials of various institutes and generate an information system that should serve as the basic inputs for the planners and decision makers. There is no need to emphasise the importance of such a database.

Difficulties encountered.

The methodology adopted for this exercise heavily depended on the questionnaire survey and personal contact with the respondents. As has already been mentioned, for personal contacts *institutional co-ordinators* were identified at all the institutes and it must be mentioned without any reservation that whatever success the present attempt has achieved it is because of the constant persuasions by the institutional coordinators. Without their help the work would have been practically impossible. In most of the questionnaire surveys the difficult part is to achieve a desirable level of response. Certainly a cent percent response is something, which would be impossible. Overall reluctance of respondents to fill lengthy questionnaires, general feeling that the similar information is being sought by different agencies and there is good deal of duplication etc. are some of the factors which normally restrict the level of success of such exercises. A strong feeling that the respondent is always forgotten after he fills in the questionnaire also adds to reluctance of respondents.

During the present exercise the investigating team had to face all these problems. In the initial stage of the data collection it was looked at as an alternative attempt to collect information for NAAC. At number of institutes we had to make it clear that the work of NAAC is entirely different than that planned in the present exercise. In the later part when UGC made it obligatory for the universities and colleges to submit themselves to the process of accreditation, we faced another difficulty that the

respondent claimed that most of the data has already been collected and hence the exercise by DST is duplication. Moreover it must be recorded that the collection of data for NAAC was obligatory for universities and it has been directly liked to the grants from UGC, Hence there was a question of priority for supplying the data. Certainly most of the centres chose to provide data to NAAC than for the present exercise. However, we could collect data despite all the odds but there exist room for improvement. Some of the observations as to why the response level was not to the desirable standards are as follows.

1. At some institutes the total faculty strength is much higher, particularly in case of most of the agricultural universities. Besides the large number of faculty the fact that many of the faculty members are located at different research centres and trying to contact these faculty members becomes difficult. Generally the response in low in case university institutes where the faculty strength is in the range of 200+.
2. The institutional coordinators had to depend on the administrative office for the details in questionnaire 1. This took long time and in some cases unfruitful exercise as the administrative office did not cooperate with the institutional coordinators.
3. Non-cooperation of institutional coordinators. In very few cases, rather exceptional cases, the cooperation from the institutional coordinators was, for whatever reasons, almost negligible. And the data collection from such centres was below 10%. Whatever response we could get was due to a few individuals who sent their questionnaire directly to the investigators.
4. The questionnaires designed could be considered as fairly lengthy ones and that was one of the factors, which contributed a lot to the poor response in initial stages. In the later period investigators appealed to the respondents to provide the latest bio-data with a one page questionnaire listing a few questions which are generally not covered in bio-data. This worked well and the response level got raised up to a considerable extent.

The Questionnaires.

The following table (i) gives the frequencies against each query included in all the questionnaires. This exercise was carried out to see the responses to different queries.

concentrate all their efforts in collecting information from individuals. The response to various queries differed considerably depending on the nature of activity involved. e.g. the queries like participation in research fora, publication of research articles have good response as against the response to awards received or patents sealed. Of course this is quite natural. The most important question, so far as the later analysis in concerned, was related to time allocation by individuals for different activities and almost all the faculty members have answered the same. The question regarding the distribution of research articles however has not been answered well. The purpose of this question was to find out the level of interaction of an individual with colleagues in the department, institute and outside the institute. May be the framing of question needs to be improved.

Quantification of self-financed researchers: It appears that in the exercise of quantification of manpower and financial sources one major group has somehow been left out of the scope. This relates to the self-financed researchers. A number of young teachers already employed in various colleges are registered as research students. They do not receive any fellowship as they are employed. However, the numbers of such so called part-time researchers are not getting counted in the manpower resources. This number is fairly high and at times exceeds the number of full-time researchers. Moreover not only that they do not get financial assistance from funding agencies but they spend quite a large amount while carrying out the research. They normally use the laboratories in the colleges where they are employed or work at the university centres during vacation. For their career advancement they take up the research work and spend a lot of amount. The quantification of the finances going into the research is not easy but certainly not impossible. This would add to the total funding devoted to research in the institute. Hence in any further effort of such nature should try to include the part-time or what can be termed as self-financed researchers.

Inclusion of colleges in the present exercise: The purpose of including the colleges, though on sample basis, in the present exercise was to get an idea about the research work that is being carried out at these centres. Though some of the colleges did take pride in fact that they are included in the exercise the overall response from the colleges was not very encouraging. As the very first attempt we should have concentrated only with the university centres. The time spend on collecting data from the colleges if is compared against the response it appears that the same time could have

Q1: Questionnaire for institutes: It may be observed that the queries related to financial resources covered in Q1 have quite low response. This is mainly because of the fact that the format in which we sought information and the format of the budget documents differ to some extent and institutional coordinators had to depend for this information on the office of comptroller. This resulted in general reluctance to give information. In order to overcome this difficulty investigator(s) had to resort to collect the budget documents from the institutes. However, this decision to collect the budget documents was taken subsequently and this affected the data collection process to some extent. While most of the institutes we could collect detailed budget documents some of the institutes, particularly government colleges and some of the university institutes provided only summary budget, which were not adequate to provide the information required. The information about the research scholars is sought from the university office and while the deputy registrar – development section should have this information the same could not be obtained from many centres. The information of scholars could have been covered in the departmental questionnaires as most the heads of department normally have this information readily available.

Q2 Questionnaire for Departments: The departmental questionnaire sought information on queries like intake capacity, mode of selection of students at PG and research level, availability of space, list of faculty, major instruments in laboratory besides a number of queries on output indicators. The idea was to get overall information on the infrastructure available and the research output of the department as a whole. In most of the cases the information given is fairly good. However, for whatever reasons some heads chose not to give information. This was one of the major problems as in many cases we had information from the individual faculty members but the consolidated information for the department as a whole was missing. In case of agriculture universities a separate problem had to be faced. Besides the teaching departments there are a large number of research stations. We could not give Q1 as it was meant for the institute and hence the departmental questionnaires were provided to these centres. However this questionnaire does not cover the finance part and hence the details of finance had to be collected from the budget of the university as a whole.

Q3 Questionnaire for individual faculty members: This was the largest and basic target group in the entire exercise. Hence it was natural that investigator(s) had to

been spent on university centres to enhance the response level. This is not under estimate the work college teachers are doing. The poor infrastructure, heavy teaching load and time consumed in a variety of extra curricular activities leaves very little scope for the college teachers to carry out research.

Conclusions

Based on the analysis of input-output indicators as well as the observations made by investigating team during the course of data collection certain definite conclusions can be arrived at.

The need of such database was felt by most of the university authorities. However, the response to the questionnaire survey leaves much room for improvement whatever data could be collected does reveal certain facts so far as the R & D activity in science and technology from higher education sector is concerned.

While university centres by and large have fair amount of R & D activity, in colleges, barring a few, it is much less. This may be attributed to the facts such as 1) the teaching component is much higher in case of college teachers as compared to the universities. 2) The infra structural development for R & D activity is too underdeveloped and 3) there does not exist any incentive for college teachers to carry out research besides obtaining a research degree.

As many as 12 institutes have less than 1 Crore as their R & D expenditure lass than 1 Crore. Out of 48 institutes which have furnished information on finances we find more than (28/48) * 100 institutes record R & D budget to be less than 5 Crores. There is a definite need of providing financial assistance of these institutes. So far as the manpower resources are concerned it may be stated that an overall average of about 35% of faculty amounting to full time equivalence for research is quite acceptable. This value ranges from little over 20% to about 45%. Considering the fact that major part of the available time is spend on teaching and preparations related to teaching a mean of 35% is not low. This time input may get enhanced if the proper funding is made available to develop infra structural facilities.

The frequency distribution of faculty involved in handling research projects and consultancy projects are quite interesting. The distribution of consultancy project is highly skewed with 75% of the institutes having less than 15% of faculty involved in it. This speaks for overall lack of relationship of academic institutes and the industrial sector. Hence, as it appears from the data set there is definite need of establishing

better ties with corporate sector. Institutions like " Technology Parks" will have to be established in different university centres.

These appear to be much room for inter institutional mobility of the faculty members. This is getting revealed from the fact that maximum percentage of faculty members involved as visiting faculty is just below 50% of the respondent and as many as 75% of the institutes have this involvement of the order of less than 25%. It would lead to a good deal of exchange of ideas and sharing of research by faculty if the inter-institutional mobility of faculty members is enhanced.

There are very low records on account of technologies developed or patents sealed. About 50% of institutes could have '0'% of faculty involvement in patents or technologies developed. Many a times one find that there is a general ignorance about the procedure of filing patents. In many cases younger faculty does not realize what type of research can qualify for filing research. It is necessary that information about such things may be made available and scientists – possibly through "technology parks" and also by arranging seminar workshop for this purpose.

DATA TABLES

Table - 1

Total Expenditure for Higher Education Sector in West Zone

		Total Expenditure (Rs.Crores)
	UNIVERSITY/INSTITUTE	
	Agriculture Science	
1	Gujarat Agriculture University, Anand	56.78
2	Indira Gandhi Krishi Vidyapeeth, Raipur	14.92
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	55.18
4	Konkan Krishi Vidyapeeth, Dapoli	15.78
5	Central Institute of Fisheries Education, Mumbai	3.88
6	Marathwada Krishi Vidyapeeth, Parbhani *	33.57
7	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	107.50
	Total (Agriculture)	**287.61**
	Engineering Science	
8	Birla Institute of Technology Science, Pilani	13.45
9	Dr. Babasaheb Ambedkar Technological University, Lonere	4.48
	Total (Engineering)	**17.93**
	Medical Science	
10	Gujarat Ayurved Univesity, Jamnagar *	8.95
	Total (Medical)	**8.95**
	Natural Science	
11	Bhavanagar University, Bhavnagar	15.07
12	Saurashtra University, Rajkot	12.03
13	North Gujarat University, Patan	4.35
14	Sardar Patel University, Vallabh Vidyanagar	18.37
15	South Gujarat University, Surat	13.76
16	Maharaja Sayajirao University, Vadodara **	38.04
17	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	6.98
18	Harisingh Gour Vishwavidyalaya, Sagar	11.80
19	Rani Durgavati Vishwavidyalaya, Jabalpur	4.46
20	Vikram University, Ujjain	17.00
21	Jiwaji University, Gwalior	10.50
22	Goa University, Panjim	13.90
23	Gujarat University, Ahmedabad	19.50
24	Nagpur Univeristy, Nagpur	41.72
25	Amravati University, Amravati	21.64
26	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	6.77
27	Shivaji University, Kolhapur	40.26
28	Mumbai University, Mumbai *	47.55
29	University of Pune, Pune	31.53
30	Swami Ramanand Teerth Marathwada University, Nanded	5.06
31	Mohanlal Sukhadia University, Udaipur	14.92
32	Rajasthan University, Jaipur	48.60

Table - 1 (contd.)

Total Expenditure for Higher Education Sector in West Zone

		Total Expenditure (Rs.Crores)
33	Maharshi Dayanand Saraswati University, Ajmer	11.88
34	Jai Narain Vyas University, Jodhpur	20.67
35	Pandit Ravishankar Shukla University, Raipur	7.91
	Total (Natural Science)	**484.27**
	Total for Universities	**798.76**
	COLLEGES	
	Agriculture Science	
	(All Agricultural Colleges are constituent Colleges, hence budgets are covered in their respective Universities	
	Engineering Science	
1	Padre Engineering College, Ponda	6.11
2	Goa Engineering College, Farmagudi	3.84
3	Walchand Engineering College, Sangli	4.05
4	Malaviya Regional Engineering College, Jaipur	29.67
5	Maulana Azad Regional Engineering College, Bhopal	39.43
6	Shri G. S. Institute of Science and Technology, Indore	5.40
7	LD Engineering, Ahmedabad	7.70
8	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0.83
	Total (Engineering)	**97.03**
	Medical Science	
9	MG Medical College, Indore	3.33
	Total (Medical)	**3.33**
	Natural Science	
10	Nagar college, Ahmednagar	1.15
11	Insitute of Science, Nagpur	2.85
12	Y.C. College, Karad	2.02
13	Ramnarain Ruia College, Mumbai	2.03
	Total (Natural Science)	**8.05**
	Total for Colleges	**108.41**
	Grand Total	**907.17**
	Source : Questionnaire I - 3.1	
	Based on Budgets, Annual Reports and Questionnaires Received	

Table - 2
S & T Expenditure for Higher Education Sector in West Zone (1997-98)

		S T Expenditure (Rs. Crores)
	UNIVERSITY/INSTITUTE	
	Agriculture Science	
1	Gujarat Agriculture University, Anand	56.78
2	Indira Gandhi Krishi Vidyapeeth, Raipur	14.92
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	55.18
4	Konkan Krishi Vidyapeeth, Dapoli	15.78
5	Central Institute of Fisheries Education, Mumbai	3.88
6	Marathwada Krishi Vidyapeeth, Parbhani *	33.57
7	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	107.50
	Total (Agriculture)	**287.61**
	Engineering Science	
7	Birla Institute of Technology Science, Pilani	13.45
8	Dr. Babasaheb Ambedkar Technological University, Lonere	4.48
	Total (Engineering)	**17.93**
	Medical Science	
9	Gujarat Ayurved Univesity, Jamnagar *	8.95
	Total (Medical)	**8.95**
	Natural Science	
10	Bhavanagar University, Bhavnagar	6.78
11	Saurashtra University, Rajkot	3.37
12	North Gujarat University, Patan	1.31
13	Sardar Patel University, Vallabh Vidyanagar	11.94
14	South Gujarat University, Surat	6.05
15	Maharaja Sayajirao University, Vadodara **	14.00
16	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	3.07
17	Harisingh Gour Vishwavidyalaya, Sagar	5.19
18	Rani Durgavati Vishwavidyalaya, Jabalpur	1.69
19	Vikram University, Ujjain	8.16
20	Jiwaji University, Gwalior	5.46
21	Goa University, Panjim	7.65
22	Gujarat University, Ahmedabad	10.53
23	Nagpur Univeristy, Nagpur	20.44
24	Amravati University, Amravati	12.98
25	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	1.96
26	Shivaji University, Kolhapur	20.13
27	Mumbai University, Mumbai *	20.45
28	University of Pune, Pune	13.56
29	Swami Ramanand Teerth Marathwada University, Nanded	3.44
30	Mohanlal Sukhadia University, Udaipur	5.52
31	Rajasthan University, Jaipur	18.95
32	Maharshi Dayanand Saraswati University, Ajmer	5.35
33	Jai Narain Vyas University, Jodhpur	11.37
34	Pandit Ravishankar Shukla University, Raipur	2.61

Table - 2 (contd.)
S & T Expenditure for Higher Education Sector in West Zone (1997-98)

	Total (Natural Science)	**221.97**
	Total for Universities	**536.46**
	COLLEGES	
	Agriculture Science	
	(All Agricultural Colleges are constituent Colleges, hence budgets are covered in their respective Universities	
	Engineering Science	
1	Padre Engineering College, Ponda	6.11
2	Goa Engineering College, Farmagudi	3.84
3	Walchand Engineering College, Sangli	4.05
4	Malaviya Regional Engineering College, Jaipur	29.67
5	Maulana Azad Regional Engineering College, Bhopal	39.43
6	Shri G. S. Institute of Science and Technology, Indore	5.40
7	LD Engineering, Ahmedabad	7.70
8	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0.83
	Total (Engineering)	**97.03**
	Medical Science	
9	MG Medical College, Indore	3.33
	Total (Medical)	**3.33**
	Natural Science	
10	Nagar college, Ahmednagar	0.61
11	Insitute of Science, Nagpur	2.85
12	Y.C. College, Karad	0.93
13	Ramnarain Ruia College, Mumbai	0.59
	Total (Natural Science)	**4.98**
	Total for Colleges	**105.34**
	Grand Total	**641.80**
	Source : Questionnaire I - 3.1, 3.2	
	Based on Budget, Annual Reports and Questionnaires Received	

Table - 3 (contd.)
R &D Expenditure for Higher Education Sector in West Zone (1997-98)

		R & D Expenditure (Rs. Crores)
	UNIVERSITY/INSTITUTE	
	Agriculture Science	
1	Gujarat Agriculture University, Anand	32.38
2	Indira Gandhi Krishi Vidyapeeth, Raipur	6.27
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	30.36
4	Konkan Krishi Vidyapeeth, Dapoli	7.03
5	Central Institute of Fisheries Education, Mumbai	1.24
6	Marathwada Krishi Vidyapeeth, Parbhani *	13.99
7	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	47.69
	Total (Agriculture)	**138.96**
	Engineering Science	
8	Birla Institute of Technology Science, Pilani	5.78
9	Dr. Babasaheb Ambedkar Technological University, Lonere	1.12
	Total (Engineering)	**6.90**
	Medical Science	
10	Gujarat Ayurved Univesity, Jamnagar *	1.41
	Total (Medical)	**1.41**
	Natural Science	
11	Bhavanagar University, Bhavnagar	1.24
12	Saurashtra University, Rajkot	0.74
13	North Gujarat University, Patan	0.26
14	Sardar Patel University, Vallabh Vidyanagar	2.54
15	South Gujarat University, Surat	1.51
16	Maharaja Sayajirao University, Vadodara **	5.93
17	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	0.68
18	Harisingh Gour Vishwavidyalaya, Sagar	1.45
19	Rani Durgavati Vishwavidyalaya, Jabalpur	0.39
20	Vikram University, Ujjain	2.53
21	Jiwaji University, Gwalior	1.80
22	Goa University, Panjim	2.32
23	Gujarat University, Ahmedabad	2.17
24	Nagpur Univeristy, Nagpur	4.37
25	Amravati University, Amravati	4.74
26	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	0.69
27	Shivaji University, Kolhapur	4.75
28	Mumbai University, Mumbai *	4.25
29	University of Pune, Pune	3.16
30	Swami Ramanand Teerth Marathwada University, Nanded	0.27
31	Mohanlal Sukhadia University, Udaipur	1.99
32	Rajasthan University, Jaipur	4.87
33	Maharshi Dayanand Saraswati University, Ajmer	1.55
34	Jai Narain Vyas University, Jodhpur	2.27
35	Pandit Ravishankar Shukla University, Raipur	0.68

Table - 3 (contd.)
R &D Expenditure for Higher Education Sector in West Zone (1997-98)

		R & D Expenditure (Rs. Crores)
	Total (Natural Science)	**57.14**
	Total for Universities	**204.40**
	COLLEGES	
	Agriculture Science	
	(All Agricultural Colleges are constituent Colleges, hence budgets are covered in their respective Universities	
	Engineering Science	
1	Padre Engineering College, Ponda	1.71
2	Goa Engineering College, Farmagudi	1.54
3	Walchand Engineering College, Sangli	1.42
4	Malaviya Regional Engineering College, Jaipur	13.14
5	Maulana Azad Regional Engineering College, Bhopal	16.95
6	Shri G. S. Institute of Science and Technology, Indore	1.93
7	LD Engineering, Ahmedabad	3.66
8	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0.33
	Total (Engineering)	**40.67**
	Medical Science	
9	MG Medical College, Indore	1.67
	Total (Medical)	**1.67**
	Natural Science	
10	Nagar college, Ahmednagar	0.18
11	Insitute of Science, Nagpur	0.79
12	Y.C. College, Karad	0.17
13	Ramnarain Ruia College, Mumbai	0.24
	Total (Natural Science)	**1.38**
	Total for Colleges	**43.72**
	Grand Total	**248.12**
	Source : Questionnaire I - 3.1,3.2	
	Questionnaire II - 2.5	
	Questionnaire III - 1.1.4, 1.4.4	
	Based on Budgets, Annual Reports and Questionnaires Received.	

Table - 4

Comparative Statement of Expenditure for Higher Education Sector in West Zone (1997-98)

		Total Expenditure	S & T Expenditure		R & D Expenditure		
			Rs. Crores	% of Total	Rs. Cro	% of tot	% of S &
	UNIVERSITY/INSTITUTE						
	Agriculture Science						
1	Gujarat Agriculture University, Anand	56.78	56.78	100.00	32.38	57.02	57.02
2	Indira Gandhi Krishi Vidyapeeth, Raipur	14.92	14.92	100.00	6.27	42.00	42.00
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	55.18	55.18	100.00	30.36	55.03	55.03
4	Konkan Krishi Vidyapeeth, Dapoli	15.78	15.78	100.00	7.03	44.54	44.54
5	Central Institute of Fisheries Education, Mumbai	3.88	3.88	100.00	1.24	32.00	32.00
6	Marathwada Krishi Vidyapeeth, Parbhani *	33.57	33.57	100.00	13.99	41.68	41.68
7	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	107.50	107.50	100.00	47.69	44.36	44.36
	Total (Agriculture)	**287.61**	**287.61**	**100.00**	**138.96**	**48.31**	**48.31**
	Engineering Science						
8	Birla Institute of Technology Science, Pilani	13.45	13.45	100.00	5.78	43.00	43.00
9	Dr. Babasaheb Ambedkar Technological University, Lonere	4.48	4.48	100.00	1.12	25.00	25.00
	Total (Engineering)	**17.93**	**17.93**	**100.00**	**6.90**	**38.50**	**38.50**
	Medical Science						
10	Gujarat Ayurved Univesity, Jamnagar *	8.95	8.95	100.00	1.41	15.74	15.74
	Total (Medical)	**8.95**	**8.95**	**100.00**	**1.41**	**15.74**	**15.74**
	Natural Science						
11	Bhavanagar University, Bhavnagar	15.07	6.78	44.99	1.24	8.22	18.28
12	Saurashtra University, Rajkot	12.03	3.37	28.01	0.74	6.16	22.00
13	North Gujarat University, Patan	4.35	1.30	29.77	0.26	5.95	20.00
14	Sardar Patel University, Vallabh Vidyanagar	18.37	11.94	65.00	2.54	13.83	21.28
15	South Gujarat University, Surat	13.76	6.05	43.95	1.51	10.99	25.00
16	Maharaja Sayajirao University, Vadodara **	38.04	14.00	36.80	5.93	15.59	42.36
17	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	6.98	3.07	43.92	0.67	9.66	22.00
18	Harisingh Gour Vishwavidyalaya, Sagar	11.80	5.19	43.95	1.45	12.31	28.00
19	Rani Durgavati Vishwavidyalaya, Jabalpur	4.46	1.68	37.59	0.39	8.65	23.00
20	Vikram University, Ujjain	17.00	8.16	48.00	2.53	14.88	31.00
21	Jiwaji University, Gwalior	10.50	5.46	52.00	1.80	17.16	33.00
22	Goa University, Panjim	13.90	7.65	55.00	2.32	16.70	30.36
23	Gujarat University, Ahmedabad	19.50	10.53	54.00	2.17	11.12	20.59
24	Nagpur Univeristy, Nagpur	41.72	20.44	49.00	4.37	10.47	21.37
25	Amravati University, Amravati	21.64	12.98	60.00	4.74	21.92	36.53
26	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	6.77	1.96	29.00	0.69	10.15	35.00
27	Shivaji University, Kolhapur	40.26	20.13	50.00	4.75	11.79	23.57
28	Mumbai University, Mumbai *	47.55	20.45	43.00	4.25	8.94	20.78
29	University of Pune, Pune	31.53	13.56	43.00	3.16	10.01	23.27
30	Swami Ramanand Teerth Marathwada University, Nanded	5.06	3.44	68.00	0.27	5.27	7.75
31	Mohanlal Sukhadia University, Udaipur	14.92	5.52	37.00	1.99	13.32	36.00
32	Rajasthan University, Jaipur	48.60	18.95	39.00	4.87	10.01	25.67
33	Maharshi Dayanand Saraswati University, Ajmer	11.88	5.35	45.00	1.55	13.05	29.00
34	Jai Narain Vyas University, Jodhpur	20.67	11.37	55.00	2.27	11.00	20.00
35	Pandit Ravishankar Shukla University, Raipur	7.91	2.61	32.95	0.68	8.57	26.00

Table - 4 contd.

