NATIONAL TECHNICAL MANPOWER INFORMATION SYSTEM

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ENGINEERING

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INTRODUCTION

Technical manpower planning concentrates on developing and controlling people with specified technical skills, so that no plan or programme suffers from lack of trained manpower and education. It improves overall competencies of people and leads for adding value to products and services for contributing to national economy. In India manpower availability is large to our country, thousands of engineering graduate and diploma holders are unemployed or under employed. Also the skill of technical manpower is a challenge for our country. To skill in new technology and competition in labour market is a main challenge in present situation. So, more emphasis should be laid down to improve the quality of technical education by establishing new Institutions or upgrading the existing curriculum all over the country. In the development process of a country, the size and the excellence of the technical manpower plays an important role. For this, a country requires sufficient information and inputs of finances, manpower and infrastructure on all fields of Science and Technology. The technical Manpower, which is only 15% of the total manpower India produces, is one of the most important elements of the Human Resource Developments for overall development of the country. To fulfill the need of skilled technical manpower in India, the Government of India in 1983 framed the National Technical Manpower Information System (NTMIS) under the Institute of Applied Manpower Research (IAMR) to get required information for proper planning and management of technical manpower. The NTMIS established 21 (Presently 20) Nodal Centres across the country to collect and analyse the data and review the prospects of technical manpower in the respective region.

Technical manpower is produced by various technical institutions like Engineering Colleges and Polytechnics, Professional bodies (AMIE), University departments and Industries. This technical manpower is absorbed in the State and Central Government Organizations, Private and Public sector enterprises, some local bodies of the state and the country. A few of the technical manpower seek better opportunities abroad.

The main tasks of the 20 Nodal Centres are to collect and analyse the data from

(i) Individual outgoing students (students Follow-up Survey)
(ii) Various technical institutions (Institutional Survey)
(iii) Various Organisation/establishments (Establishment Survey) employing technical manpower.

Graduate Follow-up Survey and Institutional Survey data are collected by 16 Nodal Centres and the rest 4 Nodal Centres called Board of Practical Training/Apprenticeship Training established in the four region of the country are given responsibility to conduct the Establishment Survey.

The Nodal Centre at Assam Engineering College was established in 1983 to collect and analyse the students Follow-up and Institutional data within the state of Assam. It also reviews the prospects of the planning and management of technical manpower in Assam. Board of Practical Training (BOPT) located in Kolkata carries out the Establishment Survey for the State of Assam.

This report reviews the Annual Technical Manpower scenario in Assam based on the data collected from the students' follow-up survey for the batch year 2003 and institutional survey 2004-2005. This report includes only the engineering disciplines.

PROCEDURE FOR COLLECTION OF DATA

A. Student Follow-up Survey

The permanent addresses of all graduates and diploma holders who passed out in 2003 from various technical institutions in Assam were collected. The follow-up questionnaires were then mailed to all the graduates and diploma holders at their respective home addresses requesting them to provide the information on the questionnaires and return the same to the Nodal Centre, Assam Engineering College. Those who did not respond to the first request, reminders were sent. This process continued till the response from 50% or more were received by mail. If the respondent is more than 50% then sample survey is not done. If the respondent is less than 50% then representative samples were drawn separately from each discipline and level of course by randomly selecting 10% or a minimum of 10 cases whichever is higher or all cases where sampling population is less than 10 in a particular discipline from the non-responding cases.

The data collectors then personally contacted the sample cases for the required information. The sample results were analysed for developing estimates for non-responding cases and merged with the results of mail enquiry to provide a representative picture for the whole state. Sampled cases located outside the state of Assam were collected through the Nodal Centres of respective state.

Institutional Data

Institutional questionnaires were sent to all Engineering Colleges and Polytechnics and University departments of technical subjects for the reference year 2004-2005. The format of the questionnaires are designed to get information about the infrastructure, staff structure, Hostels, Students intake and outturn by level, Discipline, Sex and category, Library facilities, Funds, etc. Filled-in questionnaires are obtained by correspondence and personal contact. These data are analysed to evaluate the state of technical education in Assam.