Comparative Statement of Expenditure for Higher Education Sector in West Zone (1997-98)

		Total Expenditure	S & T Expenditure		R & D Expenditure		
			Rs. Crores	% of Total	Rs. Cro	% of tot	% of S &
	Total (Natural Science)	**484.27**	**221.92**	**45.83**	**57.12**	**11.80**	**25.74**
	Total for Universities	**798.76**	**536.41**	**67.15**	**204.40**	**25.59**	**38.10**
	COLLEGES						
	Agriculture Science						
	(All Agricultural Colleges are constituent Colleges, hence budgets are covered in their respective Universities						
	Engineering Science						
1	Padre Engineering College, Ponda	6.11	6.11	100.00	1.71	27.92	27.92
2	Goa Engineering College, Farmagudi	3.84	3.84	100.00	1.54	40.00	40.00
3	Walchand Engineering College, Sangli	4.05	4.05	100.00	1.42	35.00	35.00
4	Malaviya Regional Engineering College, Jaipur	29.67	29.67	100.00	13.14	44.27	44.27
5	Maulana Azad Regional Engineering College, Bhopal	39.43	39.43	100.00	16.95	43.00	43.00
6	Shri G. S. Institute of Science and Technology, Indore	5.40	5.40	100.00	1.93	35.74	35.74
7	LD Engineering, Ahmedabad	7.70	7.70	100.00	3.66	47.56	47.56
8	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0.83	0.83	100.00	0.33	40.00	40.00
	Total (Engineering)	**97.03**	**97.03**	**100.00**	**40.67**	**41.92**	**41.92**
	Medical Science						
9	MG Medical College, Indore	3.33	3.33	100.00	1.67	50.00	50.00
	Total (Medical)	**3.33**	**3.33**	**100.00**	**1.67**	**50.00**	**50.00**
	Natural Science						
10	Nagar college, Ahmednagar	1.15	0.61	53.00	0.18	15.37	29.00
11	Insitute of Science, Nagpur	2.85	2.85	100.00	0.79	27.81	27.81
12	Y.C. College, Karad	2.02	0.93	46.04	0.17	8.61	18.71
13	Ramnarain Ruia College, Mumbai	2.03	0.59	29.00	0.24	11.60	40.00
	Total (Natural Science)	8.05	4.98	61.84	1.38	17.13	27.70
	Total for Colleges	**108.41**	**105.34**	**97.17**	**43.72**	**40.33**	**41.50**
	Grand Total	**907.17**	**641.75**	**70.74**	**248.11**	**27.35**	**38.66**
	% of Total Expenditure	100.00%	70.74%		27.35%		
	% of S & T Expenditure	-	100.00%		38.66%		
	Data Extracted from the budgets of Institutes/ Questionnaire - I (3.1, 3.2)						
	Base Year for Financial Resources (1997-1998)						
	*** Budget Years other than 1997-98**						
	Marathwada Krishi Vidyapeeth 1998-99						
	Mumbai University (Actuals)1998-1999						
	Gujarat Ayurved University 1995-96						

Table - 4 contd.

Comparative Statement of Expenditure for Higher Education Sector in West Zone (1997-98)

		Total Expenditure	**S & T Expenditure**		**R & D Expenditure**		
			Rs. Crores	**% of Total**	**Rs. Cro**	**% of tot**	**% of S &**
	** Unitary University						

Table - 5(I)

Budget-head wise distribution of Expenditure for Higher Education Sector in West Zone (1997-98)

		Building	Staff	Equipment	Books	Campus Development	Health Centre
	UNIVERSITY/INSTITUTE						
	Agriculture Science						
1	Gujarat Agriculture University, Anand	1.20	34.22	-	0.04	-	-
2	Indira Gandhi Krishi Vidyapeeth, Raipur	0.50	9.58	-	-	-	-
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	2.59	29.35	0.89	-	1.00	-
4	Konkan Krishi Vidyapeeth, Dapoli	1.20	8.80	-	0.10	-	-
5	Central Institute of Fisheries Education, Mumbai	-	2.73	0.50	-	-	-
6	Marathwada Krishi Vidyapeeth, Parbhani *	0.65	20.09	1.20	0.15	-	-
7	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	4.33	57.43	2.10	0.32	2.24	-
	Total (Agriculture)	10.47	162.20	4.69	0.61	3.24	-
	Percent share	**3.64%**	**56.40%**	**1.63%**	**0.21%**	**1.13%**	**0.00%**
	Engineering Science						
8	Birla Institute of Technology Science, Pilani	0.50	6.50	1.76	0.02	0.50	-
9	Dr. Babasaheb Ambedkar Technological University, Lonere	0.15	2.50	0.19	-	0.25	-
	Total (Engineering)	0.65	9.00	1.95	0.02	0.75	-
	Percent share	**3.63%**	**50.20%**	**10.88%**	**0.11%**	**4.18%**	**0.00%**
	Medical Science						
10	Gujarat Ayurved Univesity, Jamnagar *	-	5.33	-	0.05	-	0.53
	Total (Medical)	-	5.33	-	0.05	-	0.53
	Percent Share	**0.00%**	**59.55%**	**0.00%**	**0.56%**	**0.00%**	**5.92%**
	Natural Science						
11	Bhavanagar University, Bhavnagar	0.35	8.33	0.50	0.05	0.25	0.01
12	Saurashtra University, Rajkot	0.52	6.63	-	-	-	-
13	North Gujarat University, Patan	-	2.25	-	-	-	-
14	Sardar Patel University, Vallabh Vidyanagar	1.50	9.60	1.20	0.15	0.50	0.02
15	South Gujarat University, Surat	0.85	7.35	-	-	0.75	-
16	Maharaja Sayajirao University, Vadodara **	2.48	14.96	2.58	0.50	1.40	0.05
17	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	-	4.55	0.18	-	-	0.01
18	Harisingh Gour Vishwavidyalaya, Sagar	0.25	6.62	0.75	0.05	-	-
19	Rani Durgavati Vishwavidyalaya, Jabalpur	-	2.08	-	-	0.50	-
20	Vikram University, Ujjain	1.00	9.26	-	-	-	0.02
21	Jiwaji University, Gwalior	0.75	6.50	0.50	0.01	-	-
22	Goa University, Panjim	0.50	7.77	-	0.02	0.25	0.02
23	Gujarat University, Ahmedabad	2.25	10.10	1.30	0.10	1.05	-
24	Nagpur Univeristy, Nagpur	3.10	16.28	1.22	0.05	3.84	-
25	Amravati University, Amravati	1.50	11.37	1.50	-	1.13	-
26	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	-	3.79	0.50	-	-	-
27	Shivaji University, Kolhapur	3.64	19.69	2.20	0.08	1.42	0.08
28	Mumbai University, Mumbai *	1.15	22.63	3.40	0.05	2.50	0.10

Table - 5(II)

Budget-head wise distribution of Expenditure for Higher Education Sector in West Zone (1997-98)

		Student Amenities	Faculty Amenities	Printing	Maintenance	Travel	Others	Total
	UNIVERSITY/INSTITUTE							
	Agriculture Science							
1	Gujarat Agriculture University, Anand	-	-	4.89	5.86	0.05	10.52	56.78
2	Indira Gandhi Krishi Vidyapeeth, Raipur	-	-	1.02	2.54	-	1.28	14.92
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	0.50	-	1.86	6.22	0.32	12.45	55.18
4	Konkan Krishi Vidyapeeth, Dapoli	-	-	0.39	1.59	0.02	3.68	15.78
5	Central Institute of Fisheries Education, Mumbai	-	-	-	-	-	0.65	3.88
6	Marathwada Krishi Vidyapeeth, Parbhani *	-	-	2.55	3.86	0.05	5.02	33.57
7	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	0.75	-	4.05	8.50	0.48	27.30	107.50
		-						
	Total (Agriculture)	1.25	-	14.76	28.57	0.92	60.90	287.61
	Percent share	**0.43%**	**0.00%**	**5.13%**	**9.93%**	**0.32%**	**21.17%**	
	Engineering Science							
8	Birla Institute of Technology Science, Pilani	0.65	0.20	1.25	1.02	0.06	0.99	13.45
9	Dr. Babasaheb Ambedkar Technological University, Lonere	-	-	0.35	0.75	-	0.29	4.48
	Total (Engineering)	0.65	0.20	1.60	1.77	0.06	1.28	17.93
	Percent share	**3.63%**	**1.12%**	**8.92%**	**9.87%**	**0.33%**	**7.14%**	
	Medical Science							
10	Gujarat Ayurved Univesity, Jamnagar *	0.60	-	0.80	1.10	-	0.54	8.95
	Total (Medical)	0.60	-	0.80	1.10	-	0.54	8.95
	Percent Share	**6.70%**	**0.00%**	**8.94%**	**12.29%**	**0.00%**	**6.03%**	
	Natural Science							
11	Bhavanagar University, Bhavnagar	0.80	0.75	1.20	1.65	0.05	1.13	15.07
12	Saurashtra University, Rajkot	0.05	-	1.25	1.11	0.02	2.45	12.03
13	North Gujarat University, Patan	-	-	0.55	1.20	0.05	0.30	4.35
14	Sardar Patel University, Vallabh Vidyanagar	0.50	0.19	1.05	1.58	0.10	1.98	18.37
15	South Gujarat University, Surat	-	0.50	1.22	1.98	0.02	1.09	13.76
16	Maharaja Sayajirao University, Vadodara **	0.65	0.77	2.25	4.68	0.05	7.67	38.04
17	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	-	-	0.90	1.05	-	0.29	6.98
18	Harisingh Gour Vishwavidyalaya, Sagar	0.02	0.03	1.10	1.59	0.02	1.39	11.80
19	Rani Durgavati Vishwavidyalaya, Jabalpur	-	-	0.65	1.05	0.01	0.17	4.46
20	Vikram University, Ujjain	0.03	0.10	1.55	2.08	0.02	2.94	17.00
21	Jiwaji University, Gwalior	-	0.15	1.01	1.22	-	0.36	10.50
22	Goa University, Panjim	0.03	0.02	1.20	1.69	0.05	2.36	13.90
23	Gujarat University, Ahmedabad	0.05	0.07	1.15	1.80	0.10	1.53	19.50
24	Nagpur Univeristy, Nagpur	0.02	0.12	2.65	4.49	0.05	9.90	41.72
25	Amravati University, Amravati	0.05	0.20	1.70	2.05	0.03	2.11	21.64
26	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	-	-	0.50	1.10	-	0.88	6.77
27	Shivaji University, Kolhapur	0.12	0.18	2.85	4.19	0.06	5.75	40.26
28	Mumbai University, Mumbai *	0.58	0.43	3.50	6.75	0.15	6.31	47.55

Table - 5(I) contd.

Budget-head wise distribution of Expenditure for Higher Education Sector in West Zone (1997-98)

		Building	Staff	Equipment	Books	Campus Development	Health Centre
29	University of Pune, Pune	1.20	17.25	1.50	0.06	1.10	0.08
30	Swami Ramanand Teerth Marathwada University, Nanded	0.75	2.10	-	-	-	-
31	Mohanlal Sukhadia University, Udaipur	-	8.75	0.50	-	-	-
32	Rajasthan University, Jaipur	4.80	26.90	3.44	0.15	1.58	0.02
33	Maharshi Dayanand Saraswati University, Ajmer	1.30	6.85	0.25	-	0.50	-
34	Jai Narain Vyas University, Jodhpur	1.00	12.39	-	-	1.24	0.05
35	Pandit Ravishankar Shukla University, Raipur	0.85	4.66	-	-	-	-
	Total (Natural Science)	29.74	248.66	21.52	1.27	18.01	0.46
	Percent Share	**6.14%**	**51.35%**	**4.44%**	**0.26%**	**3.72%**	**0.09%**
	Total for Universities	40.86	425.19	28.16	1.95	22.00	0.99
	Percent share	**5.12%**	**53.23%**	**3.53%**	**0.24%**	**2.75%**	**0.12%**
	COLLEGES						
	Agriculture Science						
	(All Agricultural Colleges are constituent Colleges, hence budgets are covered in their respective Universities						
	Engineering Science						
1	Padre Engineering College, Ponda	-	3.50	0.50	0.01	-	-
2	Goa Engineering College, Farmagudi	-	1.95	0.25	0.02	-	-
3	Walchand Engineering College, Sangli	-	2.25	-	0.05	-	-
4	Malaviya Regional Engineering College, Jaipur	2.23	16.75	1.86	0.10	1.25	-
5	Maulana Azad Regional Engineering College, Bhopal	3.64	19.26	2.52	0.25	3.09	0.02
6	Shri G. S. Institute of Science and Technology, Indore	-	3.85	-	0.05	-	-
7	LD Engineering, Ahmedabad	-	3.73	1.10	0.02	-	-
8	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	-	0.49	-	-	-	-
	Total (Engineering)	5.87	51.78	6.23	0.50	4.34	0.02
	Percent Share	**6.05%**	**53.36%**	**6.42%**	**0.52%**	**4.47%**	**0.02%**
	Medical Science						
9	MG Medical College, Indore	-	1.83	-	-	-	-
	Total (Medical)	-	1.83	-	-	-	-
	Percent Share	**0.00%**	**54.95%**	**0.00%**	**0.00%**	**0.00%**	**0.00%**
	Natural Science						
10	Nagar college, Ahmednagar	-	0.50	-	-	-	-
11	Insitute of Science, Nagpur	-	1.75	-	0.10	-	-
12	Y.C. College, Karad	0.13	1.02	0.30	0.05	0.13	-
13	Ramnarain Ruia College, Mumbai	-	0.75	0.80	0.02	-	-
	Total (Natural Science)	0.13	4.02	1.10	0.17	0.13	-
	Percent Share	**1.55%**	**49.93%**	**13.60%**	**2.11%**	**1.57%**	**0.00%**

Table - 5(II) contd.

Budget-head wise distribution of Expenditure for Higher Education Sector in West Zone (1997-98)

		Student Amenities	Faculty Amenities	Printing	Maintenance	Travel	Others	Total
29	University of Pune, Pune	0.70	0.65	2.64	3.97	0.11	2.28	31.53
30	Swami Ramanand Teerth Marathwada University, Nanded	-	-	0.66	0.86	-	0.69	5.06
31	Mohanlal Sukhadia University, Udaipur	-	-	1.55	1.85	0.02	2.25	14.92
32	Rajasthan University, Jaipur	0.53	0.44	2.87	4.35	0.06	3.46	48.60
33	Maharshi Dayanand Saraswati University, Ajmer	-	-	1.09	1.34	-	0.55	11.88
34	Jai Narain Vyas University, Jodhpur	0.36	0.45	1.57	1.90	0.05	1.66	20.67
35	Pandit Ravishankar Shukla University, Raipur	0.10	0.54	0.86	0.15	-	0.75	7.91
	Total (Natural Science)	4.58	5.59	37.52	55.68	1.02	60.24	484.27
	Percent Share	**0.95%**	**1.15%**	**7.75%**	**11.50%**	**0.21%**	**12.44%**	
	Total for Universities	7.08	5.79	54.68	87.12	2.00	122.96	798.76
	Percent share	**0.89%**	**0.72%**	**6.85%**	**10.91%**	**0.25%**	**15.39%**	
	COLLEGES							
	Agriculture Science							
	(All Agricultural Colleges are constituent Colleges, hence budge							
	Engineering Science							
1	Padre Engineering College, Ponda	0.05	0.05	0.75	0.50	-	0.75	6.11
2	Goa Engineering College, Farmagudi	-	-	0.50	0.85	-	0.27	3.84
3	Walchand Engineering College, Sangli	0.02	0.05	0.63	0.93	0.01	0.11	4.05
4	Malaviya Regional Engineering College, Jaipur	0.10	0.15	1.75	2.33	0.02	3.13	29.67
5	Maulana Azad Regional Engineering College, Bhopal	0.05	0.20	2.59	3.44	0.05	4.32	39.43
6	Shri G. S. Institute of Science and Technology, Indore	-	-	0.25	0.85	-	0.40	5.40
7	LD Engineering, Ahmedabad	-	-	0.85	1.43	0.02	0.55	7.70
8	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	-	-	0.10	0.20		0.04	0.83
	Total (Engineering)	0.22	0.45	7.42	10.53	0.10	9.57	97.03
	Percent Share	**0.23%**	**0.46%**	**7.65%**	**10.85%**	**0.10%**	**9.86%**	
	Medical Science							
9	MG Medical College, Indore	-	-	0.50	0.85		0.15	3.33
	Total (Medical)	-	-	0.50	0.85	-	0.15	3.33
	Percent Share	**0.00%**	**0.00%**	**15.02%**	**25.53%**	**0.00%**	**4.50%**	
	Natural Science							
10	Nagar college, Ahmednagar	-	-	0.15	0.45	-	0.05	1.15
11	Insitute of Science, Nagpur	-	-	0.25	0.58	-	0.17	2.85
12	Y.C. College, Karad	-	0.02	0.11	0.01	0.05	0.22	2.02
13	Ramnarain Ruia College, Mumbai	-	-	-	0.40	-	0.06	2.03
	Total (Natural Science)	-	0.02	0.51	1.44	0.05	0.50	8.05
	Percent Share	**0.00%**	**0.19%**	**6.33%**	**17.89%**	**0.62%**	**6.21%**	

Table - 5(I) contd.

Budget-head wise distribution of Expenditure for Higher Education Sector in West Zone (1997-98)

	Building	Staff	Equipment	Books	Campus Development	Health Centre
Total for Colleges	6.00	57.63	7.33	0.67	4.47	0.02
Percent Share	**5.53%**	**53.16%**	**6.76%**	**0.62%**	**4.12%**	**0.02%**
Grand Total	46.86	482.82	35.49	2.62	26.47	1.01
Percent Share	**5.16%**	**53.22%**	**3.91%**	**0.29%**	**2.92%**	**0.11%**
Source : Questionnaire I - q 3.1, q 3.2						
Based on Budgets, Annual Reports and Questionnaires received						

Table - 5(II) contd.

Budget-head wise distribution of Expenditure for Higher Education Sector in West Zone (1997-98)

	Student Amenities	Faculty Amenities	Printing	Maintenance	Travel	Others	Total
Total for Colleges	0.22	0.47	8.43	12.82	0.15	10.22	108.41
Percent Share	**0.20%**	**0.43%**	**7.78%**	**11.83%**	**0.14%**	**9.43%**	
Grand Total	7.30	6.25	63.11	99.94	2.15	133.18	907.17
Percent Share	**0.80%**	**0.69%**	**6.96%**	**11.02%**	**0.24%**	**14.68%**	
Source : Questionnaire I - q 3.1, q 3.2							
Based on Budgets, Annual Reports and Questionnaires received							

Table - 6(I)

Expenditure Distribution by Source of Grant for Higher Education Sector in West Zone (1997-98)

		State Govt.	Central Govt.	Industries	Foreign Sources	Donations
	UNIVERSITY/INSTITUTE					
	Agriculture Science					
1	Gujarat Agriculture University, Anand	32.76	12.03	-	-	-
2	Indira Gandhi Krishi Vidyapeeth, Raipur	6.84	5.76	-	-	-
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	40.23	9.53	-	-	-
4	Konkan Krishi Vidyapeeth, Dapoli	7.54	3.59	-	-	-
5	Central Institute of Fisheries Education, Mumbai	3.00	-	-	-	-
6	Marathwada Krishi Vidyapeeth, Parbhani *	19.42	7.50	-	-	-
7	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	53.11	28.28	-	-	-
	Total (Agriculture)	162.90	66.69	-	-	-
	Percent share	**56.64%**	**23.19%**	**0.00%**	**0.00%**	**0.00%**
	Engineering Science					
7	Birla Institute of Technology Science, Pilani	-	0.85	-	0.56	1.25
8	Dr. Babasaheb Ambedkar Technological University, Lonere	1.92	1.20	0.26	-	-
	Total (Engineering)	1.92	2.05	0.26	0.56	1.25
	Percent share	**10.71%**	**11.43%**	**1.45%**	**3.12%**	**6.97%**
	Medical Science					
9	Gujarat Ayurved Univesity, Jamnagar *	6.29	1.67	0.25	-	0.15
	Total (Medical)	6.29	1.67	0.25	-	0.15
	Percent Share	**70.28%**	**18.66%**	**2.79%**	**0.00%**	**1.68%**
	Natural Science					
10	Bhavanagar University, Bhavnagar	6.57	4.60	0.75	-	0.20
11	Saurashtra University, Rajkot	6.25	1.59	1.06	-	0.15
12	North Gujarat University, Patan	2.50	0.59	-	-	-
13	Sardar Patel University, Vallabh Vidyanagar	6.80	4.26	1.86	-	0.33
14	South Gujarat University, Surat	5.90	3.25	-	-	-
15	Maharaja Sayajirao University, Vadodara **	14.83	10.28	1.20	-	1.26
16	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	3.85	1.24	-	-	-
17	Harisingh Gour Vishwavidyalaya, Sagar	6.50	2.54	-	-	-
18	Rani Durgavati Vishwavidyalaya, Jabalpur	2.40	1.17	-	-	-
19	Vikram University, Ujjain	6.80	4.27	-	-	-
20	Jiwaji University, Gwalior	4.28	3.48	-	-	-
21	Goa University, Panjim	7.50	3.85	-	-	0.10
22	Gujarat University, Ahmedabad	8.67	4.89	1.25	-	0.85
23	Nagpur Univeristy, Nagpur	22.57	5.48	-	-	-
24	Amravati University, Amravati	12.61	4.50	-	-	-
25	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	3.43	1.70	-	-	-

Table - 6(II)

Expenditure Distribution by Source of Grant for Higher Education Sector in West Zone (1997-98)

		Institute's Own Sources	Others	Total
	UNIVERSITY/INSTITUTE			
	Agriculture Science			
1	Gujarat Agriculture University, Anand	11.98	0.01	56.78
2	Indira Gandhi Krishi Vidyapeeth, Raipur	2.32	-	14.92
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	5.39	0.03	55.18
4	Konkan Krishi Vidyapeeth, Dapoli	4.65	-	15.78
5	Central Institute of Fisheries Education, Mumbai	0.88	-	3.88
6	Marathwada Krishi Vidyapeeth, Parbhani *	6.65	-	33.57
7	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	26.09	0.02	107.50
			-	
	Total (Agriculture)	57.96	0.06	287.61
	Percent share	**20.15%**	**0.02%**	
	Engineering Science			
7	Birla Institute of Technology Science, Pilani	10.79	-	13.45
8	Dr. Babasaheb Ambedkar Technological University, Lonere	1.10	-	4.48
			-	
	Total (Engineering)	11.89	-	17.93
	Percent share	**66.31%**	**0.00%**	
	Medical Science			
9	Gujarat Ayurved Univesity, Jamnagar *	0.59	-	8.95
			-	
	Total (Medical)	0.59	-	8.95
	Percent Share	**6.59%**	**0.00%**	
	Natural Science			
10	Bhavanagar University, Bhavnagar	2.90	0.05	15.07
11	Saurashtra University, Rajkot	2.98	-	12.03
12	North Gujarat University, Patan	1.26	-	4.35
13	Sardar Patel University, Vallabh Vidyanagar	5.12	-	18.37
14	South Gujarat University, Surat	4.61	-	13.76
15	Maharaja Sayajirao University, Vadodara **	9.51	0.96	38.04
16	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	1.86	0.03	6.98
17	Harisingh Gour Vishwavidyalaya, Sagar	2.76	-	11.80
18	Rani Durgavati Vishwavidyalaya, Jabalpur	0.89	-	4.46
19	Vikram University, Ujjain	5.90	0.03	17.00
20	Jiwaji University, Gwalior	2.71	0.03	10.50
21	Goa University, Panjim	2.45	-	13.90
22	Gujarat University, Ahmedabad	3.84	-	19.50
23	Nagpur Univeristy, Nagpur	13.54	0.13	41.72
24	Amravati University, Amravati	4.53	-	21.64
25	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	1.64	-	6.77

Table - 6(I) contd.

Expenditure Distribution by Source of Grant for Higher Education Sector in West Zone (1997-98)

		State Govt.	Central Govt.	Industries	Foreign Sources	Donations
26	Shivaji University, Kolhapur	18.98	7.32	1.40	-	0.96
27	Mumbai University, Mumbai *	20.62	8.29	2.02	-	0.56
28	University of Pune, Pune	14.86	5.28	1.06	-	0.83
29	Swami Ramanand Teerth Marathwada University, Nanded	2.89	1.24	-	-	-
30	Mohanlal Sukhadia University, Udaipur	6.53	2.72	-	-	-
31	Rajasthan University, Jaipur	25.47	9.56	-	-	0.63
32	Maharshi Dayanand Saraswati University, Ajmer	6.08	2.40	-	-	-
33	Jai Narain Vyas University, Jodhpur	9.51	6.20	-	-	-
34	Pandit Ravishankar Shukla University, Raipur	3.72	1.59	-	-	-
	Total (Natural Science)	230.12	102.29	10.60	-	5.87
	Percent Share	**47.52%**	**21.12%**	**2.19%**	**0.00%**	**1.21%**
	Total for Universities	401.23	172.70	11.11	0.56	7.27
	Percent share	**50.23%**	**21.62%**	**1.39%**	**0.07%**	**0.91%**
	COLLEGES					
	Agriculture Science					
	(All Agricultural Colleges are constituent Colleges, hence budgets are covered in their respective Universities					
	Engineering Science					
1	Padre Engineering College, Ponda	3.52	1.40	-	-	-
2	Goa Engineering College, Farmagudi	1.79	1.01	-	-	-
3	Walchand Engineering College, Sangli	2.06	1.14	-	-	-
4	Malaviya Regional Engineering College, Jaipur	13.54	7.40	1.50	-	-
5	Maulana Azad Regional Engineering College, Bhopal	21.30	9.13	1.24	-	-
6	Shri G. S. Institute of Science and Technology, Indore	2.68	1.62	-	-	-
7	LD Engineering, Ahmedabad	3.50	2.23	0.50	-	-
8	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0.43	-	-	-	-
	Total (Engineering)	48.82	23.93	3.24	-	-
	Percent Share	**50.31%**	**24.66%**	**3.34%**	**0.00%**	**0.00%**
	Medical Science					
9	MG Medical College, Indore	1.20	1.08	-	-	-
	Total (Medical)	1.20	1.08	-	-	-
	Percent Share	**36.04%**	**32.43%**	**0.00%**	**0.00%**	**0.00%**
	Natural Science					
10	Nagar college, Ahmednagar	0.32	-	-	-	0.20
11	Insitute of Science, Nagpur	1.14	0.76	-	-	-
12	Y.C. College, Karad	0.76	0.65	-	-	0.05
13	Ramnarain Ruia College, Mumbai	0.85	-	0.50	-	-

Table - 6(II)

Expenditure Distribution by Source of Grant for Higher Education Sector in West Zone (1997-98)

		Institute's Own Sources	Others	Total
26	Shivaji University, Kolhapur	11.60	-	40.26
27	Mumbai University, Mumbai *	16.05	0.01	47.55
28	University of Pune, Pune	9.50	-	31.53
29	Swami Ramanand Teerth Marathwada University, Nanded	0.90	0.03	5.06
30	Mohanlal Sukhadia University, Udaipur	5.67	-	14.92
31	Rajasthan University, Jaipur	12.94	-	48.60
32	Maharshi Dayanand Saraswati University, Ajmer	3.40	-	11.88
33	Jai Narain Vyas University, Jodhpur	4.96	-	20.67
34	Pandit Ravishankar Shukla University, Raipur	2.60	-	7.91
			-	
	Total (Natural Science)	134.12	1.27	484.27
	Percent Share	**27.70%**	**0.26%**	
	Total for Universities	204.56	1.33	798.76
	Percent share	**25.61%**	**0.17%**	
	COLLEGES			
	Agriculture Science			
	(All Agricultural Colleges are constituent Colleges, hence budget			
	Engineering Science			
1	Padre Engineering College, Ponda	1.19	-	6.11
2	Goa Engineering College, Farmagudi	1.04	-	3.84
3	Walchand Engineering College, Sangli	0.85	-	4.05
4	Malaviya Regional Engineering College, Jaipur	7.23	-	29.67
5	Maulana Azad Regional Engineering College, Bhopal	7.76	-	39.43
6	Shri G. S. Institute of Science and Technology, Indore	1.05	0.05	5.40
7	LD Engineering, Ahmedabad	1.47	-	7.70
8	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0.40	-	0.83
	Total (Engineering)	20.99	0.05	97.03
	Percent Share	**21.63%**	**0.05%**	
	Medical Science			
9	MG Medical College, Indore	1.05	-	3.33
	Total (Medical)	1.05	-	3.33
	Percent Share	**31.53%**	**0.00%**	
	Natural Science			
10	Nagar college, Ahmednagar	0.58	0.05	1.15
11	Insitute of Science, Nagpur	0.90	0.05	2.85
12	Y.C. College, Karad	0.56	-	2.02
13	Ramnarain Ruia College, Mumbai	0.68	-	2.03

Table - 6(I) contd.

Expenditure Distribution by Source of Grant for Higher Education Sector in West Zone (1997-98)

		State Govt.	Central Govt.	Industries	Foreign Sources	Donations
	Total (Natural Science)	3.07	1.41	0.50	-	0.25
	Percent Share	**38.11%**	**17.51%**	**6.21%**	**0.00%**	**3.11%**
	Total for Colleges	53.09	26.42	3.74	-	0.25
	Percent Share	48.97%	24.37%	3.45%	0.00%	0.23%
	Grand Total	454.32	199.12	14.85	0.56	7.52
	Percent Share	**50.08%**	**21.95%**	**1.64%**	**0.06%**	**0.83%**
	Source : Questionnaire I - 3.1, 3.2					
	Based on Budgets, Annual Reports and Questionnaires Received					

Table - 6(II)

Expenditure Distribution by Source of Grant for Higher Education Sector in West Zone (1997-98)

		Institute's Own Sources	Others	Total
	Total (Natural Science)	2.72	0.10	8.05
	Percent Share	**33.82%**	**1.24%**	
	Total for Colleges	24.76	0.15	108.41
	Percent Share	22.84%	0.14%	
	Grand Total	229.32	1.48	907.17
	Percent Share	**25.28%**	**0.16%**	
	Source : Questionnaire I - 3.1, 3.2			
	Based on Budgets, Annual Reports and Questionnaires Received			

Table - 7

R D Expenditure distribution by Occurance

		R&DExp1*	R&DExp2**	Total
	UNIVERSITY/INSTITUTE			
	Agriculture Science			
1	Gujarat Agriculture University, Anand	18.23	14.15	32.38
2	Indira Gandhi Krishi Vidyapeeth, Raipur	4.25	2.02	6.27
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	21.80	8.56	30.36
4	Konkan Krishi Vidyapeeth, Dapoli	4.40	2.63	7.03
5	Central Institute of Fisheries Education, Mumbai	0.85	0.39	1.24
6	Marathwada Krishi Vidyapeeth, Parbhani *	8.73	5.26	13.99
7	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	26.75	20.94	47.69
	Total (Agriculture)	85.01	53.95	138.96
	Engineering Science			
8	Birla Institute of Technology Science, Pilani	3.80	1.98	5.78
9	Dr. Babasaheb Ambedkar Technological University, Lonere	0.85	0.27	1.12
	Total (Engineering)	4.65	2.25	6.90
	Medical Science			
10	Gujarat Ayurved Univesity, Jamnagar *	0.50	0.91	1.41
	Total (Medical)	0.50	0.91	1.41
	Natural Science			
11	Bhavanagar University, Bhavnagar	0.86	0.38	1.24
12	Saurashtra University, Rajkot	0.48	0.26	0.74
13	North Gujarat University, Patan	0.18	0.08	0.26
14	Sardar Patel University, Vallabh Vidyanagar	1.76	0.78	2.54
15	South Gujarat University, Surat	0.89	0.62	1.51
16	Maharaja Sayajirao University, Vadodara **	3.39	2.54	5.93
17	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	0.31	0.37	0.68
18	Harisingh Gour Vishwavidyalaya, Sagar	0.75	0.70	1.45
19	Rani Durgavati Vishwavidyalaya, Jabalpur	0.23	0.16	0.39
20	Vikram University, Ujjain	1.50	1.03	2.53
21	Jiwaji University, Gwalior	0.98	0.82	1.80
22	Goa University, Panjim	1.67	0.65	2.32
23	Gujarat University, Ahmedabad	1.30	0.87	2.17
24	Nagpur Univeristy, Nagpur	2.95	1.42	4.37
25	Amravati University, Amravati	2.68	2.06	4.74
26	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	0.30	0.39	0.69
27	Shivaji University, Kolhapur	3.20	1.55	4.75
28	Mumbai University, Mumbai *	2.81	1.44	4.25
29	University of Pune, Pune	1.73	1.43	3.16
30	Swami Ramanand Teerth Marathwada University, Nanded	0.15	0.12	0.27
31	Mohanlal Sukhadia University, Udaipur	0.98	1.01	1.99
32	Rajasthan University, Jaipur	2.55	2.32	4.87
33	Maharshi Dayanand Saraswati University, Ajmer	0.89	0.66	1.55
34	Jai Narain Vyas University, Jodhpur	1.15	1.12	2.27

Table - 7

R D Expenditure distribution by Occurance

		R&DExp1*	R&DExp2**	Total
35	Pandit Ravishankar Shukla University, Raipur	0.40	0.28	0.68
	Total (Natural Science)	34.09	23.05	57.14
	Total for Universities	124.25	80.16	204.41
	COLLEGES			
	Agriculture Science			
	(All Agricultural Colleges are constituent Colleges, hence budgets are covered in their respective Universities			
	Engineering Science			
1	Padre Engineering College, Ponda	0.89	0.82	1.71
2	Goa Engineering College, Farmagudi	0.98	0.56	1.54
3	Walchand Engineering College, Sangli	0.75	0.67	1.42
4	Malaviya Regional Engineering College, Jaipur	7.05	6.09	13.14
5	Maulana Azad Regional Engineering College, Bhopal	9.53	7.42	16.95
6	Shri G. S. Institute of Science and Technology, Indore	1.05	0.88	1.93
7	LD Engineering, Ahmedabad	1.99	1.67	3.66
8	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0.12	0.21	0.33
	Total (Engineering)	22.36	18.31	40.67
	Medical Science			
9	MG Medical College, Indore	1.01	0.66	1.67
	Total (Medical)	1.01	0.66	1.67
	Natural Science			
10	Nagar college, Ahmednagar	0.05	0.13	0.18
11	Insitute of Science, Nagpur	0.48	0.31	0.79
12	Y.C. College, Karad	0.10	0.07	0.17
13	Ramnarain Ruia College, Mumbai	0.14	0.10	0.24
	Total (Natural Science)	0.77	0.61	1.38
	Total for Colleges	24.14	19.58	43.72
	Grand Total	148.39	99.73	248.12
*	RDExp1 - Expenditure incurred on equipment, Laboratory, Maintenance, contingency, Seminars etc. Proportion of PG Students and Research Scholars applied.			
**	RDExp2 - Expenditure incurred on Salary of teaching staff, apportioned by Time spent on Research.			
	Source : Questionnaire I - 3.1, 3.2			
	Questionnaire II - 2.5			
	Questionnaire III - 1.1.4, 1.4.4			
	Based on Budgets, Annual Reports and Questionnaires Received			

Table - 8

R D Expenditure for Higher Education Sector in West Zone - Recurring/Non-recurring (1997-98)

		Recurring *	Non-recurring **	Total
	UNIVERSITY/INSTITUTE			
	Agriculture Science			
1	Gujarat Agriculture University, Anand	22.99	9.39	32.38
2	Indira Gandhi Krishi Vidyapeeth, Raipur	5.14	1.13	6.27
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	23.08	7.29	30.36
4	Konkan Krishi Vidyapeeth, Dapoli	5.20	1.83	7.03
5	Central Institute of Fisheries Education, Mumbai	0.98	0.26	1.24
6	Marathwada Krishi Vidyapeeth, Parbhani *	10.35	3.64	13.99
7	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	29.65	18.04	47.69
	Total (Agriculture)	97.39	41.57	138.96
	Engineering Science			
8	Birla Institute of Technology Science, Pilani	4.05	1.74	5.78
9	Dr. Babasaheb Ambedkar Technological University, Lonere	0.92	0.20	1.12
	Total (Engineering)	4.97	1.94	6.90
	Medical Science			
10	Gujarat Ayurved Univesity, Jamnagar *	1.24	0.17	1.41
	Total (Medical)	1.24	0.17	1.41
	Natural Science			
11	Bhavanagar University, Bhavnagar	1.02	0.22	1.24
12	Saurashtra University, Rajkot	0.63	0.11	0.74
13	North Gujarat University, Patan	0.23	0.03	0.26
14	Sardar Patel University, Vallabh Vidyanagar	1.83	0.71	2.54
15	South Gujarat University, Surat	1.24	0.27	1.51
16	Maharaja Sayajirao University, Vadodara **	4.51	1.42	5.93
17	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	0.55	0.12	0.68
18	Harisingh Gour Vishwavidyalaya, Sagar	1.25	0.20	1.45
19	Rani Durgavati Vishwavidyalaya, Jabalpur	0.35	0.04	0.39
20	Vikram University, Ujjain	2.20	0.33	2.53
21	Jiwaji University, Gwalior	1.44	0.36	1.80
22	Goa University, Panjim	1.83	0.49	2.32
23	Gujarat University, Ahmedabad	1.69	0.48	2.17
24	Nagpur Univeristy, Nagpur	3.63	0.74	4.37
25	Amravati University, Amravati	3.79	0.95	4.74
26	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	0.58	0.10	0.69
27	Shivaji University, Kolhapur	3.65	1.09	4.75
28	Mumbai University, Mumbai *	3.14	1.10	4.25
29	University of Pune, Pune	2.30	0.85	3.16
30	Swami Ramanand Teerth Marathwada University, Nanded	0.22	0.05	0.27
31	Mohanlal Sukhadia University, Udaipur	1.73	0.26	1.99
32	Rajasthan University, Jaipur	4.04	0.83	4.87
33	Maharshi Dayanand Saraswati University, Ajmer	1.32	0.23	1.55
34	Jai Narain Vyas University, Jodhpur	1.98	0.30	2.27
35	Pandit Ravishankar Shukla University, Raipur	0.56	0.12	0.68
	Total (Natural Science)	45.72	11.42	57.14

Table - 8

R D Expenditure for Higher Education Sector in West Zone - Recurring/Non-recurring (1997-98)

		Recurring *	Non-recurring **	Total
	Total for Universities	149.31	55.09	204.41
	COLLEGES			
	Agriculture Science			
	(All Agricultural Colleges are constituent Colleges, hence budgets are covered in their respective Universities			
	Engineering Science			
1	Padre Engineering College, Ponda	1.28	0.43	1.71
2	Goa Engineering College, Farmagudi	1.17	0.37	1.54
3	Walchand Engineering College, Sangli	1.13	0.28	1.42
4	Malaviya Regional Engineering College, Jaipur	10.38	2.76	13.14
5	Maulana Azad Regional Engineering College, Bhopal	13.22	3.73	16.95
6	Shri G. S. Institute of Science and Technology, Indore	1.51	0.42	1.93
7	LD Engineering, Ahmedabad	2.82	0.84	3.66
8	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0.27	0.07	0.33
			-	
	Total (Engineering)	31.77	8.90	40.67
	Medical Science			
9	MG Medical College, Indore	1.32	0.35	1.67
	Total (Medical)	1.32	0.35	1.67
	Natural Science			
10	Nagar college, Ahmednagar	0.15	0.02	0.18
11	Insitute of Science, Nagpur	0.63	0.17	0.79
12	Y.C. College, Karad	0.15	0.02	0.17
13	Ramnarain Ruia College, Mumbai	0.17	0.06	0.24
	Total (Natural Science)	1.10	0.28	1.38
	Total for Colleges	34.19	9.53	43.72
	Grand Total	183.50	64.62	248.12
*	Recurring Expenditure - Expenditure incurred on Instruments, Maintenance, Sumposium, contingency apportioned by PG Students - Research ScholarRatio, Expenditure incurred on Salary of Teaching Staff apportioned by Time spent on Research			
**	NonRecurring Expenditure - Expenditure incurred on Equipment, Laboratory apportioned by PG Students Research Scholar Ratio			
	Source - Questionnaire I - 3.1, 3.2			
	Questionnaire II - 2.5			
	Questionnaire III - 1.1.4, 1.4.4			
	Based on Budgets, Annual Reports and Questionnaires Received			

Table - 9

R & D Expenditure for Higher Education Sector in West Zone by Major Socio-Economic Factors (1997-98)

	R & D Expenditure (Rs. Crores)
Agriculture, Forestry & Fishing	60.79
Industrial Development	18.86
Energy	4.47
Transport & Telecommunication	58.56
Urban & Rural Planning	9.18
Control & Care of Environment	5.46
Health	9.43
Social Development & Services	12.41
Earth and Atmosphere	4.22
Advancement of Knowledge	55.83
Civil Space	2.48
Defense	5.95
Not Elsewhere Classified	0.50
Total	**248.12**
Source - Questionnaire I - 3.1, 3.2	
Questionnaire II - 7	
Questionnaire III - 1.1.4, 1.4.4	
Based on Budgets, Annual Reports and Questionnaires Received	

Table - 10

R & D Expenditure for Higher Education Sector in West Zone by Type of Research (1997-98)

	R & D Expenditure
Basic Research	79.79
Applied Research	121.24
Experimental Development	47.09
Total	**248.12**

Source - Questionnaire I - 3.1, 3.2
Questionnaire II - 8
Questionnaire III - 1.1.4, 1.4.4

Based on Budgets, Annual Reports and Questionnaires Received

Table - 11

Summary of Expenditure for Higher Education Sector in West Zone (1997-98)

	Summary of Financial Resources		
		(West Zone)	
			(Rs. Crores)
	Total Expenditure	S & T Expenditure	R & D Expenditure
University/Institutes	**798.76**	**536.46**	**204.40**
S & T Exp.	67.16	100.00	-
R & D Exp.	25.59	38.10	100.00
Colleges	**108.41**	**105.34**	**43.72**
S & T Exp.	97.17	100.00	-
R & D Exp.	40.33	41.50	100.00
Total	**907.17**	**641.80**	**248.12**
S & T Exp.	70.75	100.00	-
R & D Exp.	27.35	38.66	100.00

Table 12

Total Expenditure

		(Field of Science)			
Rs. In Crores	Agriculture	Engineering	Medical	Natural Science	Total
Below 1	0	1	0	0	1
1 - 5	1	3	1	5	10
5 - 10	0	3	1	4	8
10 - 15	1	1	0	7	9
15 - 20	1	0	0	4	5
20 - 25	0	0	0	3	3
25 - 50	1	2	0	6	9
Over 50	3	0	0	0	3
Total	**7**	**10**	**2**	**29**	**48**

Total S & T Expenditure

		(Field of Science)			
Rs. In Crores	Agriculture	Engineering	Medical	Natural Science	Total
Below 1	0	1	0	2	3
1 - 5	1	3	1	8	13
5 - 10	0	3	1	9	13
10 - 15	1	1	0	6	8
15 - 20	1	0	0	1	2
20 - 25	0	0	0	3	3
Over 25	4	2	0	0	6
Total	**7**	**10**	**2**	**29**	**48**

Total R & D Expenditure

		(Field Of Science)			
Rs. In Crores	Agriculture	Engineering	Medical	Natural Science	Total
Below 1	0	1	0	10	11
1 - 5	1	6	2	18	27
5 - 10	2	1	0	1	4
10 - 15	1	1	0	0	2
15 - 20	0	1	0	0	1
20 - 25	0	0	0	0	0
Over 25	3	0	0	0	3
Total	**7**	**10**	**2**	**29**	**48**

Table - 13

Frequency Distribution - Total Expenditure

Category	No. *	% Share	Total Expenditu	(Rs. Crores) % Share
< 1 Crore	1	2.08	0.83	0.09
1 - 5 Crores	11	22.92	36.44	4.02
5-10 Crores	8	16.67	54.88	6.05
10-25 Crores	17	35.42	245.19	27.03
25 - 50 Crores	8	16.67	350.37	38.62
> 50 Crores	3	6.25	219.46	24.19
Total	**48**		**907.17**	

Frequency Distribution - S & T Expenditure

Category	No. *	% Share	S & T Expendit	(Rs. Crores) % Share
< 1 Crore	4	8.33	2.96	0.46
1 - 5 Crores	13	27.08	39.88	6.21
5-10 Crores	12	25.00	78.33	12.20
10-25 Crores	13	27.08	198.50	30.93
> 25 Crores	6	12.50	322.13	50.19
Total	**48**		**641.80**	

Frequency Distribution - R & D Expenditure

Category	No. *	% Share	S & T Expendit	(Rs. Crores) % Share
< 1 Crore	12	25.00	5.42	2.19
1 - 5 Crores	26	54.17	63.18	25.46
5-10 Crores	4	8.33	25.01	10.08
> 10 Crores	6	12.50	154.51	62.27
Total	48		**248.12**	

Source : Questionnaire I - 3.1, 3.2
Questionnaire II - 5
Questionnaire III - 1.1.4, 1.4.4
Based on Budgets, Annual Reports and Questionnaires Received
* - Number of Institutes

Table - 14 (I)

R D Personnel from Teaching Staff in West Zone by Designation and Gender

	University / Institute Name	espondents	Professor		Reader		Lecturer	
			Male	Female	Male	emale	Male	Female
	Agriculture Science							
1	Central Institute of Fisheries Education, Mumbai	22	1	-	2	1	4	1
2	Gujarat Agriculture University, Anand	304	9	2	21	10	48	32
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	175	7	2	11	7	29	12
4	Marathwada Krishi Vidyapeeth, Parbhani	95	3	1	11	4	10	7
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	435	17	7	37	18	46	26
6	Rajasthan Agriculture University, Bikaner	38	1	-	3	1	5	4
7	Rajasthan Agriculture University, Udaipur	107	7	3	8	5	11	10
	Total (Agriculture)	1,176	45	15	93	46	153	92
	Engineering Science							
8	Birla Institute of Technology Science, Pilani	80	2	1	5	4	5	5
9	Dr. Babasaheb Ambedkar Technological University, Lonere	49	1	-	3	1	4	3
#	Indian Institute of Technology, Mumbai	109	5	2	9	7	14	10
	Total (Engineering)	238	8	3	17	12	23	18
	Medical Science							
#	Gujarat Ayurved Univesity, Jamnagar	94	2	2	5	3	4	4
	Total (Medical)	94	2	2	5	3	4	4
	Natural Science							
#	Amravati University, Amravati	33	1	-	2	1	4	2
#	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	14	-	-	1	-	3	1
#	Banasthali University, Banasthali	48	2	1	2	2	3	6
#	Barkatullah Vishwavidyalaya, Bhopal	32	1	1	2	1	4	3
#	Bhavanagar University, Bhavnagar	21	-	-	1	1	2	1
#	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	23	-	-	2	1	4	1
#	Goa University, Panjim	54	2	1	5	3	4	3
#	Harisingh Gour Vishwavidyalaya, Sagar	40	1	-	3	-	8	4
#	Jiwaji University, Gwalior	34	-	-	2	-	4	1
#	Maharaja Sayajirao University, Vadodara	139	7	4	8	6	9	6
#	Mohanlal Sukhadia University, Udaipur	64	2	1	7	4	4	1
#	Mumbai University, Mumbai	48	1	1	5	2	6	2
#	Nagpur Univeristy, Nagpur	50	1	1	5	1	5	3
#	North Gujarat University, Patan	15	-	-	1	-	4	1
#	North Maharashtra University, Jalgaon	22	-	-	2	2	4	-
#	Pandit Ravishankar Shukla University, Raipur	43	1	-	3	3	5	3
#	Pune University, Pune	73	4	3	7	4	6	4
#	Rajasthan University, Jaipur	28	-	-	2	1	3	2
#	Rani Durgavati Vishwavidyalaya, Jabalpur	39	-	-	3	1	6	3
#	Sardar Patel University, Vallabh Vidyanagar	31	-	-	1	-	6	2
#	Saurashtra University, Rajkot	65	3	1	7	1	5	4
#	Shivaji University, Kolhapur	73	2	-	6	4	7	5
#	South Gujarat University, Surat	23	1	-	2	-	4	2
#	Swami Ramanand Teerth Marathwada University, Nanded	24	-	-	2	1	3	2
	Total (Natural Science)	1,036	29	14	81	39	113	62
	Total for Universities	2,544	84	34	196	100	293	176

Table - 14 (II)

R D Personnel from Teaching Staff in West Zone by Designation and Gender

(in Numbers)

	University / Institute Name	Others		Total		Total
		Male	Female	Male	Female	
	Agriculture Science					
1	Central Institute of Fisheries Education, Mumbai	-	-	7	2	9
2	Gujarat Agriculture University, Anand	4	2	82	46	128
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	3	1	50	22	72
4	Marathwada Krishi Vidyapeeth, Parbhani	-	-	24	12	36
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	7	3	107	54	161
6	Rajasthan Agriculture University, Bikaner	2	-	11	5	16
7	Rajasthan Agriculture University, Udaipur	4	-	30	18	48
	Total (Agriculture)	20	6	311	159	470
	Engineering Science					
8	Birla Institute of Technology Science, Pilani	-	-	12	10	22
9	Dr. Babasaheb Ambedkar Technological University, Lonere	-	-	8	4	12
#	Indian Institute of Technology, Mumbai	-	-	28	19	47
	Total (Engineering)	-	-	48	33	81
	Medical Science					
#	Gujarat Ayurved Univesity, Jamnagar	-	-	11	9	20
	Total (Medical)	-	-	11	9	20
	Natural Science					
#	Amravati University, Amravati	-	-	7	3	10
#	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	-	-	4	1	5
#	Banasthali University, Banasthali	-	-	7	9	16
#	Barkatullah Vishwavidyalaya, Bhopal	-	-	7	5	12
#	Bhavanagar University, Bhavnagar	-	-	3	2	5
#	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	-	-	6	2	8
#	Goa University, Panjim	2	1	13	8	21
#	Harisingh Gour Vishwavidyalaya, Sagar	1	-	13	4	17
#	Jiwaji University, Gwalior	-	-	6	1	7
#	Maharaja Sayajirao University, Vadodara	-	-	24	16	40
#	Mohanlal Sukhadia University, Udaipur	-	-	13	6	19
#	Mumbai University, Mumbai	-	-	12	5	17
#	Nagpur Univeristy, Nagpur	-	-	11	5	16
#	North Gujarat University, Patan	-	-	5	1	6
#	North Maharashtra University, Jalgaon	1	-	7	2	9
#	Pandit Ravishankar Shukla University, Raipur	2	-	11	6	17
#	Pune University, Pune	-	-	17	11	28
#	Rajasthan University, Jaipur	-	1	5	4	9
#	Rani Durgavati Vishwavidyalaya, Jabalpur	-	-	9	4	13
#	Sardar Patel University, Vallabh Vidyanagar	-	-	7	2	9
#	Saurashtra University, Rajkot	-	-	15	6	21
#	Shivaji University, Kolhapur	3	1	18	10	28
#	South Gujarat University, Surat	-	-	7	2	9
#	Swami Ramanand Teerth Marathwada University, Nanded	-	-	5	3	8
	Total (Natural Science)	9	3	232	118	350
	Total for Universities	29	9	602	319	921

Table - 14 (I) contd.

R D Personnel from Teaching Staff in West Zone by Designation and Gender

			Professor		Reader		Lecturer	
	University / Institute Name	espondents	Male	Female	Male	emale	Male	Female
Colleges								
	Agriculture Science							
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities							
	Engineering Science							
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	60	-	-	4	1	6	2
2	Goa Engineering College, Farmagudi	50	-	-	4	1	6	4
3	LD Engineering, Ahmedabad	69	-	-	7	3	9	5
4	Malaviya Regional Engineering College, Jaipur	70	-	-	6	3	8	3
5	Maulana Azad Regional Engineering College, Bhopal	5	-	-	-	-	2	-
6	Padre Engineering College, Ponda	48	-	-	3	1	6	7
7	Shri G. S. Institute of Science and Technology, Indore	75	-	-	4	3	10	7
8	Walchand Engineering College, Sangli	21	-	-	1	-	4	2
	Total (Engineering)	398	-	-	29	12	51	30
	Medical Science							
9	Goa Medical College, Panjim	55	-	-	5	2	5	4
#	J.L.N. Medical College, Ajmer	118	-	-	8	6	13	10
#	Medical College, Rewa	21	-	-	1	-	4	4
#	MG Medical College, Indore	55	-	-	6	4	7	5
	Total (Medical)	249	-	-	20	12	29	23
	Natural Science							
#	Ahmednagar college, Ahmednagar	16	-	-	-	-	4	1
#	Government Girls College, Rewa	50	-	-	2	2	7	5
#	Insitute of Science, Nagpur	22	-	-	1	-	4	3
#	Kelkar-Vaze College, Mumbai	13	-	-	-	-	3	-
#	Model Government College, Rewa	27	-	-	2	1	5	2
#	M.G. Science College, Ahmedabad	8	-	-	-	-	3	-
#	N.M Science College, Patan	50	-	-	4	2	6	4
#	Pratap College, Amalner	22	-	-	2	-	5	2
#	Rajshri College, Alwar	14	-	-	-	-	3	2
#	Ramnarain Ruia College, Mumbai	33	-	-	1	1	6	4
#	S. P. College, Pune	21	-	-	2	-	4	2
#	St. Xavier's College, Mumbai	44	-	-	2	1	5	4
#	Y.C. College, Karad	43	-	-	1	2	5	6
#	Y.C. Institute of Science, Satara	68	-	-	4	4	13	8
	Total (Natural Science)	431	-	-	21	13	73	43
	Total for Colleges	1,078	-	-	70	37	153	96
	Grand Total	3,622	84	34	266	137	446	272

Table - 14 (II) contd.

R D Personnel from Teaching Staff in West Zone by Designation and Gender

(in Numbers)

	University / Institute Name	Others		Total		Total
		Male	Female	Male	Female	
Colleges						
	Agriculture Science					
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities					
	Engineering Science					
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	-	-	10	3	13
2	Goa Engineering College, Farmagudi	-	-	10	5	15
3	LD Engineering, Ahmedabad	-	-	16	8	24
4	Malaviya Regional Engineering College, Jaipur	-	-	14	6	20
5	Maulana Azad Regional Engineering College, Bhopal	-	-	2	-	2
6	Padre Engineering College, Ponda	-	-	9	8	17
7	Shri G. S. Institute of Science and Technology, Indore	-	-	14	10	24
8	Walchand Engineering College, Sangli	-	-	5	2	7
	Total (Engineering)	-	-	80	42	122
	Medical Science					
9	Goa Medical College, Panjim	-	-	10	6	16
#	J.L.N. Medical College, Ajmer	-	-	21	16	37
#	Medical College, Rewa	-	-	5	4	9
#	MG Medical College, Indore	-	-	13	9	22
	Total (Medical)	-	-	49	35	84
	Natural Science					
#	Ahmednagar college, Ahmednagar	-	-	4	1	5
#	Government Girls College, Rewa	-	-	9	7	16
#	Insitute of Science, Nagpur	-	-	5	3	8
#	Kelkar-Vaze College, Mumbai	-	-	3	-	3
#	Model Government College, Rewa	-	-	7	3	10
#	M.G. Science College, Ahmedabad	-	-	3	-	3
#	N.M Science College, Patan	-	-	10	6	16
#	Pratap College, Amalner	-	-	7	2	9
#	Rajshri College, Alwar	-	-	3	2	5
#	Ramnarain Ruia College, Mumbai	-	-	7	5	12
#	S. P. College, Pune	-	-	6	2	8
#	St. Xavier's College, Mumbai	-	-	7	5	12
#	Y.C. College, Karad	-	-	6	8	14
#	Y.C. Institute of Science, Satara	-	-	17	12	29
	Total (Natural Science)	-	-	94	56	150
	Total for Colleges	-	-	223	133	356
	Grand Total	29	9	825	452	1,277

Table - 15 (I)

R D Personnel from Teaching Staff in West Zone by Designation

				Professor		Reader	
	University / Institute Name	Respondents	Total	Total	FTE	Total	FTE
	Agriculture Science						
1	Central Institute of Fisheries Education, Mumbai	22	9	3	1	7	3
2	Gujarat Agriculture University, Anand	304	128	20	11	74	31
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	175	72	18	9	33	18
4	Marathwada Krishi Vidyapeeth, Parbhani	95	36	10	4	32	15
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	435	161	46	24	129	55
6	Rajasthan Agriculture University, Bikaner	38	16	2	1	9	4
7	Rajasthan Agriculture University, Udaipur	107	48	18	10	28	13
	Total (Agriculture)	1,176	470	117	60	312	139
	Percent FTE		**39.97**		**51.28**		**44.55**
	Engineering Science						
8	Birla Institute of Technology Science, Pilani	80	22	8	3	28	9
9	Dr. Babasaheb Ambedkar Technological University, Lonere	49	12	3	1	15	4
#	Indian Institute of Technology, Mumbai	109	47	16	7	39	16
	Total (Engineering)	238	81	27	11	82	29
	Percent FTE		**34.08**		**40.74**		**35.37**
	Medical Science						
#	Gujarat Ayurved Univesity, Jamnagar	94	20	11	4	41	8
	Total (Medical)	94	20	11	4	41	8
	Percent FTE		**21.00**		**36.36**		**19.51**
	Natural Science						
#	Amravati University, Amravati	33	10	3	1	11	3
#	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	14	5	-	-	3	1
#	Banasthali University, Banasthali	48	16	6	3	11	4
#	Barkatullah Vishwavidyalaya, Bhopal	32	12	5	2	9	3
#	Bhavanagar University, Bhavnagar	21	5	-	-	7	2
#	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	23	8	1	-	8	3
#	Goa University, Panjim	54	21	8	3	15	8
#	Harisingh Gour Vishwavidyalaya, Sagar	40	17	2	1	7	3
#	Jiwaji University, Gwalior	34	7	-	-	11	2
#	Maharaja Sayajirao University, Vadodara	139	40	29	11	41	14
#	Mohanlal Sukhadia University, Udaipur	64	19	7	3	34	11
#	Mumbai University, Mumbai	48	17	5	2	18	7
#	Nagpur Univeristy, Nagpur	50	16	6	2	19	6
#	North Gujarat University, Patan	15	6	-	-	2	1
#	North Maharashtra University, Jalgaon	22	9	-	-	7	4
#	Pandit Ravishankar Shukla University, Raipur	43	17	3	1	13	6
#	Pune University, Pune	73	28	16	7	24	11
#	Rajasthan University, Jaipur	28	9	-	-	8	3
#	Rani Durgavati Vishwavidyalaya, Jabalpur	39	13	-	-	11	4
#	Sardar Patel University, Vallabh Vidyanagar	31	9	1	-	3	1
#	Saurashtra University, Rajkot	65	21	10	4	18	8
#	Shivaji University, Kolhapur	73	28	6	2	22	10
#	South Gujarat University, Surat	23	9	2	1	6	2
#	Swami Ramanand Teerth Marathwada University, Nanded	24	8	-	-	7	3
	Total (Natural Science)	1,036	350	110	43	315	120
	Percent FTE		**33.80**		**39.09**		**38.10**

Table - 15 (II)

R D Personnel from Teaching Staff in West Zone by Designation

		Lecturer		Others	
	University / Institute Name	Total	FTE	Total	FTE
	Agriculture Science				
1	Central Institute of Fisheries Education, Mumbai	12	5	-	-
2	Gujarat Agriculture University, Anand	190	80	20	6
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	105	41	19	4
4	Marathwada Krishi Vidyapeeth, Parbhani	53	17	-	-
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	217	72	43	10
6	Rajasthan Agriculture University, Bikaner	20	9	7	2
7	Rajasthan Agriculture University, Udaipur	46	21	15	4
	Total (Agriculture)	643	245	104	26
	Percent FTE		**38.10**		**25.00**
	Engineering Science				
8	Birla Institute of Technology Science, Pilani	44	10	-	-
9	Dr. Babasaheb Ambedkar Technological University, Lonere	31	7	-	-
#	Indian Institute of Technology, Mumbai	54	24	-	-
	Total (Engineering)	129	41	-	-
	Percent FTE		**31.78**		-
	Medical Science				
#	Gujarat Ayurved Univesity, Jamnagar	42	8	-	-
	Total (Medical)	42	8	-	-
	Percent FTE		**19.05**		-
	Natural Science				
#	Amravati University, Amravati	19	6	-	-
#	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	11	4	-	-
#	Banasthali University, Banasthali	31	9	-	-
#	Barkatullah Vishwavidyalaya, Bhopal	18	7	-	-
#	Bhavanagar University, Bhavnagar	14	3	-	-
#	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	14	5	-	-
#	Goa University, Panjim	21	7	10	3
#	Harisingh Gour Vishwavidyalaya, Sagar	27	12	4	1
#	Jiwaji University, Gwalior	23	5	-	-
#	Maharaja Sayajirao University, Vadodara	69	15	-	-
#	Mohanlal Sukhadia University, Udaipur	23	5	-	-
#	Mumbai University, Mumbai	25	8	-	-
#	Nagpur Univeristy, Nagpur	25	8	-	-
#	North Gujarat University, Patan	13	5	-	-
#	North Maharashtra University, Jalgaon	11	4	4	1
#	Pandit Ravishankar Shukla University, Raipur	20	8	7	2
#	Pune University, Pune	33	10		
#	Rajasthan University, Jaipur	15	5	5	1
#	Rani Durgavati Vishwavidyalaya, Jabalpur	28	9	-	-
#	Sardar Patel University, Vallabh Vidyanagar	27	8	-	-
#	Saurashtra University, Rajkot	37	9	-	-
#	Shivaji University, Kolhapur	29	12	16	4
#	South Gujarat University, Surat	15	6	-	-
#	Swami Ramanand Teerth Marathwada University, Nanded	17	5	-	-
	Total (Natural Science)	565	175	46	12
	Percent FTE		**30.97**		**26.09**

Table - 15 (I) contd.

R D Personnel from Teaching Staff in West Zone by Designation

	University / Institute Name	Respondents	Total	Professor		Reader	
				Total	FTE	Total	FTE
	Total for Universities	2,544	921	265	118	750	296
	Percent FTE		**36.21**		**44.53**		**39.47**
Colleges							
	Agriculture Science						
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities						
	Engineering Science						
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	60	13	-	-	25	5
2	Goa Engineering College, Farmagudi	50	15	-	-	23	5
3	LD Engineering, Ahmedabad	69	24	-	-	31	10
4	Malaviya Regional Engineering College, Jaipur	70	20	-	-	26	9
5	Maulana Azad Regional Engineering College, Bhopal	5	2	-	-	-	-
6	Padre Engineering College, Ponda	48	17	-	-	11	4
7	Shri G. S. Institute of Science and Technology, Indore	75	24	-	-	23	7
8	Walchand Engineering College, Sangli	21	7	-	-	3	1
	Total (Engineering)	398	122	-	-	142	41
	Percent FTE		**30.54**		-		**28.87**
	Medical Science						
9	Goa Medical College, Panjim	55	16	-	-	19	7
#	J.L.N. Medical College, Ajmer	118	37	-	-	43	14
#	Medical College, Rewa	21	9	-	-	2	1
#	MG Medical College, Indore	55	22	-	-	26	10
	Total (Medical)	249	84	-	-	90	32
	Percent FTE		**33.71**		-		**35.56**
	Natural Science						
#	Ahmednagar college, Ahmednagar	16	5	-	-	1	-
#	Government Girls College, Rewa	50	16	-	-	13	4
#	Insitute of Science, Nagpur	22	8	-	-	3	1
#	Kelkar-Vaze College, Mumbai	13	3	-	-	1	-
#	Model Government College, Rewa	27	10	-	-	7	3
#	M.G. Science College, Ahmedabad	8	3	-	-	-	-
#	N.M Science College, Patan	50	16	-	-	19	6
#	Pratap College, Amalner	22	9	-	-	5	2
#	Rajshri College, Alwar	14	5	-	-	1	-
#	Ramnarain Ruia College, Mumbai	33	12	-	-	5	2
#	S.P. College, Pune	21	8	-	-	5	2
#	St. Xavier's College, Mumbai	44	12	-	-	10	3
#	Y.C. College, Karad	43	14	-	-	7	3
#	Y.C. Institute of Science, Satara	68	29	-	-	17	8
	Total (Natural Science)	431	150	-	-	94	34
	Percent FTE		**34.84**		-		**36.17**
	Total for Colleges	1,078	356	-	-	326	107
	Percent FTE		**32.99**		-		**32.82**
	Grand Total	3,622	1,277	265	118	1,076	403
	Percent FTE		**35.25**		**44.53**		**37.45**

Table - 15 (II) contd.

R D Personnel from Teaching Staff in West Zone by Designation

		Lecturer		Others	
	University / Institute Name	Total	FTE	Total	FTE
	Total for Universities	1,379	469	150	38
	Percent FTE		**34.01**		**25.33**
Colleges					
	Agriculture Science				
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities				
	Engineering Science				
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	35	8	-	-
2	Goa Engineering College, Farmagudi	27	10	-	-
3	LD Engineering, Ahmedabad	38	14	-	-
4	Malaviya Regional Engineering College, Jaipur	44	11	-	-
5	Maulana Azad Regional Engineering College, Bhopal	5	2	-	-
6	Padre Engineering College, Ponda	37	13	-	-
7	Shri G. S. Institute of Science and Technology, Indore	52	17	-	-
8	Walchand Engineering College, Sangli	18	6	-	-
	Total (Engineering)	256	81	-	-
	Percent FTE		**31.64**		-
	Medical Science				
9	Goa Medical College, Panjim	36	9	-	-
#	J.L.N. Medical College, Ajmer	75	23	-	-
#	Medical College, Rewa	19	8	-	-
#	MG Medical College, Indore	29	12	-	-
	Total (Medical)	159	52	-	-
	Percent FTE		**32.70**		-
	Natural Science				
#	Ahmednagar college, Ahmednagar	15	5	-	-
#	Government Girls College, Rewa	37	12	-	-
#	Insitute of Science, Nagpur	19	7	-	-
#	Kelkar-Vaze College, Mumbai	12	3	-	-
#	Model Government College, Rewa	20	7	-	-
#	M.G. Science College, Ahmedabad	8	3	-	-
#	N.M Science College, Patan	31	10	-	-
#	Pratap College, Amalner	17	7	-	-
#	Rajshri College, Alwar	13	5	-	-
#	Ramnarain Ruia College, Mumbai	28	10	-	-
#	S.P. College, Pune	16	6		
#	St. Xavier's College, Mumbai	34	9	-	-
#	Y.C. College, Karad	36	11	-	-
#	Y.C. Institute of Science, Satara	51	21	-	-
	Total (Natural Science)	337	116	-	-
	Percent FTE		**34.42**		-
	Total for Colleges	752	249	-	-
	Percent FTE		**33.11**		-
	Grand Total	2,131	718	150	38
	Percent FTE		**33.69**		**25.33**

Table - 16

R & D Personnel in Higher Education Sector in West Zone by Field of Science

Field of Science	Respondents	R & D Personnel	Percent
Agriculture Science	1176	470	39.97
Engineering Science	636	203	31.92
Medical Science	343	104	30.32
Natural Science	1467	500	34.08
Total	3622	1277	35.26
	Source : Questionnaire III - 1.4.4		
	Based on Questionnaires Received		

Table - 17

R & D Personnel in Higher Education Sector in West Zone by Designation and Gender

Designation		Respondents	R & D Personnel		Total	Percent
			Male	Female		
Professor		265	84	34	118	44.53
Reader and Equivalent		1,076	266	137	403	37.45
Lecturer and Equivalent		2,131	446	272	718	33.69
Others*		150	29	9	38	25.33
Total		3,622	825	452	1,277	35.26
	* Others - includes Scientists, AO, Tutors					
	Source : Questionnaire III - 1.4.4					
	Based on Questionnaires Received					

Table - 18

Time spent in Percent on Various activities by Teaching Faculty in West Zone

Field of Science / Activity	Teaching	Research	Administr	Training	Others
Agriculture Science	32	40	15	5	8
Engineering Science	35	32	12	8	13
Medical Science	35	41	11	6	7
Natural Science	36	34	12	7	11
	34	35	13	7	11
	Source : Questionnaire III - 1.4.4				
	Based on Questionnaires Received				

Table - 19

Educational of the Faculty from Higher Education Sector in West Zone

Educational Qualification of Faculty

(in Percent)

	University / Institute Name	Respondents	Doctorate	M.Phil./M.Sc./M.E. Equivalent
	Agriculture Science			
1	Central Institute of Fisheries Education, Mumbai	22	68	32
2	Gujarat Agriculture University, Anand	304	71	29
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	175	69	31
4	Marathwada Krishi Vidyapeeth, Parbhani	95	77	23
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	435	81	19
6	Rajasthan Agriculture University, Bikaner	38	55	45
7	Rajasthan Agriculture University, Udaipur	107	63	37
	Total (Agriculture)	1,176	74	26
	Engineering Science			
8	Birla Institute of Technology Science, Pilani	80	79	21
9	Dr. Babasaheb Ambedkar Technological University, Lonere	49	59	41
10	Indian Institute of Technology, Mumbai	109	93	7
	Total (Engineering)	238	81	19
	Medical Science			
11	Gujarat Ayurved Univesity, Jamnagar	94	70	30
	Total (Medical)	94	70	30
	Natural Science			
12	Amravati University, Amravati	33	55	45
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	14	57	43
14	Banasthali University, Banasthali	48	65	35
15	Barkatullah Vishwavidyalaya, Bhopal	32	66	34
16	Bhavanagar University, Bhavnagar	21	62	38
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	23	57	43
18	Goa University, Panjim	54	67	33
19	Harisingh Gour Vishwavidyalaya, Sagar	40	65	35
20	Jiwaji University, Gwalior	34	74	26
21	Maharaja Sayajirao University, Vadodara	139	53	47
22	Mohanlal Sukhadia University, Udaipur	64	64	36
23	Mumbai University, Mumbai	48	60	40
24	Nagpur Univeristy, Nagpur	50	50	50
25	North Gujarat University, Patan	15	47	53
26	North Maharashtra University, Jalgaon	22	45	55
27	Pandit Ravishankar Shukla University, Raipur	43	49	51
28	Pune University, Pune	73	74	26
29	Rajasthan University, Jaipur	28	71	29
30	Rani Durgavati Vishwavidyalaya, Jabalpur	39	54	46
31	Sardar Patel University, Vallabh Vidyanagar	31	58	42
32	Saurashtra University, Rajkot	65	54	46
33	Shivaji University, Kolhapur	73	70	30
34	South Gujarat University, Surat	23	48	52

Table - 19

Educational of the Faculty from Higher Education Sector in West Zone

35	Swami Ramanand Teerth Marathwada University, Nanded	24	67	33
	Total (Natural Science)	1,036	51	49
	Total for Universities	2,544	65	35
Colleges				
	Agriculture Science			
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities			
	Engineering Science			
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	60	5	95
2	Goa Engineering College, Farmagudi	50	24	76
3	LD Engineering, Ahmedabad	69	39	61
4	Malaviya Regional Engineering College, Jaipur	70	60	40
5	Maulana Azad Regional Engineering College, Bhopal	5	100	-
6	Padre Engineering College, Ponda	48	65	35
7	Shri G. S. Institute of Science and Technology, Indore	75	28	72
8	Walchand Engineering College, Sangli	21	48	52
	Total (Engineering)	398	38	62
	Medical Science			
9	Goa Medical College, Panjim	55	76	24
10	J.L.N. Medical College, Ajmer	118	64	36
11	Medical College, Rewa	21	52	48
12	MG Medical College, Indore	55	67	33
	Total (Medical)	249	67	33
	Natural Science			
13	Government Girls College, Rewa	16	13	88
14	Insitute of Science, Nagpur	50	64	36
15	Kelkar-Vaze College, Mumbai	22	68	32
16	Model Government College, Rewa	13	23	77
17	M.G. Science College, Ahmedabad	27	56	44
18	N.M Science College, Patan	8	13	88
19	Nagar college, Ahmednagar	50	60	40
20	Pratap College, Amalner	22	23	77
21	Rajshri College, Alwar	14	21	79
22	Ramnarain Ruia College, Mumbai	33	73	27
	S.P. College, Pune	21	43	57
23	St. Xavier's College, Mumbai	44	75	25
24	Y.C. College, Karad	43	81	19
25	Y.C. Institute of Science, Satara	68	75	25
	Total (Natural Science)	431	58	42
	Total for Colleges	1,078	53	47
	Grand Total	3,622	61	39
	Source : Questionnaire III - 1.3			
	Based on Questionnaires Received			

Table - 20
Various Means of Central Tendency used to Determine FTE (Research) in West Zone

Field of Science		Mean	Median	Mode
Agriculture Science		40	39	45
Engineering Science		32	30	30
Medical Science		41	41	35
Natural Science		34	30	35

Table - 21

Research Guidance (M. Phil. / M. Tech. + Ph.D) by Faculty from Higher Education Sector in West Zone

		(1995-1998)				
			(in Numbers)			
	Institute Name	Degrees Awarded	Guidance/ year	Faculty Involved	(guidance/year)/ faculty	Faculty Involvement as pecent of Total
Universities / Institutes of National Importance						
	Agriculture Science					
1	Central Institute of Fisheries Education, Mumbai	17	5.67	5	1.13	22.73
2	Gujarat Agriculture University, Anand	892	297.33	143	2.08	47.04
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	450	150.00	65	2.31	37.14
4	Marathwada Krishi Vidyapeeth, Parbhani	280	93.33	34	2.75	35.79
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	1523	507.67	243	2.09	55.86
6	Rajasthan Agriculture University, Bikaner	95	31.67	25	1.27	65.79
7	Rajasthan Agriculture University, Udaipur	527	175.67	62	2.83	57.94
	Total (Agriculture)	3784	1,261.33	577	2.19	49.06
	Engineering Science					
8	Birla Institute of Technology Science, Pilani	254	84.67	34	2.49	42.50
9	Dr. Babasaheb Ambedkar Technological University, Lonere	43	14.33	15	0.96	30.61
10	Indian Institute of Technology, Mumbai	557	185.67	78	2.38	71.56
	Total (Engineering)	854	284.67	127	2.24	53.36
	Medical Science					
11	Gujarat Ayurved Univesity, Jamnagar	124	41.33	53	0.78	56.38
	Total (Medical)	124	41.33	53	0.78	56.38
	Natural Science					
12	Amravati University, Amravati	53	17.67	18	0.98	54.55
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	43	14.33	7	2.05	50.00
14	Banasthali University, Banasthali	186	62.00	19	3.26	39.58
15	Barkatullah Vishwavidyalaya, Bhopal	100	33.33	18	1.85	56.25
16	Bhavanagar University, Bhavnagar	54	18.00	11	1.64	52.38
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	38	12.67	9	1.41	39.13
18	Goa University, Panjim	109	36.33	18	2.02	33.33
19	Harisingh Gour Vishwavidyalaya, Sagar	62	20.67	32	0.65	80.00
20	Jiwaji University, Gwalior	98	32.67	18	1.81	52.94
21	Maharaja Sayajirao University, Vadodara	524	174.67	72	2.43	51.80
22	Mumbai University, Mumbai	110	36.67	32	1.15	66.67
23	Nagpur Univeristy, Nagpur	78	26.00	19	1.37	38.00
24	North Gujarat University, Patan	23	7.67	6	1.28	40.00
25	North Maharashtra University, Jalgaon	20	6.67	7	0.95	31.82
26	Pandit Ravishankar Shukla University, Raipur	42	14.00	18	0.78	41.86
27	Rajasthan University, Jaipur	148	49.33	19	2.60	67.86
28	Rani Durgavati Vishwavidyalaya, Jabalpur	38	12.67	25	0.51	64.10
29	Sardar Patel University, Vallabh Vidyanagar	138	46.00	22	2.09	70.97
30	Saurashtra University, Rajkot	75	25.00	27	0.93	41.54
31	Shivaji University, Kolhapur	190	63.33	48	1.32	65.75
32	South Gujarat University, Surat	20	6.67	3	2.22	13.04
33	Swami Ramanand Teerth Marathwada University, Nanded	56	18.67	12	1.56	50.00
	Total (Natural Science)	2205	735.00	460	1.60	51.17

Table - 21

Research Guidance (M. Phil. / M. Tech. + Ph.D) by Faculty from Higher Education Sector in West Zone

	Institute Name	Degrees Awarded	Guidance/ year	Faculty Involved	(guidance/year)/ faculty	Faculty Involvement as pecent of Total
	Total for Universities	6967	2,322.33	1,217	1.91	50.56
Colleges						
	Agriculture Science					
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)					
	Engineering Science					
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	19	6.33	8	0.79	13.33
2	Goa Engineering College, Farmagudi	8	2.67	2	1.33	4.00
3	LD Engineering, Ahmedabad	12	4.00	7	0.57	10.14
4	Malaviya Regional Engineering College, Jaipur	85	28.33	32	0.89	45.71
5	Maulana Azad Regional Engineering College, Bhopal	2	0.67	2	0.33	40.00
6	Padre Engineering College, Ponda	3	1.00	3	0.33	6.25
7	Shri G. S. Institute of Science and Technology, Indore	8	2.67	4	0.67	5.33
8	Walchand Engineering College, Sangli	1	0.33	1	0.33	4.76
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	Total (Engineering)	138	46.00	59	0.78	14.82
	Medical Science					
9	Goa Medical College, Panjim	7	2.33	3	0.78	5.45
10	J.L.N. Medical College, Ajmer	29	9.67	15	0.64	12.71
11	Medical College, Rewa	0	-	-	-	-
12	MG Medical College, Indore	15	5.00	8	0.63	14.55
	Total (Medical)	51	17.00	26	0.65	10.44
	Natural Science					
13	Government Girls College, Rewa	1	0.33	1	0.33	6.25
14	Insitute of Science, Nagpur	65	21.67	28	0.77	56.00
15	Kelkar-Vaze College, Mumbai	25	8.33	13	0.64	59.09
16	Model Government College, Rewa	0	-	-	-	-
17	M.G. Science College, Ahmedabad	3	1.00	2	0.50	7.41
18	N.M Science College, Patan	0	-	-	-	-
19	Nagar college, Ahmednagar	7	2.33	5	0.47	10.00
20	Pratap College, Amalner	0	-	-	-	-
21	Rajshri College, Alwar	0	-	-	-	-
22	Ramnarain Ruia College, Mumbai	175	58.33	28	2.08	84.85
23	St. Xavier's College, Mumbai	52	17.33	26	0.67	59.09
24	Y.C. College, Karad	12	4.00	8	0.50	18.60
25	Y.C. Institute of Science, Satara	21	7.00	15	0.47	22.06
	Total (Natural Science)	361	120.33	126	0.96	30.73
	Total for Colleges	499	166.33	185	0.90	17.50
	Grand Total	7466	2,488.67	1,402	1.78	40.47

Table - 22

Research Projects Completed

(in Number)

	Institute Name	Total	Faculty Involved	Projects/ Faculty	Faculty Involvement as Percent of Total
Universities / Institutes of National Importance					
	Agriculture Science				
1	Central Institute of Fisheries Education, Mumbai	3	3	1.00	13.64
2	Gujarat Agriculture University, Anand	352	102	3.45	33.55
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	193	76	2.54	43.43
4	Marathwada Krishi Vidyapeeth, Parbhani	110	48	2.29	50.53
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	432	144	3.00	33.10
6	Rajasthan Agriculture University, Bikaner	17	12	1.42	31.58
7	Rajasthan Agriculture University, Udaipur	78	15	5.20	14.02
	Total (Agriculture)	1185	400	2.96	34.01
	Engineering Science				
8	Birla Institute of Technology Science, Pilani	156	42	3.71	52.50
9	Dr. Babasaheb Ambedkar Technological University, Lonere	21	12	1.75	24.49
10	Indian Institute of Technology, Mumbai	165	63	2.62	57.80
	Total (Engineering)	342	117	2.92	49.16
	Medical Science				
11	Gujarat Ayurved Univesity, Jamnagar	6	2	3.00	2.13
	Total (Medical)	6	2	3.00	2.13
	Natural Science				
12	Amravati University, Amravati	17	9	1.89	27.27
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	5	3	1.67	21.43
14	Banasthali University, Banasthali	22	10	2.20	20.83
15	Barkatullah Vishwavidyalaya, Bhopal	18	7	2.57	21.88
16	Bhavanagar University, Bhavnagar	15	9	1.67	42.86
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	7	6	1.17	26.09
18	Goa University, Panjim	27	12	2.25	22.22
19	Harisingh Gour Vishwavidyalaya, Sagar	11	9	1.22	22.50
20	Jiwaji University, Gwalior	28	15	1.87	44.12
21	Maharaja Sayajirao University, Vadodara	168	58	2.90	41.73
22	Mumbai University, Mumbai	79	31	2.55	64.58
23	Nagpur Univeristy, Nagpur	54	19	2.84	38.00
24	North Gujarat University, Patan	11	5	2.20	33.33
25	North Maharashtra University, Jalgaon	7	3	2.33	13.64
26	Pandit Ravishankar Shukla University, Raipur	10	8	1.25	18.60
27	Rajasthan University, Jaipur	33	12	2.75	42.86
28	Rani Durgavati Vishwavidyalaya, Jabalpur	11	7	1.57	17.95
29	Sardar Patel University, Vallabh Vidyanagar	38	17	2.24	54.84
30	Saurashtra University, Rajkot	7	3	2.33	4.62
31	Shivaji University, Kolhapur	48	21	2.29	28.77
32	South Gujarat University, Surat	3	1	3.00	4.35
33	Swami Ramanand Teerth Marathwada University, Nanded	7	3	2.33	12.50

Table - 22

	Total (Natural Science)	626	268	2.34	29.81
	Total for Universities	2159	787	2.74	32.70
Colleges					
	Agriculture Science				
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)				
	Engineering Science				
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	3	2	1.50	3.33
2	Goa Engineering College, Farmagudi	15	8	1.88	16.00
3	LD Engineering, Ahmedabad	11	9	1.22	13.04
4	Malaviya Regional Engineering College, Jaipur	79	34	2.32	48.57
5	Maulana Azad Regional Engineering College, Bhopal	0	0	-	-
6	Padre Engineering College, Ponda	9	4	2.25	8.33
7	Shri G. S. Institute of Science and Technology, Indore	15	9	1.67	12.00
8	Walchand Engineering College, Sangli	7	3	2.33	14.29
	Total (Engineering)	139	69	2.01	17.34
	Medical Science				
9	Goa Medical College, Panjim	3	2	1.50	3.64
10	J.L.N. Medical College, Ajmer	23	12	1.92	10.17
11	Medical College, Rewa	0	0	-	-
12	MG Medical College, Indore	7	4	1.75	7.27
	Total (Medical)	33	18	1.83	7.23
	Natural Science				
13	Government Girls College, Rewa	0	0	-	-
14	Insitute of Science, Nagpur	43	19	2.26	38.00
15	Kelkar-Vaze College, Mumbai	12	7	1.71	31.82
16	Model Government College, Rewa	3	3	1.00	23.08
17	M.G. Science College, Ahmedabad	7	6	1.17	22.22
18	N.M Science College, Patan	0	0	-	-
19	Nagar college, Ahmednagar	13	7	1.86	14.00
20	Pratap College, Amalner	3	2	1.50	9.09
21	Rajshri College, Alwar	3	3	1.00	21.43
22	Ramnarain Ruia College, Mumbai	15	8	1.88	24.24
23	St. Xavier's College, Mumbai	8	5	1.60	11.36
24	Y.C. College, Karad	3	2	1.50	4.65
25	Y.C. Institute of Science, Satara	3	2	1.50	2.94
	Total (Natural Science)	113	64	1.77	15.61
	Total for Colleges	285	151	1.89	14.29
	Grand Total	2444	938	2.61	27.08

Table - 23

Research Articles Published by Faculty from Higher Education Sector in West Zone (1995 -98)

Research Publications : Research Articles

(1995-1998)

(in Numbers)

	Institute Name	Total Papers	Papers / Year	Faculty Involved	(Paper/year) / Faculty	Faculty Involvement as Percent of
Universities / Institutes of National Importance						
	Agriculture Science					
1	Central Institute of Fisheries Education, Mumbai	253	84.33	15	5.62	68.18
2	Gujarat Agriculture University, Anand	1,254	418.00	248	1.69	81.58
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	854	284.67	124	2.30	70.86
4	Marathwada Krishi Vidyapeeth, Parbhani	662	220.67	74	2.98	77.89
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	1,898	632.67	302	2.09	69.43
6	Rajasthan Agriculture University, Bikaner	129	43.00	24	1.79	63.16
7	Rajasthan Agriculture University, Udaipur	533	177.67	86	2.07	80.37
	Total (Agriculture)	5,583	1,861.00	873	2.13	74.23
	Engineering Science					
8	Birla Institute of Technology Science, Pilani	428	142.67	62	2.30	77.50
9	Dr. Babasaheb Ambedkar Technological University, Lonere	184	61.33	39	1.57	79.59
10	Indian Institute of Technology, Mumbai	484	161.33	65	2.48	59.63
	Total (Engineering)	1,096	365.33	166	2.20	69.75
	Medical Science					
11	Gujarat Ayurved Univesity, Jamnagar	189	63.00	53	1.19	56.38
	Total (Medical)	189	63.00	53	1.19	56.38
	Natural Science					
12	Amravati University, Amravati	157	52.33	27	1.94	81.82
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	42	14.00	11	1.27	78.57
14	Banasthali University, Banasthali	185	61.67	40	1.54	83.33
15	Barkatullah Vishwavidyalaya, Bhopal	93	31.00	28	1.11	87.50
16	Bhavanagar University, Bhavnagar	39	13.00	16	0.81	76.19
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	29	9.67	12	0.81	52.17
18	Goa University, Panjim	86	28.67	42	0.68	77.78
19	Harisingh Gour Vishwavidyalaya, Sagar	84	28.00	38	0.74	95.00
20	Jiwaji University, Gwalior	102	34.00	28	1.21	82.35
21	Maharaja Sayajirao University, Vadodara	533	177.67	102	1.74	73.38
22	Mumbai University, Mumbai	302	100.67	38	2.65	79.17
23	Nagpur Univeristy, Nagpur	158	52.67	38	1.39	76.00
24	North Gujarat University, Patan	26	8.67	9	0.96	60.00
25	North Maharashtra University, Jalgaon	45	15.00	19	0.79	86.36
26	Pandit Ravishankar Shukla University, Raipur	76	25.33	33	0.77	76.74
27	Rajasthan University, Jaipur	119	39.67	18	2.20	64.29
28	Rani Durgavati Vishwavidyalaya, Jabalpur	38	12.67	25	0.51	64.10
29	Sardar Patel University, Vallabh Vidyanagar	95	31.67	27	1.17	87.10
30	Saurashtra University, Rajkot	79	26.33	27	0.98	41.54
31	Shivaji University, Kolhapur	239	79.67	64	1.24	87.67
32	South Gujarat University, Surat	28	9.33	11	0.85	47.83
33	Swami Ramanand Teerth Marathwada University, Nanded	67	22.33	18	1.24	75.00
	Total (Natural Science)	2,622	874.00	671	1.30	74.64

Table - 23

Research Articles Published by faculty from Higher Education Sector in West Zone (1995 -98)						
Institute	Name	Total Papers	Papers / Year	Faculty Involved	(Paper/year) / Faculty	Faculty Involvement as Percent of
	Total for Universities	9,490	3,163.33	1763	1.79	73.24
Colleges						
	Agriculture Science					
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)					
	Engineering Science					
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	62	20.67	12	1.72	20.00
2	Goa Engineering College, Farmagudi	59	19.67	19	1.04	38.00
3	LD Engineering, Ahmedabad	98	32.67	43	0.76	62.32
4	Malaviya Regional Engineering College, Jaipur	249	83.00	64	1.30	91.43
5	Maulana Azad Regional Engineering College, Bhopal	14	4.67	5	0.93	100.00
6	Padre Engineering College, Ponda	119	39.67	35	1.13	72.92
7	Shri G. S. Institute of Science and Technology, Indore	208	69.33	63	1.10	84.00
8	Walchand Engineering College, Sangli	77	25.67	18	1.43	85.71
	Total (Engineering)	886	295.33	259	1.14	65.08
	Medical Science					
9	Goa Medical College, Panjim	152	50.67	38	1.33	69.09
10	J.L.N. Medical College, Ajmer	375	125.00	85	1.47	72.03
11	Medical College, Rewa	43	14.33	11	1.30	52.38
12	MG Medical College, Indore	199	66.33	45	1.47	81.82
	Total (Medical)	769	256.33	179	1.43	71.89
	Natural Science					
13	Government Girls College, Rewa	53	17.67	11	1.61	68.75
14	Insitute of Science, Nagpur	163	54.33	39	1.39	78.00
15	Kelkar-Vaze College, Mumbai	87	29.00	21	1.38	95.45
16	Model Government College, Rewa	33	11.00	9	1.22	69.23
17	M.G. Science College, Ahmedabad	105	35.00	16	2.19	59.26
18	N.M Science College, Patan	36	12.00	8	1.50	100.00
19	Nagar college, Ahmednagar	193	64.33	41	1.57	82.00
20	Pratap College, Amalner	43	14.33	18	0.80	81.82
21	Rajshri College, Alwar	29	9.67	8	1.21	57.14
22	Ramnarain Ruia College, Mumbai	241	80.33	28	2.87	84.85
23	St. Xavier's College, Mumbai	185	61.67	38	1.62	86.36
24	Y.C. College, Karad	131	43.67	37	1.18	86.05
25	Y.C. Institute of Science, Satara	208	69.33	52	1.33	76.47
	Total (Natural Science)	1,507	502.33	326	1.54	79.51
	Total for Colleges	3,162	1,054.00	764	1.38	72.28
	Grand Total	12,652	4,217.33	2527	1.67	72.95

Table24

Books Monographs published by faculty from Higher Education Sector in West Zone

(Till date)

		(in Numbers)			
Institute Name		Books Published	Faculty Involved	Books / Faculty	Faculty Involvement as Percent of
Universities / Institutes of National Importance					
	Agriculture Science				
1	Central Institute of Fisheries Education, Mumbai	7	3	2.33	13.64
2	Gujarat Agriculture University, Anand	43	33	1.30	10.86
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	33	29	1.14	16.57
4	Marathwada Krishi Vidyapeeth, Parbhani	11	11	1.00	11.58
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	73	62	1.18	14.25
6	Rajasthan Agriculture University, Bikaner	3	2	1.50	5.26
7	Rajasthan Agriculture University, Udaipur	13	10	1.30	9.35
	Total (Agriculture)	183	150	1.22	12.76
	Engineering Science				
8	Birla Institute of Technology Science, Pilani	3	2	1.50	2.50
9	Dr. Babasaheb Ambedkar Technological University, Lonere	1	1	1.00	2.04
10	Indian Institute of Technology, Mumbai	18	8	2.25	7.34
	Total (Engineering)	22	11	2.00	4.62
	Medical Science				
11	Gujarat Ayurved Univesity, Jamnagar	17	11	1.55	11.70
	Total (Medical)	17	11	1.55	11.70
	Natural Science				
12	Amravati University, Amravati	3	3	1.00	9.09
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	0	0	-	-
14	Banasthali University, Banasthali	7	6	1.17	12.50
15	Barkatullah Vishwavidyalaya, Bhopal	0	0	-	-
16	Bhavanagar University, Bhavnagar	0	0	-	-
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	1	1	1.00	4.35
18	Goa University, Panjim	2	2	2.00	3.70
19	Harisingh Gour Vishwavidyalaya, Sagar	3	3	1.00	7.50
20	Jiwaji University, Gwalior	11	8	1.38	23.53
21	Maharaja Sayajirao University, Vadodara	34	19	1.79	13.67
22	Mumbai University, Mumbai	11	10	1.10	20.83
23	Nagpur Univeristy, Nagpur	8	6	1.33	12.00
24	North Gujarat University, Patan	4	3	1.33	20.00
25	North Maharashtra University, Jalgaon	1	1	1.00	4.55
26	Pandit Ravishankar Shukla University, Raipur	13	8	1.63	18.60
27	Rajasthan University, Jaipur	5	4	1.25	14.29
28	Rani Durgavati Vishwavidyalaya, Jabalpur	1	1	1.00	2.56
29	Sardar Patel University, Vallabh Vidyanagar	11	10	1.10	32.26
30	Saurashtra University, Rajkot	5	4	1.25	6.15
31	Shivaji University, Kolhapur	18	12	1.50	16.44
32	South Gujarat University, Surat	0	0	-	-
33	Swami Ramanand Teerth Marathwada University, Nanded	3	2	1.50	8.33

Table24

Books Monographs published by faculty from Higher Education Sector in West Zone

(Till date)

	Total (Natural Science)	141	103	1.37	11.46
	Total for Universities	363	275	1.32	11.43
Colleges					
	Agriculture Science				
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)				
	Engineering Science				
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0	0	-	-
2	Goa Engineering College, Farmagudi	4	3	1.33	6.00
3	LD Engineering, Ahmedabad	1	1	1.00	1.45
4	Malaviya Regional Engineering College, Jaipur	16	11	1.45	15.71
5	Maulana Azad Regional Engineering College, Bhopal	0	0	-	-
6	Padre Engineering College, Ponda	0	0	-	-
7	Shri G. S. Institute of Science and Technology, Indore	7	6	1.17	8.00
8	Walchand Engineering College, Sangli	7	5	1.40	23.81
	Total (Engineering)	35	26	1.35	6.53
	Medical Science				
9	Goa Medical College, Panjim	5	4	1.25	7.27
10	J.L.N. Medical College, Ajmer	29	21	1.38	17.80
11	Medical College, Rewa	1	1	1.00	4.76
12	MG Medical College, Indore	17	10	1.70	18.18
	Total (Medical)	52	36	1.44	14.46
	Natural Science				
13	Government Girls College, Rewa	0	0	-	-
14	Insitute of Science, Nagpur	15	8	1.88	16.00
15	Kelkar-Vaze College, Mumbai	5	5	1.00	22.73
16	Model Government College, Rewa	1	1	1.00	7.69
17	M.G. Science College, Ahmedabad	11	9	1.22	33.33
18	N.M Science College, Patan	0	0	-	-
19	Nagar college, Ahmednagar	6	5	1.20	10.00
20	Pratap College, Amalner	1	1	1.00	4.55
21	Rajshri College, Alwar	3	3	1.00	21.43
22	Ramnarain Ruia College, Mumbai	18	11	1.64	33.33
23	St. Xavier's College, Mumbai	18	13	1.38	29.55
24	Y.C. College, Karad	11	4	2.75	9.30
25	Y.C. Institute of Science, Satara	15	11	1.36	16.18
	Total (Natural Science)	104	71	1.46	17.32
	Total for Colleges	191	133	1.44	12.58
	Grand Total	332	236	1.41	6.81

Table - 25

External Examinership by faculty from Higher Education Sector in West Zone (1995-98)

		(in Numbers)			
Institute Name		Examinership	Faculty Involved	Examinership / Faculty	Faculty Involvement as Percent of
Universities / Institutes of National Importance					
	Agriculture Science				
1	Central Institute of Fisheries Education, Mumbai	4	4	1.00	18.18
2	Gujarat Agriculture University, Anand	70	69	1.01	22.70
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	46	44	1.05	25.14
4	Marathwada Krishi Vidyapeeth, Parbhani	22	22	1.00	23.16
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	102	98	1.04	22.53
6	Rajasthan Agriculture University, Bikaner	11	11	1.00	28.95
7	Rajasthan Agriculture University, Udaipur	29	29	1.00	27.10
	Total (Agriculture)	284	277	1.03	23.55
	Engineering Science				
8	Birla Institute of Technology Science, Pilani	22	20	1.10	25.00
9	Dr. Babasaheb Ambedkar Technological University, Lonere	18	18	1.00	36.73
10	Indian Institute of Technology, Mumbai	47	41	1.15	37.61
	Total (Engineering)	87	79	1.10	33.19
	Medical Science				
11	Gujarat Ayurved Univesity, Jamnagar	35	30	1.17	31.91
	Total (Medical)	35	30	1.17	31.91
	Natural Science				
12	Amravati University, Amravati	11	11	1.00	33.33
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	9	9	1.00	64.29
14	Banasthali University, Banasthali	22	22	1.00	45.83
15	Barkatullah Vishwavidyalaya, Bhopal	11	9	1.22	28.13
16	Bhavanagar University, Bhavnagar	5	5	1.00	23.81
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	9	9	1.00	39.13
18	Goa University, Panjim	23	20	1.15	37.04
19	Harisingh Gour Vishwavidyalaya, Sagar	32	29	1.10	72.50
20	Jiwaji University, Gwalior	18	18	1.00	52.94
21	Maharaja Sayajirao University, Vadodara	65	60	1.08	43.17
22	Mumbai University, Mumbai	22	20	1.10	41.67
23	Nagpur Univeristy, Nagpur	19	19	1.00	38.00
24	North Gujarat University, Patan	8	8	1.00	53.33
25	North Maharashtra University, Jalgaon	10	10	1.00	45.45
26	Pandit Ravishankar Shukla University, Raipur	21	18	1.17	41.86
27	Rajasthan University, Jaipur	11	11	1.00	39.29
28	Rani Durgavati Vishwavidyalaya, Jabalpur	20	20	1.00	51.28
29	Sardar Patel University, Vallabh Vidyanagar	18	15	1.20	48.39
30	Saurashtra University, Rajkot	11	11	1.00	16.92
31	Shivaji University, Kolhapur	23	20	1.15	27.40
32	South Gujarat University, Surat	10	10	1.00	43.48
33	Swami Ramanand Teerth Marathwada University, Nanded	12	12	1.00	50.00
	Total (Natural Science)	390	366	1.07	40.71
	Total for Universities	709	673	1.05	27.96

Table - 25

External Examinership by faculty from Higher Education Sector in West Zone (1995-98)

	Institute Name	Examinership	Faculty Involved	Examinership / Faculty	Faculty Involvement as Percent of
Colleges					
	Agriculture Science				
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)				
	Engineering Science				
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	11	10	1.10	16.67
2	Goa Engineering College, Farmagudi	29	24	1.21	48.00
3	LD Engineering, Ahmedabad	12	12	1.00	17.39
4	Malaviya Regional Engineering College, Jaipur	33	33	1.00	47.14
5	Maulana Azad Regional Engineering College, Bhopal	3	3	1.00	60.00
6	Padre Engineering College, Ponda	21	21	1.00	43.75
7	Shri G. S. Institute of Science and Technology, Indore	25	21	1.19	28.00
8	Walchand Engineering College, Sangli	18	15	1.20	71.43
	Total (Engineering)	152	139	1.09	34.92
	Medical Science				
9	Goa Medical College, Panjim	12	12	1.00	21.82
10	J.L.N. Medical College, Ajmer	25	25	1.00	21.19
11	Medical College, Rewa	2	2	1.00	9.52
12	MG Medical College, Indore	3	3	1.00	5.45
	Total (Medical)	42	42	1.00	16.87
	Natural Science				
13	Government Girls College, Rewa	8	8	1.00	50.00
14	Insitute of Science, Nagpur	22	22	1.00	44.00
15	Kelkar-Vaze College, Mumbai	12	12	1.00	54.55
16	Model Government College, Rewa	11	11	1.00	84.62
17	M.G. Science College, Ahmedabad	23	22	1.05	81.48
18	N.M Science College, Patan	6	6	1.00	75.00
19	Nagar college, Ahmednagar	22	22	1.00	44.00
20	Pratap College, Amalner	10	10	1.00	45.45
21	Rajshri College, Alwar	10	10	1.00	71.43
22	Ramnarain Ruia College, Mumbai	15	10	1.50	30.30
23	St. Xavier's College, Mumbai	20	20	1.00	45.45
24	Y.C. College, Karad	18	16	1.13	37.21
25	Y.C. Institute of Science, Satara	23	18	1.28	26.47
	Total (Natural Science)	200	187	1.07	45.61
	Total for Colleges	394	368	1.07	34.82
	Grand Total	1103	1041	1.06	30.05

Table - 26

Editorial Responsibilities held by faculty from Higher Education Sector (1995-98)

(in Numbers)

	Institute Name	Total Responsibilities	Faculty Involved	Responsibilities / Faculty	Faculty Involvement as Percent of Total Response
Universities / Institutes of National Importance					
	Agriculture Science				
1	Central Institute of Fisheries Education, Mumbai	7	6	1.17	27.27
2	Gujarat Agriculture University, Anand	43	38	1.13	12.50
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	13	13	1.00	7.43
4	Marathwada Krishi Vidyapeeth, Parbhani	17	15	1.13	15.79
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	49	47	1.04	10.80
6	Rajasthan Agriculture University, Bikaner	13	11	1.18	28.95
7	Rajasthan Agriculture University, Udaipur	21	21	1.00	19.63
	Total (Agriculture)	163	151	1.08	12.84
	Engineering Science				
8	Birla Institute of Technology Science, Pilani	18	17	1.06	21.25
9	Dr. Babasaheb Ambedkar Technological University, Lonere	11	11	1.00	22.45
10	Indian Institute of Technology, Mumbai	47	40	1.18	36.70
	Total (Engineering)	76	68	1.12	28.57
	Medical Science				
11	Gujarat Ayurved Univesity, Jamnagar	23	20	1.15	21.28
	Total (Medical)	23	20	1.15	21.28
	Natural Science				
12	Amravati University, Amravati	11	10	1.10	30.30
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	3	3	1.00	21.43
14	Banasthali University, Banasthali	11	8	1.38	16.67
15	Barkatullah Vishwavidyalaya, Bhopal	10	10	1.00	31.25
16	Bhavanagar University, Bhavnagar	3	2	1.50	9.52
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	7	6	1.17	26.09
18	Goa University, Panjim	18	15	1.20	27.78
19	Harisingh Gour Vishwavidyalaya, Sagar	22	20	1.10	50.00
20	Jiwaji University, Gwalior	15	14	1.07	41.18
21	Maharaja Sayajirao University, Vadodara	49	45	1.09	32.37
22	Mumbai University, Mumbai	10	10	1.00	20.83
23	Nagpur Univeristy, Nagpur	15	14	1.07	28.00
24	North Gujarat University, Patan	1	1	1.00	6.67
25	North Maharashtra University, Jalgaon	2	2	1.00	9.09
26	Pandit Ravishankar Shukla University, Raipur	12	12	1.00	27.91
27	Rajasthan University, Jaipur	14	12	1.17	42.86
28	Rani Durgavati Vishwavidyalaya, Jabalpur	0	0	-	-
29	Sardar Patel University, Vallabh Vidyanagar	8	7	1.14	22.58
30	Saurashtra University, Rajkot	5	4	1.25	6.15
31	Shivaji University, Kolhapur	14	13	1.08	17.81
32	South Gujarat University, Surat	0	0	-	-

Table - 26

Editorial Responsibilities held by faculty from Higher Education Sector (1995-98)

	Institute Name	Total Responsibilities	Faculty Involved	Responsibilities / Faculty	Faculty Involvement as Percent of Total Response
	Total (Natural Science)	233	211	1.10	23.47
	Total for Universities	495	450	1.10	18.70
Colleges					
	Agriculture Science				
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)				
	Engineering Science				
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0	0	-	-
2	Goa Engineering College, Farmagudi	1	1	1.00	2.00
3	LD Engineering, Ahmedabad	3	2	1.50	2.90
4	Malaviya Regional Engineering College, Jaipur	12	12	1.00	17.14
5	Maulana Azad Regional Engineering College, Bhopal	0	0	-	-
6	Padre Engineering College, Ponda	2	1	2.00	2.08
7	Shri G. S. Institute of Science and Technology, Indore	7	6	1.17	8.00
8	Walchand Engineering College, Sangli	2	2	1.00	9.52
	Total (Engineering)	27	24	1.13	6.03
	Medical Science				
9	Goa Medical College, Panjim	7	6	1.17	10.91
10	J.L.N. Medical College, Ajmer	43	40	1.08	33.90
11	Medical College, Rewa	0	0	-	-
12	MG Medical College, Indore	13	11	1.18	20.00
	Total (Medical)	63	57	1.11	22.89
	Natural Science				
13	Government Girls College, Rewa	0	0	-	-
14	Insitute of Science, Nagpur	15	15	1.00	30.00
15	Kelkar-Vaze College, Mumbai	0	0	-	-
16	Model Government College, Rewa	0	0	-	-
17	M.G. Science College, Ahmedabad	1	1	1.00	3.70
18	N.M Science College, Patan	0	0	-	-
19	Nagar college, Ahmednagar	1	1	1.00	2.00
20	Pratap College, Amalner	0	0	-	-
21	Rajshri College, Alwar	0	0	-	-
22	Ramnarain Ruia College, Mumbai	7	5	1.40	15.15
23	St. Xavier's College, Mumbai	2	2	1.00	4.55
24	Y.C. College, Karad	1	1	1.00	2.33
25	Y.C. Institute of Science, Satara	3	2	1.50	2.94
	Total (Natural Science)	30	27	1.11	6.59
	Total for Colleges	120	108	1.11	10.22
	Grand Total	353	319	1.11	9.21

Table- 27

Patents secured by Faculty from Higher Education Sector in West Zone (in Number)

	Institute Name	National	International	Total	Faculty Involved	Patents/ Faculty	Faculty Involvement as Percent of Total Response
	Universities / Institutes of National Importance						
	Agriculture Science						
1	Central Institute of Fisheries Education, Mumbai	1	0	1	1	1.00	4.55
2	Gujarat Agriculture University, Anand	27	2	29	15	1.93	4.93
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	32	3	35	19	1.84	10.86
4	Marathwada Krishi Vidyapeeth, Parbhani	7	0	7	7	1.00	7.37
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	33	2	35	21	1.67	4.83
6	Rajasthan Agriculture University, Bikaner	2	0	2	2	1.00	5.26
7	Rajasthan Agriculture University, Udaipur	19	0	19	17	1.12	15.89
	Total (Agriculture)	121	7	128	82	1.56	6.97
	Engineering Science						
8	Birla Institute of Technology Science, Pilani	7	0	7	6	1.17	7.50
9	Dr. Babasaheb Ambedkar Technological University, Lonere	0	0	0	0	-	-
#	Indian Institute of Technology, Mumbai	23	7	30	18	1.67	16.51
	Total (Engineering)	30	7	37	24	1.54	10.08
	Medical Science						
#	Gujarat Ayurved Univesity, Jamnagar	0	0	0	0	-	-
	Total (Medical)	0	0	0	0	-	-
	Natural Science						
#	Amravati University, Amravati	0	0	0	0	-	-
#	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	0	0	0	0	-	-
#	Banasthali University, Banasthali	0	0	0	0	-	-
#	Barkatullah Vishwavidyalaya, Bhopal	0	0	0	0	-	-
#	Bhavanagar University, Bhavnagar	0	0	0	0	-	-
#	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	0	0	0	0	-	-
#	Goa University, Panjim	0	0	0	0	-	-
#	Harisingh Gour Vishwavidyalaya, Sagar	0	0	0	0	-	-
#	Jiwaji University, Gwalior	1	0	1	1	1.00	2.94
#	Maharaja Sayajirao University, Vadodara	7	0	7	5	1.40	3.60
#	Mumbai University, Mumbai	2	0	2	2	1.00	4.17
#	Nagpur Univeristy, Nagpur	0	0	0	0	-	-
#	North Gujarat University, Patan	0	0	0	0	-	-
#	North Maharashtra University, Jalgaon	0	0	0	0	-	-
#	Pandit Ravishankar Shukla University, Raipur	0	0	0	0	-	-
#	Rajasthan University, Jaipur	1	0	1	1	1.00	3.57
#	Rani Durgavati Vishwavidyalaya, Jabalpur	0	0	0	0	-	-
#	Sardar Patel University, Vallabh Vidyanagar	3	0	3	2	1.50	6.45
#	Saurashtra University, Rajkot	0	0	0	0	-	-
#	Shivaji University, Kolhapur	0	0	0	0	-	-
#	South Gujarat University, Surat	0	0	0	0	-	-
#	Swami Ramanand Teerth Marathwada University, Nanded	0	0	0	0	-	-
	Total (Natural Science)	14	0	14	11	1.27	1.22

Table- 27

	Patents secured by Faculty from Higher Education Sector in West Zone					
Institute Name	National	International	Total	Faculty Involved	Patents/ Faculty	Faculty Involvement as Percent of Total Response
Total for Universities	165	14	179	117	1.53	4.86
Colleges						
Agriculture Science						
(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)						
Engineering Science						
1 Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0	0	0	0	-	-
2 Goa Engineering College, Farmagudi	1	0	1	1	1.00	2.00
3 LD Engineering, Ahmedabad	1	0	1	1	1.00	1.45
4 Malaviya Regional Engineering College, Jaipur	5	0	5	4	1.25	5.71
5 Maulana Azad Regional Engineering College, Bhopal	0	0	0	0	-	-
6 Padre Engineering College, Ponda	0	0	0	0	-	-
7 Shri G. S. Institute of Science and Technology, Indore	1	0	1	1	1.00	1.33
8 Walchand Engineering College, Sangli	0	0	0	0	-	-
Total (Engineering)	8	0	8	7	1.14	1.76
Medical Science						
9 Goa Medical College, Panjim	0	0	0	0	-	-
# J.L.N. Medical College, Ajmer	0	0	0	0	-	-
# Medical College, Rewa	0	0	0	0	-	-
# MG Medical College, Indore	0	0	0	0	-	-
Total (Medical)	0	0	0	0	0	-
Natural Science						
# Government Girls College, Rewa	0	0	0	0	-	-
# Insitute of Science, Nagpur	0	0	0	0	-	-
# Kelkar-Vaze College, Mumbai	0	0	0	0	-	-
# Model Government College, Rewa	0	0	0	0	-	-
# M.G. Science College, Ahmedabad	0	0	0	0	-	-
# N.M Science College, Patan	0	0	0	0	-	-
# Nagar college, Ahmednagar	0	0	0	0	-	-
# Pratap College, Amalner	0	0	0	0	-	-
# Rajshri College, Alwar	0	0	0	0	-	-
# Ramnarain Ruia College, Mumbai	2	0	2	2	1.00	6.06
# St. Xavier's College, Mumbai	0	0	0	0	-	-
# Y.C. College, Karad	0	0	0	0	-	-
# Y.C. Institute of Science, Satara	0	0	0	0	-	-
Total (Natural Science)	2	0	2	2	1.00	0.49
Total for Colleges	10	0	10	9	1.11	0.85
Grand Total	175	14	189	126	1.50	3.64

Technologies Developed by faculty from Higher Education Sector in West Zone

		(in Numbers)			
	Institute Name	Total	Faculty Involved	Technology / Faculty	Faculty Involvement as Percent of Total Response
	Agriculture Science				
1	Central Institute of Fisheries Education, Mumbai	1	1	1.00	4.55
2	Gujarat Agriculture University, Anand	145	69	2.10	22.70
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	37	19	1.95	10.86
4	Marathwada Krishi Vidyapeeth, Parbhani	17	15	1.13	15.79
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	221	124	1.78	28.51
6	Rajasthan Agriculture University, Bikaner	7	7	1.00	18.42
7	Rajasthan Agriculture University, Udaipur	56	48	1.17	44.86
	Total (Agriculture)	484	283	1.71	24.06
	Engineering Science				
8	Birla Institute of Technology Science, Pilani	7	6	1.17	7.50
9	Dr. Babasaheb Ambedkar Technological University, Lonere	-	-	-	-
10	Indian Institute of Technology, Mumbai	19	12	1.58	11.01
	Total (Engineering)	26	18	1.44	7.56
	Medical Science				
11	Gujarat Ayurved Univesity, Jamnagar	1	1	1.00	1.06
	Total (Medical)	1	1	1.00	1.06
	Natural Science				
12	Amravati University, Amravati	-	-	-	-
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	-	-	-	-
14	Banasthali University, Banasthali	-	-	-	-
15	Barkatullah Vishwavidyalaya, Bhopal	-	-	-	-
16	Bhavanagar University, Bhavnagar	-	-	-	-
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	-	-	-	-
18	Goa University, Panjim	1	1	1.00	1.85
19	Harisingh Gour Vishwavidyalaya, Sagar	-	-	-	-
20	Jiwaji University, Gwalior	-	-	-	-
21	Maharaja Sayajirao University, Vadodara	8	6	1.33	4.32
22	Mumbai University, Mumbai	2	2	1.00	4.17
23	Nagpur Univeristy, Nagpur	-	-	-	-
24	North Gujarat University, Patan	-	-	-	-
25	North Maharashtra University, Jalgaon	-	-	-	-
26	Pandit Ravishankar Shukla University, Raipur	-	-	-	-
27	Rajasthan University, Jaipur	2	1	2.00	3.57
28	Rani Durgavati Vishwavidyalaya, Jabalpur	-	-	-	-
29	Sardar Patel University, Vallabh Vidyanagar	6	5	1.20	16.13
30	Saurashtra University, Rajkot	-	-	-	-
31	Shivaji University, Kolhapur	1	1	1.00	1.37
32	South Gujarat University, Surat	-	-	-	-
33	Swami Ramanand Teerth Marathwada University, Nanded	-	-	-	-
	Total (Natural Science)	20	16	1.25	1.78

Table -28

Technologies Developed by faculty from Higher Education Sector in West Zone

	Institute Name	Total	Faculty Involved	Technology / Faculty	Faculty Involvement as Percent of Total Response
	Total for Universities	531	318	1.67	13.21
Colleges					
	Agriculture Science				
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)				
	Engineering Science				
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	2	2	1.00	3.33
2	Goa Engineering College, Farmagudi	1	1	1.00	2.00
3	LD Engineering, Ahmedabad	-	-	-	-
4	Malaviya Regional Engineering College, Jaipur	7	5	1.40	7.14
5	Maulana Azad Regional Engineering College, Bhopal	-	-	-	-
6	Padre Engineering College, Ponda	2	1	2.00	2.08
7	Shri G. S. Institute of Science and Technology, Indore	1	1	1.00	1.33
8	Walchand Engineering College, Sangli	-	-	-	-
	Total (Engineering)	13	10	1.30	2.51
	Medical Science				
9	Goa Medical College, Panjim	1	1	1.00	1.82
10	J.L.N. Medical College, Ajmer	7	6	1.17	5.08
11	Medical College, Rewa	-	-	-	-
12	MG Medical College, Indore	3	1	3.00	1.82
	Total (Medical)	11	8	1.38	3.21
	Natural Science				
13	Government Girls College, Rewa	-	-	-	-
14	Insitute of Science, Nagpur	1	1	-	2.00
15	Kelkar-Vaze College, Mumbai	-	-	-	-
16	Model Government College, Rewa	-	-	-	-
17	M.G. Science College, Ahmedabad	-	-	-	-
18	N.M Science College, Patan	-	-	-	-
19	Nagar college, Ahmednagar	-	-	-	-
20	Pratap College, Amalner	-	-	-	-
21	Rajshri College, Alwar	-	-	-	-
22	Ramnarain Ruia College, Mumbai	3	2	1.50	6.06
23	St. Xavier's College, Mumbai	-	-	-	-
24	Y.C. College, Karad	-	-	-	-
25	Y.C. Institute of Science, Satara	-	-	-	-
	Total (Natural Science)	4	3	1.33	0.73
	Total for Colleges	28	21	1.33	1.99
	Grand Total	559	339	1.65	9.79

Table - 29

Awards Received by faculty from Higher Education Sector in West Zone

				(in Number)			
	University Name	National	ternational	Total	Faculty Involved	Awards / Faculty	Faculty Involvement as Percent of Total
	Agriculture Science						
1	Central Institute of Fisheries Education, Mumbai	1	-	1	1	1.00	4.55
2	Gujarat Agriculture University, Anand	52	17	69	24	2.88	7.89
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	13	5	18	8	2.25	4.57
4	Marathwada Krishi Vidyapeeth, Parbhani	7	1	8	5	1.60	5.26
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	112	45	157	68	2.31	15.63
6	Rajasthan Agriculture University, Bikaner	3	1	4	2	2.00	5.26
7	Rajasthan Agriculture University, Udaipur	17	3	20	13	1.54	12.15
	Total (Agriculture)	205	72	277	121	2.29	10.29
	Engineering Science						
8	Birla Institute of Technology Science, Pilani	21	6	27	8	3.38	10.00
9	Dr. Babasaheb Ambedkar Technological University, Lonere	7	-	7	5	1.40	10.20
#	Indian Institute of Technology, Mumbai	42	26	68	36	1.89	33.03
	Total (Engineering)	70	32	102	49	2.08	20.59
	Medical Science						
#	Gujarat Ayurved Univesity, Jamnagar	8	-	8	6	1.33	6.38
	Total (Medical)	8	-	8	6	1.33	6.38
	Natural Science						
#	Amravati University, Amravati	6	-	6	5	1.20	15.15
#	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	1	-	1	1	1.00	7.14
#	Banasthali University, Banasthali	13	1	14	6	2.33	12.50
#	Barkatullah Vishwavidyalaya, Bhopal	3	-	3	3	1.00	9.38
#	Bhavanagar University, Bhavnagar	2	-	2	2	1.00	9.52
#	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	-	-	-	-	-	-
#	Goa University, Panjim	7	1	8	5	1.60	9.26
#	Harisingh Gour Vishwavidyalaya, Sagar	4	-	4	3	1.33	7.50
#	Jiwaji University, Gwalior	6	-	6	5	1.20	14.71
#	Maharaja Sayajirao University, Vadodara	29	7	36	23	1.57	16.55
#	Mumbai University, Mumbai	16	3	19	8	2.38	16.67
#	Nagpur Univeristy, Nagpur	11	-	11	7	1.57	14.00
#	North Gujarat University, Patan	-	-	-	-	-	-
#	North Maharashtra University, Jalgaon	2	-	2	2	1.00	9.09
#	Pandit Ravishankar Shukla University, Raipur	9	-	9	7	1.29	16.28
#	Rajasthan University, Jaipur	1	-	1	1	1.00	3.57
#	Rani Durgavati Vishwavidyalaya, Jabalpur	-	-	-	-	-	-
#	Sardar Patel University, Vallabh Vidyanagar	15	3	18	10	1.80	32.26
#	Saurashtra University, Rajkot	1	-	1	1	1.00	1.54
#	Shivaji University, Kolhapur	11	2	13	12	1.08	16.44
#	South Gujarat University, Surat	-	-	-	-	-	-
#	Swami Ramanand Teerth Marathwada University, Nanded	2	-	2	2	1.00	8.33
	Total (Natural Science)	139	17	156	103	1.51	11.46

Table - 29

Awards Received by faculty from Higher Education Sector in West Zone

	University Name	National	ternational	Total	Faculty Involved	Awards / Faculty	Faculty Involvement as Percent of Total
	Total for Universities	422	121	543	279	1.95	11.59
Colleges							
	Agriculture Science						
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)						
	Engineering Science						
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	2	-	2	2	1.00	3.33
2	Goa Engineering College, Farmagudi	7	1	8	5	1.60	10.00
3	LD Engineering, Ahmedabad	6	-	6	6	1.00	8.70
4	Malaviya Regional Engineering College, Jaipur	13	2	15	13	1.15	18.57
5	Maulana Azad Regional Engineering College, Bhopal	-	-	-	-	-	-
6	Padre Engineering College, Ponda	3	-	3	3	1.00	6.25
7	Shri G. S. Institute of Science and Technology, Indore	11	2	13	10	1.30	13.33
8	Walchand Engineering College, Sangli	-	-	-	-	-	-
	Total (Engineering)	42	5	47	39	1.21	9.80
	Medical Science						
9	Goa Medical College, Panjim	3	-	3	3	1.00	5.45
#	J.L.N. Medical College, Ajmer	17	1	18	13	1.38	11.02
#	Medical College, Rewa	-	-	-	-	-	-
#	MG Medical College, Indore	7	-	7	6	1.17	10.91
	Total (Medical)	69	6	75	61	1.23	24.50
	Natural Science						
#	Government Girls College, Rewa	-	-	-	-	-	-
#	Insitute of Science, Nagpur	6	-	6	4	1.50	8.00
#	Kelkar-Vaze College, Mumbai	3	-	3	3	1.00	13.64
#	Model Government College, Rewa	-	-	-	-	-	-
#	M.G. Science College, Ahmedabad	1	-	1	1	1.00	3.70
#	N.M Science College, Patan	-	-	-	-	-	-
#	Nagar college, Ahmednagar	1	-	1	-	1.00	-
#	Pratap College, Amalner	-	-	-	-	-	-
#	Rajshri College, Alwar	-	-	-	-	-	-
#	Ramnarain Ruia College, Mumbai	4	-	4	3	1.33	9.09
#	St. Xavier's College, Mumbai	1	-	1	1	1.00	2.27
#	Y.C. College, Karad	2	-	2	1	2.00	2.33
#	Y.C. Institute of Science, Satara	5	-	5	4	1.25	5.88
	Total (Natural Science)	13	-	13	9	1.44	2.20
	Total for Colleges	124	11	135	109	1.24	10.31
	Grand Total	546	132	678	388	1.75	11.20

Table - 30

Fellowship Conferred on faculty from Higher Education Sector in West Zone

		(in Numbers)			
University Name		Total	Faculty Involved	Fellowships/ Faculty	Faculty Involvement as Percent of
Universities / Institutes of National Importance					
	Agriculture Science				
1	Central Institute of Fisheries Education, Mumbai	1	1	1.00	4.55
2	Gujarat Agriculture University, Anand	23	21	1.10	6.91
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	11	10	1.10	5.71
4	Marathwada Krishi Vidyapeeth, Parbhani	7	6	1.17	6.32
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	48	43	1.12	9.89
6	Rajasthan Agriculture University, Bikaner	5	3	1.67	7.89
7	Rajasthan Agriculture University, Udaipur	34	29	1.17	27.10
	Total (Agriculture)	129	113	1.14	9.61
	Engineering Science				
8	Birla Institute of Technology Science, Pilani	7	7	1.00	8.75
9	Dr. Babasaheb Ambedkar Technological University, Lonere	1	1	1.00	2.04
10	Indian Institute of Technology, Mumbai	26	22	1.18	20.18
	Total (Engineering)	34	30	1.13	12.61
	Medical Science				
11	Gujarat Ayurved Univesity, Jamnagar	3	3	1.00	3.19
	Total (Medical)	3	3	1.00	3.19
	Natural Science				
12	Amravati University, Amravati	1	1	1.00	3.03
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	0	0	-	-
14	Banasthali University, Banasthali	2	2	1.00	4.17
15	Barkatullah Vishwavidyalaya, Bhopal	1	1	1.00	3.13
16	Bhavanagar University, Bhavnagar	1	1	1.00	4.76
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	1	1	1.00	4.35
18	Goa University, Panjim	3	2	1.50	3.70
19	Harisingh Gour Vishwavidyalaya, Sagar	1	1	1.00	2.50
20	Jiwaji University, Gwalior	7	5	1.40	14.71
21	Maharaja Sayajirao University, Vadodara	37	33	1.12	23.74
22	Mumbai University, Mumbai	18	11	1.64	22.92
23	Nagpur Univeristy, Nagpur	7	5	1.40	10.00
24	North Gujarat University, Patan	0	0	-	-
25	North Maharashtra University, Jalgaon	0	0	-	-
26	Pandit Ravishankar Shukla University, Raipur	1	1	1.00	2.33
27	Rajasthan University, Jaipur	15	9	1.67	32.14
28	Rani Durgavati Vishwavidyalaya, Jabalpur	0	0	-	-
29	Sardar Patel University, Vallabh Vidyanagar	6	4	1.50	12.90
30	Saurashtra University, Rajkot	1	1	1.00	1.54
31	Shivaji University, Kolhapur	5	5	1.00	6.85
32	South Gujarat University, Surat	0	0	-	-
33	Swami Ramanand Teerth Marathwada University, Nanded	1	1	1.00	4.17
	Total (Natural Science)	108	84	1.29	9.34

Table - 30

Fellowship Conferred on faculty from Higher Education Sector in West Zone

University Name		Total	Faculty Involved	Fellowships/ Faculty	Faculty Involvement as Percent of
	Total for Universities	274	230	1.19	9.56
Colleges					
	Agriculture Science				
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)				
	Engineering Science				
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	0	0	-	-
2	Goa Engineering College, Farmagudi	3	3	1.00	6.00
3	LD Engineering, Ahmedabad	1	1	1.00	1.45
4	Malaviya Regional Engineering College, Jaipur	15	13	1.15	18.57
5	Maulana Azad Regional Engineering College, Bhopal	0	0	-	-
6	Padre Engineering College, Ponda	1	1	1.00	2.08
7	Shri G. S. Institute of Science and Technology, Indore	4	3	1.33	4.00
8	Walchand Engineering College, Sangli	1	1	1.00	4.76
	Total (Engineering)	25	22	1.14	5.53
	Medical Science				
9	Goa Medical College, Panjim	3	2	1.50	3.64
10	J.L.N. Medical College, Ajmer	19	15	1.27	12.71
11	Medical College, Rewa	3	2	1.50	9.52
12	MG Medical College, Indore	8	7	1.14	12.73
	Total (Medical)	33	26	1.27	10.44
	Natural Science				
13	Government Girls College, Rewa	0	0	-	-
14	Insitute of Science, Nagpur	13	11	1.18	22.00
15	Kelkar-Vaze College, Mumbai	3	3	1.00	13.64
16	Model Government College, Rewa	1	1	1.00	7.69
17	M.G. Science College, Ahmedabad	2	2	1.00	7.41
18	N.M Science College, Patan	0	0	-	-
19	Nagar college, Ahmednagar	0	0	-	-
20	Pratap College, Amalner	0	0	-	-
21	Rajshri College, Alwar	0	0	-	-
22	Ramnarain Ruia College, Mumbai	2	2	1.00	6.06
23	St. Xavier's College, Mumbai	0	0	-	-
24	Y.C. College, Karad	0	0	-	-
25	Y.C. Institute of Science, Satara		0	-	-
	Total (Natural Science)	21	19	1.11	4.63
	Total for Colleges	79	67	1.18	6.34
	Grand Total	353	297	1.19	8.57

Table - 31

Participation in Research Fora by faculty from Higher Education Sector in West Zone (1995 - 98)

			(in Numbers)			
	Institute Name	Total Participation	Participations / year	Faculty Involved	(Participations / year) /	Faculty involvement as percent of Total Response
Universities / Institutes of National Importance						
	Agriculture Science					
1	Central Institute of Fisheries Education, Mumbai	42	14.00	18	0.78	81.82
2	Gujarat Agriculture University, Anand	951	317.00	265	1.20	87.17
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	438	146.00	150	0.97	85.71
4	Marathwada Krishi Vidyapeeth, Parbhani	195	65.00	75	0.87	78.95
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	1287	429.00	415	1.03	95.40
6	Rajasthan Agriculture University, Bikaner	100	33.33	27	1.23	71.05
7	Rajasthan Agriculture University, Udaipur	257	85.67	85	1.01	79.44
	Total (Agriculture)	3270	1,090.00	1035	1.05	88.01
	Engineering Science					
8	Birla Institute of Technology Science, Pilani	258	86.00	71	1.21	88.75
9	Dr. Babasaheb Ambedkar Technological University, Lonere	151	50.33	40	1.26	81.63
10	Indian Institute of Technology, Mumbai	751	250.33	98	2.55	89.91
	Total (Engineering)	1160	386.67	209	1.85	87.82
	Medical Science					
11	Gujarat Ayurved Univesity, Jamnagar	79	26.33	42	0.63	44.68
	Total (Medical)	79	26.33	42	0.63	44.68
	Natural Science					
12	Amravati University, Amravati	67	22.33	27	0.83	81.82
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	29	9.67	10	0.97	71.43
14	Banasthali University, Banasthali	151	50.33	40	1.26	83.33
15	Barkatullah Vishwavidyalaya, Bhopal	68	22.67	29	0.78	90.63
16	Bhavanagar University, Bhavnagar	65	21.67	18	1.20	85.71
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	34	11.33	15	0.76	65.22
18	Goa University, Panjim	92	30.67	41	0.75	75.93
19	Harisingh Gour Vishwavidyalaya, Sagar	63	21.00	21	1.00	52.50
20	Jiwaji University, Gwalior	78	26.00	25	1.04	73.53
21	Maharaja Sayajirao University, Vadodara	383	127.67	103	1.24	74.10
22	Mumbai University, Mumbai	135	45.00	40	1.13	83.33
23	Nagpur Univeristy, Nagpur	98	32.67	34	0.96	68.00
24	North Gujarat University, Patan	23	7.67	11	0.70	73.33
25	North Maharashtra University, Jalgaon	34	11.33	15	0.76	68.18
26	Pandit Ravishankar Shukla University, Raipur	68	22.67	26	0.87	60.47
27	Rajasthan University, Jaipur	49	16.33	20	0.82	71.43
28	Rani Durgavati Vishwavidyalaya, Jabalpur	37	12.33	21	0.59	53.85
29	Sardar Patel University, Vallabh Vidyanagar	91	30.33	28	1.08	90.32
30	Saurashtra University, Rajkot	39	13.00	25	0.52	38.46
31	Shivaji University, Kolhapur	188	62.67	53	1.18	72.60
32	South Gujarat University, Surat	51	17.00	18	0.94	78.26
33	Swami Ramanand Teerth Marathwada University, Nanded	71	23.67	20	1.18	83.33

Table - 31

Participation in Research Fora by faculty from Higher Education Sector in West Zone (1995 - 98)

	Institute Name	Total Participation	Participations / year	Faculty Involved	(Participations / year) /	Faculty involvement as percent of Total Response
	Total (Natural Science)	1914	638.00	640	1.00	71.19
			-			
	Total for Universities	6423	2,141.00	1926	1.11	80.02
Colleges						
	Agriculture Science					
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities)					
	Engineering Science					
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	32	10.67	23	0.46	38.33
2	Goa Engineering College, Farmagudi	110	36.67	39	0.94	78.00
3	LD Engineering, Ahmedabad	125	41.67	50	0.83	72.46
4	Malaviya Regional Engineering College, Jaipur	157	52.33	55	0.95	78.57
5	Maulana Azad Regional Engineering College, Bhopal	13	4.33	3	1.44	60.00
6	Padre Engineering College, Ponda	93	31.00	40	0.78	83.33
7	Shri G. S. Institute of Science and Technology, Indore	131	43.67	36	1.21	48.00
8	Walchand Engineering College, Sangli	44	14.67	12	1.22	57.14
	Total (Engineering)	705	235.00	258	0.91	64.82
	Medical Science					
9	Goa Medical College, Panjim	105	35.00	43	0.81	78.18
10	J.L.N. Medical College, Ajmer	222	74.00	61	1.21	51.69
11	Medical College, Rewa	59	19.67	13	1.51	61.90
12	MG Medical College, Indore	101	33.67	36	0.94	65.45
	Total (Medical)	487	162.33	153	1.06	61.45
	Natural Science					
13	Government Girls College, Rewa	19	6.33	7	0.90	43.75
14	Insitute of Science, Nagpur	134	44.67	38	1.18	76.00
15	Kelkar-Vaze College, Mumbai	62	20.67	15	1.38	68.18
16	Model Government College, Rewa	14	4.67	8	0.58	61.54
17	M.G. Science College, Ahmedabad	46	15.33	20	0.77	74.07
18	N.M Science College, Patan	8	2.67	3	0.89	37.50
19	Nagar college, Ahmednagar	133	44.33	43	1.03	86.00
20	Pratap College, Amalner	13	4.33	6	0.72	27.27
21	Rajshri College, Alwar	17	5.67	6	0.94	42.86
22	Ramnarain Ruia College, Mumbai	91	30.33	26	1.17	78.79
23	St. Xavier's College, Mumbai	114	38.00	39	0.97	88.64
24	Y.C. College, Karad	87	29.00	33	0.88	76.74
25	Y.C. Institute of Science, Satara	111	37.00	42	0.88	61.76
	Total (Natural Science)	849	283.00	286	0.99	69.76
	Total for Colleges	2041	680.33	697	0.98	65.94
	Grand Total	8464	2,821.33	2623	1.08	75.72

Table - 32 (I)

Participation in various Research Activities by faculty from Higher Education Sector in West Zone

	University / Institute Name	Respondents	1	2	3	4
	Agriculture Science					
1	Central Institute of Fisheries Education, Mumbai	22	18.18	22.73	27.27	9.09
2	Gujarat Agriculture University, Anand	304	22.70	33.22	12.50	14.80
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	175	25.14	30.29	7.43	9.71
4	Marathwada Krishi Vidyapeeth, Parbhani	95	23.16	22.11	15.79	11.58
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	435	22.53	46.44	10.80	14.48
6	Rajasthan Agriculture University, Bikaner	38	28.95	28.95	28.95	18.42
7	Rajasthan Agriculture University, Udaipur	107	27.10	29.91	19.63	15.89
	Total (Agriculture)	1,176	23.55	36.14	12.84	13.78
	Engineering Science					
8	Birla Institute of Technology Science, Pilani	80	25.00	28.75	21.25	13.75
9	Dr. Babasaheb Ambedkar Technological University, Lonere	49	36.73	30.61	22.45	20.41
10	Indian Institute of Technology, Mumbai	109	37.61	28.44	36.70	24.77
	Total (Engineering)	238	33.19	28.99	28.57	20.17
	Medical Science					
11	Gujarat Ayurved Univesity, Jamnagar	94	31.91	47.87	21.28	30.85
	Total (Medical)	94	31.91	47.87	21.28	30.85
	Natural Science					
12	Amravati University, Amravati	33	33.33	33.33	30.30	21.21
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	14	64.29	50.00	21.43	21.43
14	Banasthali University, Banasthali	48	45.83	45.83	16.67	22.92
15	Barkatullah Vishwavidyalaya, Bhopal	32	28.13	21.88	31.25	21.88
16	Bhavanagar University, Bhavnagar	21	23.81	23.81	9.52	33.33
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	23	39.13	47.83	26.09	47.83
18	Goa University, Panjim	54	37.04	33.33	27.78	20.37
19	Harisingh Gour Vishwavidyalaya, Sagar	40	72.50	62.50	50.00	32.50
20	Jiwaji University, Gwalior	34	52.94	44.12	41.18	26.47
21	Maharaja Sayajirao University, Vadodara	139	43.17	48.92	32.37	19.42
22	Mumbai University, Mumbai	48	41.67	45.83	20.83	16.67
23	Nagpur Univeristy, Nagpur	50	38.00	34.00	28.00	22.00
24	North Gujarat University, Patan	15	53.33	33.33	6.67	20.00
25	North Maharashtra University, Jalgaon	22	45.45	36.36	9.09	27.27
26	Pandit Ravishankar Shukla University, Raipur	43	41.86	46.51	27.91	23.26
27	Rajasthan University, Jaipur	28	39.29	39.29	42.86	21.43
28	Rani Durgavati Vishwavidyalaya, Jabalpur	39	51.28	48.72	-	10.26
29	Sardar Patel University, Vallabh Vidyanagar	31	48.39	35.48	22.58	19.35
30	Saurashtra University, Rajkot	65	16.92	13.85	6.15	18.46
31	Shivaji University, Kolhapur	73	27.40	28.77	17.81	24.66
32	South Gujarat University, Surat	23	43.48	47.83	-	26.09
33	Swami Ramanand Teerth Marathwada University, Nanded	24	50.00	62.50	12.50	45.83
	Total (Natural Science)	899	40.71	39.82	23.47	23.03

Table - 32 (II)

Participation in various Research Activities by faculty from Higher Education Sector in West Zone

		5	6	7
	University / Institute Name			
	Agriculture Science			
1	Central Institute of Fisheries Education, Mumbai	9.09	18.18	18.18
2	Gujarat Agriculture University, Anand	3.62	37.50	37.50
3	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	4.00	32.57	42.29
4	Marathwada Krishi Vidyapeeth, Parbhani	3.16	15.79	28.42
5	Panjabrao Deshmukh Krishi Vidyapeeth, Akola	5.52	37.47	35.63
6	Rajasthan Agriculture University, Bikaner	7.89	55.26	39.47
7	Rajasthan Agriculture University, Udaipur	9.35	27.10	28.97
	Total (Agriculture)	5.10	34.27	35.71
	Engineering Science			
8	Birla Institute of Technology Science, Pilani	5.00	26.25	13.75
9	Dr. Babasaheb Ambedkar Technological University, Lonere	4.08	22.45	14.29
10	Indian Institute of Technology, Mumbai	19.27	17.43	11.93
	Total (Engineering)	11.34	21.43	13.03
	Medical Science			
11	Gujarat Ayurved Univesity, Jamnagar	3.19	24.47	25.53
	Total (Medical)	3.19	24.47	25.53
	Natural Science			
12	Amravati University, Amravati	3.03	21.21	9.09
13	Awadhesh Pratap Singh Vishwavidyalaya, Rewa	-	21.43	7.14
14	Banasthali University, Banasthali	4.17	22.92	4.17
15	Barkatullah Vishwavidyalaya, Bhopal	3.13	18.75	3.13
16	Bhavanagar University, Bhavnagar	4.76	23.81	-
17	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	8.70	13.04	4.35
18	Goa University, Panjim	1.85	20.37	7.41
19	Harisingh Gour Vishwavidyalaya, Sagar	-	22.50	2.50
20	Jiwaji University, Gwalior	8.82	32.35	11.76
21	Maharaja Sayajirao University, Vadodara	10.79	34.53	18.71
22	Mumbai University, Mumbai	10.42	27.08	14.58
23	Nagpur Univeristy, Nagpur	4.00	32.00	16.00
24	North Gujarat University, Patan	-	26.67	-
25	North Maharashtra University, Jalgaon	-	13.64	4.55
26	Pandit Ravishankar Shukla University, Raipur	2.33	16.28	6.98
27	Rajasthan University, Jaipur	3.57	10.71	-
28	Rani Durgavati Vishwavidyalaya, Jabalpur	-	17.95	-
29	Sardar Patel University, Vallabh Vidyanagar	6.45	35.48	9.68
30	Saurashtra University, Rajkot	3.08	23.08	-
31	Shivaji University, Kolhapur	9.59	26.03	15.07
32	South Gujarat University, Surat	-	47.83	-
33	Swami Ramanand Teerth Marathwada University, Nanded	4.17	37.50	8.33
	Total (Natural Science)	5.23	25.81	8.68

Table - 32 (I) contd.

Participation in various Research Activities by faculty from Higher Education Sector in West Zone

		Respondents	1	2	3	4
	Total for Universities	2,407	27.96	34.40	18.70	18.53
Colleges						
	Agriculture Science					
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities					
	Engineering Science					
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	60	16.67	20.00	-	18.33
2	Goa Engineering College, Farmagudi	50	48.00	54.00	2.00	14.00
3	LD Engineering, Ahmedabad	69	17.39	15.94	2.90	20.29
4	Malaviya Regional Engineering College, Jaipur	70	47.14	42.86	17.14	15.71
5	Maulana Azad Regional Engineering College, Bhopal	5	60.00	20.00	-	-
6	Padre Engineering College, Ponda	48	43.75	47.92	2.08	18.75
7	Shri G. S. Institute of Science and Technology, Indore	75	28.00	30.67	8.00	25.33
8	Walchand Engineering College, Sangli	21	71.43	52.38	9.52	33.33
	Total (Engineering)	398	34.92	34.67	6.03	19.60
	Medical Science					
9	Goa Medical College, Panjim	55	21.82	27.27	10.91	5.45
10	J.L.N. Medical College, Ajmer	118	21.19	22.88	33.90	16.10
11	Medical College, Rewa	21	9.52	28.57	-	4.76
12	MG Medical College, Indore	55	5.45	41.82	20.00	12.73
	Total (Medical)	249	16.87	28.51	22.89	12.05
	Natural Science					
13	Government Girls College, Rewa	16	50.00	31.25	-	18.75
14	Insitute of Science, Nagpur	50	44.00	40.00	30.00	22.00
15	Kelkar-Vaze College, Mumbai	22	54.55	50.00	-	31.82
16	Model Government College, Rewa	13	84.62	69.23	-	30.77
17	M.G. Science College, Ahmedabad	27	81.48	74.07	3.70	37.04
18	N.M Science College, Patan	8	75.00	50.00	-	37.50
19	Nagar college, Ahmednagar	50	44.00	42.00	2.00	22.00
20	Pratap College, Amalner	22	45.45	31.82	-	18.18
21	Rajshri College, Alwar	14	71.43	42.86	-	7.14
22	Ramnarain Ruia College, Mumbai	33	30.30	36.36	15.15	6.06
23	St. Xavier's College, Mumbai	44	45.45	47.73	4.55	13.64
24	Y.C. College, Karad	43	37.21	39.53	2.33	18.60
25	Y.C. Institute of Science, Satara	68	26.47	27.94	2.94	19.12
	Total (Natural Science)	410	45.61	41.95	6.59	20.24
	Total for Colleges	1,057	34.82	36.05	10.22	18.07
	Grand Total	3,464	30.05	34.90	9.21	18.39
	1 - External Examinership					
	2 - Research Evaluation					
	3 - Editorial Responsibilities					
	4 - Visiting Faculty					
	5 - Advisory Committee					
	6 - Managerial Responsibilities					
	7 - Promotional Activities					

Table - 32 (II) contd.

Participation in various Research Activities by faculty from Higher Education Sector in West Zone

		5	6	7
	Total for Universities	5.69	29.46	22.97
Colleges				
	Agriculture Science			
	(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities			
	Engineering Science			
1	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	-	18.33	5.00
2	Goa Engineering College, Farmagudi	2.00	14.00	4.00
3	LD Engineering, Ahmedabad	1.45	21.74	10.14
4	Malaviya Regional Engineering College, Jaipur	4.29	21.43	4.29
5	Maulana Azad Regional Engineering College, Bhopal	-	20.00	-
6	Padre Engineering College, Ponda	-	25.00	6.25
7	Shri G. S. Institute of Science and Technology, Indore	1.33	21.33	12.00
8	Walchand Engineering College, Sangli	-	14.29	9.52
	Total (Engineering)	1.51	20.10	7.29
	Medical Science			
9	Goa Medical College, Panjim	1.82	10.91	10.91
10	J.L.N. Medical College, Ajmer	3.39	14.41	7.63
11	Medical College, Rewa	-	9.52	9.52
12	MG Medical College, Indore	5.45	12.73	5.45
	Total (Medical)	3.21	12.85	8.03
	Natural Science			
13	Government Girls College, Rewa	-	12.50	6.25
14	Insitute of Science, Nagpur	4.00	22.00	4.00
15	Kelkar-Vaze College, Mumbai	-	27.27	4.55
16	Model Government College, Rewa	-	7.69	-
17	M.G. Science College, Ahmedabad	-	11.11	11.11
18	N.M Science College, Patan	-	12.50	-
19	Nagar college, Ahmednagar	-	38.00	6.00
20	Pratap College, Amalner	-	22.73	-
21	Rajshri College, Alwar	7.14	28.57	-
22	Ramnarain Ruia College, Mumbai	3.03	36.36	9.09
23	St. Xavier's College, Mumbai	-	34.09	11.36
24	Y.C. College, Karad	-	25.58	2.33
25	Y.C. Institute of Science, Satara	-	17.65	4.41
	Total (Natural Science)	0.98	24.88	5.37
	Total for Colleges	1.70	20.25	6.72
	Grand Total	4.47	26.65	18.01
	1 - External Examinership			
	2 - Research Evaluation			
	3 - Editorial Responsibilities			
	4 - Visiting Faculty			
	5 - Advisory Committee			
	6 - Managerial Responsibilities			
	7 - Promotional Activities			

Table - 33

Frequency of invitation for Visiting Faculty to faculty from Higher Education Sector in West Zone

		(value in %)					
		No. of Occurances					
	Respondents (No.)	0	1	2	3	>3	Participation (in %)
University / Institute Name							
Agriculture Science							
Central Institute of Fisheries Education, Mumbai	22	90.91	9.09	-	-	-	9.09
Gujarat Agriculture University, Anand	304	85.20	6.91	4.28	3.29	0.33	14.80
Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	175	90.29	6.29	2.86	0.57	-	9.71
Marathwada Krishi Vidyapeeth, Parbhani	95	88.42	7.37	4.21	-	-	11.58
Panjabrao Deshmukh Krishi Vidyapeeth, Akola	435	85.52	8.97	4.14	0.92	0.46	14.48
Rajasthan Agriculture University, Bikaner	38	81.58	15.79	2.63	-	-	18.42
Rajasthan Agriculture University, Udaipur	107	84.11	9.35	4.67	1.87	-	15.89
Total (Agriculture)	1,176	86.22	8.16	3.91	1.45	0.26	13.78
Engineering Science							
Birla Institute of Technology Science, Pilani	80	86.25	7.50	5.00	1.25	-	13.75
Dr. Babasaheb Ambedkar Technological University, Lonere	49	79.59	14.29	4.08	2.04	-	20.41
Indian Institute of Technology, Mumbai	109	75.23	10.09	7.34	5.50	1.83	24.77
Total (Engineering)	238	79.83	10.08	5.88	3.36	0.84	20.17
Medical Science							
Gujarat Ayurved Univesity, Jamnagar	94	69.15	19.15	7.45	4.26	-	30.85
Total (Medical)	94	69.15	19.15	7.45	4.26	-	30.85
Natural Science							
Amravati University, Amravati	33	78.79	18.18	3.03	-	-	21.21
Awadhesh Pratap Singh Vishwavidyalaya, Rewa	14	78.57	21.43	-	-	-	21.43
Banasthali University, Banasthali	48	77.08	16.67	6.25	-	-	22.92
Barkatullah Vishwavidyalaya, Bhopal	32	78.13	21.88	-	-	-	21.88
Bhavanagar University, Bhavnagar	21	66.67	28.57	4.76	-	-	33.33
Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	23	52.17	30.43	17.39	-	-	47.83
Goa University, Panjim	54	79.63	11.11	5.56	1.85	1.85	20.37
Harisingh Gour Vishwavidyalaya, Sagar	40	67.50	22.50	10.00	-	-	32.50
Jiwaji University, Gwalior	34	73.53	23.53	-	2.94	-	26.47
Maharaja Sayajirao University, Vadodara	139	80.58	9.35	4.32	4.32	1.44	19.42
Mumbai University, Mumbai	48	83.33	16.67	-	-	-	16.67
Nagpur Univeristy, Nagpur	50	78.00	14.00	8.00	-	-	22.00
North Gujarat University, Patan	15	80.00	13.33	-	6.67	-	20.00
North Maharashtra University, Jalgaon	22	72.73	13.64	13.64	-	-	27.27
Pandit Ravishankar Shukla University, Raipur	43	76.74	9.30	6.98	6.98	-	23.26
Rajasthan University, Jaipur	28	78.57	14.29	3.57	-	3.57	21.43
Rani Durgavati Vishwavidyalaya, Jabalpur	39	89.74	7.69	-	2.56	-	10.26
Sardar Patel University, Vallabh Vidyanagar	31	80.65	19.35	-	-	-	19.35
Saurashtra University, Rajkot	65	81.54	15.38	3.08	-	-	18.46
Shivaji University, Kolhapur	73	75.34	15.07	9.59	-	-	24.66
South Gujarat University, Surat	23	73.91	26.09	-	-	-	26.09
Swami Ramanand Teerth Marathwada University, Nanded	24	54.17	37.50	8.33	-	-	45.83
Total (Natural Science)	899	76.97	16.24	4.89	1.45	0.44	23.03

Table - 33

Frequency of invitation for Visiting Faculty to faculty from Higher Education Sector in West Zone

	Respondents (No.)	0	1	2	3	>3	Participation (in %)
Total for Universities	2,407	81.47	11.80	4.61	1.74	0.37	18.53
Agriculture Science							
(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities							
Engineering Science							
Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	60	81.67	10.00	6.67	1.67	-	18.33
Goa Engineering College, Farmagudi	50	86.00	14.00	-	-	-	14.00
LD Engineering, Ahmedabad	69	79.71	11.59	7.25	1.45	-	20.29
Malaviya Regional Engineering College, Jaipur	70	84.29	7.14	4.29	-	4.29	15.71
Maulana Azad Regional Engineering College, Bhopal	5	100.00	-	-	-	-	-
Padre Engineering College, Ponda	48	81.25	14.58	2.08	2.08	-	18.75
Shri G. S. Institute of Science and Technology, Indore	75	74.67	13.33	4.00	5.33	2.67	25.33
Walchand Engineering College, Sangli	21	66.67	14.29	19.05	-	-	33.33
Total (Engineering)	398	80.40	11.56	5.03	1.76	1.26	19.60
Medical Science							
Goa Medical College, Panjim	55	94.55	5.45	-	-	-	5.45
J.L.N. Medical College, Ajmer	118	83.90	9.32	3.39	3.39	-	16.10
Medical College, Rewa	21	95.24	4.76	-	-	-	4.76
MG Medical College, Indore	55	87.27	9.09	3.64	-	-	12.73
Total (Medical)	249	87.95	8.03	2.41	1.61	-	12.05
Natural Science							
Government Girls College, Rewa	16	81.25	18.75	-	-	-	18.75
Insitute of Science, Nagpur	50	78.00	14.00	8.00	-	-	22.00
Kelkar-Vaze College, Mumbai	22	68.18	27.27	4.55	-	-	31.82
Model Government College, Rewa	13	69.23	30.77	-	-	-	30.77
M.G. Science College, Ahmedabad	27	62.96	25.93	11.11	-	-	37.04
N.M Science College, Patan	8	62.50	37.50	-	-	-	37.50
Nagar college, Ahmednagar	50	78.00	14.00	6.00	2.00	-	22.00
Pratap College, Amalner	22	81.82	18.18	-	-	-	18.18
Rajshri College, Alwar	14	92.86	7.14	-	-	-	7.14
Ramnarain Ruia College, Mumbai	33	93.94	6.06	-	-	-	6.06
St. Xavier's College, Mumbai	44	86.36	11.36	2.27	-	-	13.64
Y.C. College, Karad	43	81.40	13.95	4.65	-	-	18.60
Y.C. Institute of Science, Satara	68	80.88	8.82	7.35	1.47	1.47	19.12
Total (Natural Science)	410	79.76	14.88	4.63	0.49	0.24	20.24
Total for Colleges	1,057	81.93	12.02	4.26	1.23	0.57	18.07
Grand Total	3,464	81.61	11.86	4.50	1.59	0.43	18.39

Table - 34

Frequency of participation in Advisory committee by faculty from Higher Educatoin Sector in West Zone

(values in %)

		No. of Occurances					
University / Institute Name	Respondents	0	1	2	3	>3	Participation (in %)
Agriculture Science							
Central Institute of Fisheries Education, Mumbai	22	90.91	9.09	-	-	-	9.09
Gujarat Agriculture University, Anand	304	96.38	2.30	0.99	0.33	-	3.62
Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur	175	96.00	3.43	0.57	-	-	4.00
Marathwada Krishi Vidyapeeth, Parbhani	95	96.84	3.16	-	-	-	3.16
Panjabrao Deshmukh Krishi Vidyapeeth, Akola	435	94.48	3.45	1.38	0.46	0.23	5.52
Rajasthan Agriculture University, Bikaner	38	92.11	7.89	-	-	-	7.89
Rajasthan Agriculture University, Udaipur	107	90.65	5.61	2.80	0.93	-	9.35
Total (Agriculture)	1,176	94.90	3.57	1.11	0.34	0.09	5.10
Engineering Science							
Birla Institute of Technology Science, Pilani	80	95.00	5.00	-	-	-	5.00
Dr. Babasaheb Ambedkar Technological University, Lonere	49	95.92	4.08	-	-	-	4.08
Indian Institute of Technology, Mumbai	109	80.73	####	5.50	2.75	0.92	19.27
Total (Engineering)	238	88.66	7.14	2.52	1.26	0.42	11.34
Medical Science							
Gujarat Ayurved Univesity, Jamnagar	94	96.81	3.19	-	-	-	3.19
Total (Medical)	94	96.81	3.19	-	-	-	3.19
Natural Science							
Amravati University, Amravati	33	96.97	3.03	-	-	-	3.03
Awadhesh Pratap Singh Vishwavidyalaya, Rewa	14	100.00	-	-	-	-	-
Banasthali University, Banasthali	48	95.83	4.17	-	-	-	4.17
Barkatullah Vishwavidyalaya, Bhopal	32	96.88	3.13	-	-	-	3.13
Bhavanagar University, Bhavnagar	21	95.24	4.76	-	-	-	4.76
Dr. Babasaheb Ambedkar Marathwada University, Aurangabad	23	91.30	8.70	-	-	-	8.70
Goa University, Panjim	54	98.15	1.85	-	-	-	1.85
Harisingh Gour Vishwavidyalaya, Sagar	40	100.00	-	-	-	-	-
Jiwaji University, Gwalior	34	91.18	5.88	2.94	-	-	8.82
Maharaja Sayajirao University, Vadodara	139	89.21	7.19	2.88	0.72	-	10.79
Mumbai University, Mumbai	48	89.58	8.33	2.08	-	-	10.42
Nagpur Univeristy, Nagpur	50	96.00	2.00	2.00	-	-	4.00
North Gujarat University, Patan	15	100.00	-	-	-	-	-
North Maharashtra University, Jalgaon	22	100.00	-	-	-	-	-
Pandit Ravishankar Shukla University, Raipur	43	97.67	2.33	-	-	-	2.33
Rajasthan University, Jaipur	28	96.43	3.57	-	-	-	3.57
Rani Durgavati Vishwavidyalaya, Jabalpur	39	100.00	-	-	-	-	-
Sardar Patel University, Vallabh Vidyanagar	31	93.55	6.45	-	-	-	6.45
Saurashtra University, Rajkot	65	96.92	3.08	-	-	-	3.08
Shivaji University, Kolhapur	73	90.41	6.85	2.74	-	-	9.59
South Gujarat University, Surat	23	100.00	-	-	-	-	-
Swami Ramanand Teerth Marathwada University, Nanded	24	95.83	4.17	-	-	-	4.17

Table - 34

Frequency of participation in Advisory committee by faculty from Higher Educatoin Sector in West Zone

	Respondents	0	1	2	3	>3	Participation (in %)
Total (Natural Science)	899	94.77	4.12	1.00	0.11	-	5.23
Total for Universities	2,407	94.31	4.11	1.16	0.33	0.08	5.69
Agriculture Science							
(All Agricultural Colleges are constituent Colleges, hence values are covered in their respective Universities							
Engineering Science							
Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar	60	100.00	-	-	-	-	-
Goa Engineering College, Farmagudi	50	98.00	2.00	-	-	-	2.00
LD Engineering, Ahmedabad	69	98.55	1.45	-	-	-	1.45
Malaviya Regional Engineering College, Jaipur	70	95.71	4.29	-	-	-	4.29
Maulana Azad Regional Engineering College, Bhopal	5	100.00	-	-	-	-	-
Padre Engineering College, Ponda	48	100.00	-	-	-	-	-
Shri G. S. Institute of Science and Technology, Indore	75	98.67	1.33	-	-	-	1.33
Walchand Engineering College, Sangli	21	100.00	-	-	-	-	-
Total (Engineering)	398	98.49	1.51	-	-	-	1.51
Medical Science							
Goa Medical College, Panjim	55	98.18	1.82	-	-	-	1.82
J.L.N. Medical College, Ajmer	118	96.61	2.54	0.85	-	-	3.39
Medical College, Rewa	21	100.00	-	-	-	-	-
MG Medical College, Indore	55	94.55	3.64	1.82	-	-	5.45
Total (Medical)	249	96.79	2.41	0.80	-	-	3.21
Natural Science							
Government Girls College, Rewa	16	100.00	-	-	-	-	-
Insitute of Science, Nagpur	50	96.00	2.00	2.00	-	-	4.00
Kelkar-Vaze College, Mumbai	22	100.00	-	-	-	-	-
Model Government College, Rewa	13	100.00	-	-	-	-	-
M.G. Science College, Ahmedabad	27	100.00	-	-	-	-	-
N.M Science College, Patan	8	100.00	-	-	-	-	-
Nagar college, Ahmednagar	50	100.00	-	-	-	-	-
Pratap College, Amalner	22	100.00	-	-	-	-	-
Rajshri College, Alwar	14	92.86	7.14	-	-	-	7.14
Ramnarain Ruia College, Mumbai	33	96.97	3.03	-	-	-	3.03
St. Xavier's College, Mumbai	44	100.00	-	-	-	-	-
Y.C. College, Karad	43	100.00	-	-	-	-	-
Y.C. Institute of Science, Satara	68	100.00	-	-	-	-	-
Total (Natural Science)	410	99.02	0.73	0.24	-	-	0.98
Total for Colleges	1,057	98.30	1.42	0.28	-	-	1.70
Grand Total	3,464	95.53	3.29	0.89	0.23	0.06	4.47

Table - 35

	Consolidated Scoers for University/Institutes based on their Quartile scores																					Member of		Consolidated Score	Years of standing
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX		Total	1st 25%	last 25 %		
SP. Univ.	3	3	2	1	4	4	4	4	4	4	4	3	2	2	2	4	4	4	4		62	11	1	81.58	43
IIT	0	0	4	4	4	4	4	1	2	4	2	4	3	4	4	4	4	4	4		60	12	3	78.95	
Mumbai	4	3	2	3	4	4	3	3	4	3	3	2	1	4	3	4	4	3	3		60	7	1	78.95	141
Shivaji	4	4	3	3	4	3	4	4	4	2	2	2	3	4	1	4	3	3	3		60	8	1	78.95	36
Jiwaji	2	2	4	1	3	4	1	4	4	2	4	4	4	4	4	3	4	3	2		59	10	2	77.63	34
MS Univ.	3	4	1	1	3	3	4	2	3	2	3	4	2	4	4	4	4	3	3		57	7	2	75	49
Rajasthan	4	4	4	2	4	3	4	1	4	2	3	4	3	2	2	1	4	3	3		57	8	2	75	51
Pune	3	3	2	4	3	2	4	3	4	3	1	3	2	3	3	4	4	3	3		57	5	1	75	49
GAU	4	4	4	4	2	3	3	3	3	4	1	1	1	2	2	2	3	4	4		54	7	3	71.05	26
BITS	3	4	4	1	2	4	4	3	1	4	1	2	1	3	3	3	3	4	3		53	6	4	69.74	34
JNKV	4	4	3	4	1	4	3	2	4	4	1	1	1	2	2	1	3	4	4		52	8	5	68.42	34
MKV	4	4	4	3	1	4	3	3	3	3	1	2	1	2	1	2	3	4	4		52	6	4	68.42	26
Harisingh Gaur	2	2	3	4	4	2	1	4	2	1	4	4	4	1	4	2	1	1	2		48	7	5	63.16	52
Nagpur	4	3	1	2	1	3	4	2	3	1	3	3	3	2	2	3	4	2	2		48	3	3	63.16	75
Amravati	3	3	2	1	3	2	1	4	2	3	3	4	2	1	2	4	2	3	2		47	3	3	61.84	15
Banasthali	0	0	3	2	2	2	3	4	3	3	4	2	3	3	4	3	2	2	2		47	3	2	61.84	
PDKV	0	0	4	3	2	3	3	2	3	4	1	1	1	3	3	4	3	3	4		47	4	5	61.84	
RAUU	0	0	2	4	3	1	3	3	2	3	2	2	1	4	2	3	4	4	4		47	5	4	61.84	
MSU	2	2	3	2	4	1	1	3	3	2	3	4	4	2	3	2	1	1	2		45	3	4	59.21	36
SRTMU	1	1	3	2	2	1	3	2	2	3	4	2	4	3	3	2	2	2	2		44	2	3	57.89	4
Bhavnagar	2	2	2	1	3	3	2	2	1	4	1	1	4	3	1	3	3	2	2		42	2	5	55.26	20
RAUB	0	0	1	4	3	3	2	1	2	1	2	4	2	3	2	1	3	4	4		42	4	6	55.26	
Barkatullah	0	0	3	3	3	2	2	4	1	4	2	4	3	2	1	3	2	1	1		41	3	6	53.95	
CIFE	1	1	3	4	1	1	2	2	3	3	1	4	1	4	1	1	2	3	3		41	3	8	53.95	37
Goa	2	3	3	3	1	2	1	3	1	2	2	3	2	1	4	2	2	1	3		41	1	5	53.95	13
BAMU	1	1	2	2	1	2	4	1	1	1	3	3	4	4	4	1	2	2	1		40	4	8	52.63	40
Ravishankar	1	1	1	3	2	1	2	2	4	1	3	3	3	1	4	4	1	2	1		40	3	8	52.63	8
Guj. Auy.	3	2	3	1	3	1	1	1	3	1	2	2	4	2	1	2	2	2	3		39	1	6	51.32	32
BATU	1	1	2	1	1	2	2	3	1	3	1	3	2	3	3	3	1	2	2		37	0	7	48.68	9
AP Singh	1	1	2	2	2	2	1	3	1	2	4	3	3	1	3	2	1	1	1		36	1	8	47.37	30
North Gujarat	1	1	1	3	2	3	1	1	4	2	4	1	2	1	1	1	1	1	1		32	2	12	42.11	12
North Maharash	0	0	1	4	1	1	2	4	2	1	3	1	4	1	1	2	1	1	1		31	3	12	40.79	
South Gujarat	2	2	1	4	1	1	1	1	1	2	3	1	3	1	3	1	1	1	1		31	1	12	40.79	31
Rani Durgavati	1	1	1	2	4	1	1	1	1	1	4	1	1	1	3	1	1	1	1		28	2	15	36.84	41
Saurashtra	1	1	1	2	2	1	2	1	2	1	1	1	2	2	1	1	1	1	1		25	0	13	32.89	31
IGKV	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8	0	0	10.53	11
KKV	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		8	0	0	10.53	26
JNV	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6	0	0	7.89	36
Gujarat	3	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		5	0	0	6.58	48
Vikram	2	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		5	0	0	6.58	41
MDSU	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		4	0	0	5.26	11

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List of Institutional Co-ordinators

1	Prof. R. S. Biradar	Central Institute of Fisheries Education, Mumbai
2	Dr. S. K. Dixit	Gujarat Agriculture University, Anand
3	Dr. S. D. Upadhyay	Jawaharlal Nehru Krishi Vidyapeeth, Jabalpur
4	Dr. S. P. Kalyankar	Marathwada Krishi Vidyapeeth, Parbhani
5	Dr. V. B. Shekar	Panjabrao Deshmukh Krishi Vidyapeeth, Akola
6	Dr. V. S. Kawadia	Rajasthan Agriculture University, Bikaner
7	Dr. P. L. Maliwal	Rajasthan Agriculture University, Udaipur
8	Dr. B. P. Singh	Indira Gandhi Krishi Vishwavidyalaya, Raipur
9	Dr. B. L. Dhonukshe	Konkan Krishi Vidyapeeth, Dapoli-Ratnagiri
10	Prof. L. K. Maheshwari	Birla Institute of Technology Science, Pilani
11	Dr. B. B. Singh	Dr. Babasaheb Ambedkar Technological University, Lonere
12	Prof. P. K. Rao	Indian Institute of Technology, Mumbai
13	Dr. Ravishankar	Gujarat Ayurved Univesity, Jamnagar
14	Dr. S. F. R. Khadri	Amravati University, Amravati
15	Dr. C. K. Sharma	Awadhesh Pratap Singh Vishwavidyalaya, Rewa
16	Dr. Aditya Shastri	Banasthali University, Banasthali
17	Dr. A. K. Gwal	Barkatullah Vishwavidyalaya, Bhopal
18	Prof. R. V. Mehta	Bhavanagar University, Bhavnagar
19	Prof. S. C. Mehrotra	Dr. Babasaheb Ambedkar Marathwada University, Aurangabad
20	Dr. A. G. Balasubramanian	Goa University, Panjim
21	Dr. H. V. Verma	Harisingh Gour Vishwavidyalaya, Sagar
22	Dr.(Ms) Sharada Khandelwal	Jiwaji University, Gwalior
23	Dr. Jayashree De	Maharaja Sayajirao University, Vadodara
24	Prof. M. N. Welling	Mumbai University, Mumbai
25	Dr. P. G. Khot	Nagpur Univerjsty, Nagpur
26	Shri. K. L. Rathod	North Gujarat University, Patan
27	Dr. P. P. Patil	North Maharashtra University, Jalgaon
28	Prof. H. R. Singh	Pandit Ravishankar Shukla University, Raipur
29	Dr. N. K. Lohia	Rajasthan University, Jaipur
30	Dr. M. C. Agarwal	Rani Durgavati Vishwavidyalaya, Jabalpur
31	Dr. N. G. Patel	Sardar Patel University, Vallabh Vidyanagar
32	Prof. K. K. Khakkhar	Saurashtra University, Rajkot
33	Prof. Jay Samant	Shivaji University, Kolhapur
34	Dr. B. I. Sheth	South Gujarat University, Surat
35	Dr. D. B. Yedekar	Swami Ramanand Teerth Marathwada University, Nanded
36	Dr. K. K. Sharma	Maharshi Dayanand Saraswati University, Ajmer
37	Dr. M. D. Kajale	Deccan College Post Graduate and Research Institute, Pune
38	Prof. Sudhakar Bharati	Devi Ahilya Vishwavidyalaya, Indore
39	Prof G. R. Jakhar	Jai Narain Vyas, Jodhpur
40	Prof. K. K. Sud	Mohanlal Sukhadia University, Udaipur
41	Dr. S. R. Jog	Pune University, Pune
Colleges		
1	Dr. A. M. Shaikh	Birla Vishwakarma Mahavidyalaya, Vallabh Vidyanagar
2	Dr. Lall	Goa Engineering College, Farmagudi
3	Prof. M. H. Rangwala	LD Engineering, Ahmedabad
4	Dr. Sandeep Sancheti	Malaviya Regional Engineering College, Jaipur
5		Maulana Azad Regional Engineering College, Bhopal
6	Prof. Staju Jacob	Padre Engineering College, Ponda
7	Dr. O. P. Bhatia	Shri G. S. Institute of Science and Technology, Indore
8	Dr. V. N. Bapat	Walchand Engineering College, Sangli
9	Dr. S. K. Bhargava	MBM Engineering College, Jodhpur
10	Dr. Dhume	Goa Medical College, Panjim

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List of Institutional Co-ordinators

11	Dr. Anup Tankha	J.L.N. Medical College, Ajmer
12	Dr. S. S. Kushwaha	Medical College, Rewa
13	Dr. (Ms) S. Bose	MG Medical College, Indore
14	Dr. B. K. Jain	S. P. Medical College, Bikaner
15	Principal Kandepal	Government Girls College, Rewa
16	Dr. Deshpande	Insitute of Science, Nagpur
17	Dr. S. R. Ghantawal	Kelkar-Vaze College, Mumbai
18	Dr. N. B. Singh	Model Government College, Rewa
19	Prof. C. G. Dave	M.G. Science College, Ahmedabad
20		N.M Science College, Patan
21	Dr. M. A. Shaikh	Nagar college, Ahmednagar
22	Dr. S. R. Chaudhri	Pratap College, Amalner
23	Dr. Ajay Varma	Rajshri College, Alwar
24	Dr. R. P. Phadke	Ramnarain Ruia College, Mumbai
25	Dr. C. Vaman Rao	St. Xavier's College, Mumbai
26	Dr. M. R. Mulla	Y.C. College, Karad
27	Dr. V. Khandekar	Y.C. Institute of Science, Satara
28	Prof. A. M. Deokule	S. P. College, Pune
29	The Principal	Government Girls College, Bhopal
30	Prof. Pitaliya	Government College, Bhilwara
31	The Principal	H & HB Kotak Institute of Science

CoRelation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Total Expenditure	1.0000																				
S & T Expenditure	0.8599	1.0000																			
R & D Expenditure	0.7359	0.9652	1.0000																		
% Faculty with PhD	0.2547	0.4191	0.3857	1.0000																	
FTE	0.6548	0.8642	0.9223	0.2990	1.0000																
Years of standing	0.4734	0.1722	0.0137	- 0.0221	- 0.0153	1.0000															
Research Guidance	0.4098	0.4751	0.4622	0.4062	0.3776	- 0.0615	1.0000														
Research Projcets	0.5394	0.5129	0.4410	0.3335	0.4571	0.1754	0.6757	1.0000													
Consultancy Projects	0.3778	0.2783	0.2020	0.5031	0.3721	0.0883	0.5716	0.5694	1.0000												
Publication papers	0.2333	0.2814	0.2433	0.2452	0.1943	0.2303	0.2934	0.1250	0.3036	1.0000											
Publication Books	0.0595	0.0499	0.0465	0.3776	0.1807	- 0.0113	0.1334	0.2585	0.4485	0.3124	1.0000										
Research Fora	0.3257	0.2865	0.2450	0.4047	0.1768	0.1110	0.2572	0.0758	0.3483	0.1621	0.2082	1.0000									
External Examination	0.0533	- 0.0009	- 0.0686	0.0947	0.0113	0.1309	0.1383	0.1049	0.2243	0.0667	0.2343	0.1211	1.0000								
editorial responsibility	0.1651	0.1418	0.1000	0.4740	0.2154	- 0.0436	0.3936	0.4125	0.5619	0.1669	0.3657	0.0656	0.2588	1.0000							
Visiting Faculty	- 0.3464	- 0.4229	- 0.4135	- 0.1946	- 0.2096	- 0.1662	- 0.0381	0.0130	0.0130	- 0.2831	- 0.0876	- 0.0433	- 0.0516	0.0827	1.0000						
Advisory Committee	0.2985	0.1149	0.0301	0.3153	0.2538	0.4260	0.4932	0.3753	0.5333	0.4067	0.4096	0.5165	0.0566	0.3007	- 0.0025	1.0000					
Professional Bodies	- 0.2052	- 0.2584	- 0.1813	0.0872	- 0.0826	0.0922	- 0.1181	- 0.1739	- 0.2691	- 0.1871	0.0383	0.2410	- 0.0094	- 0.0737	0.2080	- 0.0372	1.0000				
Awards	0.5220	0.6160	0.5716	0.4558	0.5387	0.2515	0.5896	0.5719	0.6310	0.3276	0.4210	0.2797	0.2213	0.5573	- 0.1675	0.3955	- 0.0740	1.0000			
Fellowships	0.4749	0.3233	0.1939	0.3025	0.2166	0.3501	0.3483	0.3210	0.5043	0.2363	0.3517	0.2655	0.1060	0.4749	0.0292	0.4795	0.1143	0.4727	1.0000		
Patents	0.6179	0.7088	0.7112	0.2371	0.6107	0.2620	0.5600	0.4415	0.4595	0.4607	0.2923	0.3398	0.1772	0.2796	- 0.2842	0.5429	- 0.0993	0.5980	0.4394	1.0000	
Technologies	0.7222	0.7466	0.6933	0.2853	0.5278	0.2113	0.3693	0.4300	0.2626	0.3861	0.2511	0.1491	0.1715	0.3631	0.3573	0.3974	0.0417	0.5020	0.4584	0.6354	1.0000