Establishment Survey

The Board of Practical Training (BOPT), Kolkata, collects the establishment survey data for the eastern region. The BOPT, Kolkata sends the establishment questionnaires to various departments of State and Central Governments, Industries in the Public and Private sector and others organizations of the state, which employ technical manpower. These questionnaires ask data regarding its products, investments, working capital, particulars of staff expansion proposal etc. Filled-in questionnaires are collected and analysed by BOPT, and prepare the distribution Tables. These distribution tables are then passed to the Nodal Centre, Assam Engineering College for use in preparation of the Review.

PARTS OF THE REPORT

This report consists of seven chapters. Chapter I traces out the growth of technical education in Assam. Chapter II deals with the structure of staff in various technical institutions. Chapter III describes the migration of students into and out of the state of Assam. The Chapter IV and Chapter V chapters contain the analysis of data collected through students follow-up survey and review the engineering labour market in the state of Assam. Chapter VI highlights the absorption pattern of engineering degree holders. Chapter VII deals with self-employment scenario of engineering degree holders.

CHAPTER I

EVOLUTION OF TECHNICAL EDUCATIONAL FACILITIES

(ENGINEERING)

1.0 INTRODUCTION

The development of Technical education in Assam has been very slow. The facilities for technical education in Assam until independence were very poor. Many students from Assam went to other parts of India to avail technical education. There were only few institutions that provided inadequate facilities and junior level course in selected fields. These were The Assam Textile Institute established in 1920 and Prince of Wales Institute of Engineering and Technology in 1927. The development of technical education in this part of India was given priority only after independence.

1.1 DEVELOPMENT OF TECHNICAL EDUCATION (ENGINEERING)

Initially diploma courses in Electrical, Mechanical and Automobile engineering were introduced in Prince of Wales Institute of Engineering and Technology. The Assam Engineering Institute was established in 1948. These institutes were upgraded to Polytechnics in 1956 according to the norms laid down by All India Council for Technical Education (AICTE). Five more polytechnic followed this including one Girls' Polytechnic, Indian Institute of Handloom Technology under Ministry of Textiles. In 1998, another girls' polytechnic named Residential Girls Polytechnic has been established at Golaghat. This polytechnic is currently offering diploma in Electronics & Telecommunication Engineering and Textile Chemistry & Design. At present there are ten institutions that are offering diploma courses in engineering disciplines.

Assam Engineering College was the first engineering institution established in 1956, which offered degree level courses. Initially there was only Civil Engineering department. In 1957, Electrical and Mechanical Engineering courses were added. Chemical Engineering was added in 1963. Then Postgraduate courses in Flood Control and Watershed Management & Soil Mechanics were introduced in Civil Engineering in 1977 and 1987 respectively. Master in Computer Application (MCA) was introduced in 1990.Earlier Electronics and Telecommunication was attached to Electrical engineering department. Now it is offering degree course as a separate department. Degree course in Computer Science, Instrumentation and Industrial & Production Engineering has been introduced in 1998. Now all the Technical departments are offering Research facilities for Ph.D program. From the year 2004 in Electrical

Engineering Department has started P.G course. From the year 2005 Mechanical Engineering Department has started P.G. course.

The second engineering college named, Jorhat Engineering College was established in 1960. It offered Civil, Mechanical, Electrical Engineering courses. In 1987 the Post Graduate course MCA was introduced. The Computer Science department offering degree course was added in 1988. The Regional Engineering College presently known as National Institute of Technology at Silchar was established in 1977, which is. The institute is offering degree courses in Civil, Electrical, Mechanical, Electronics and Telecommunication and Computer Science.

The sixth Indian Institute of Technology was established at Guwahati in 1994 .It is now offering degree courses Mechanical, Computer Science, Electronics and Telecommunication, Civil, Chemical and Bachelor of Designing. Along with these, M. Tech. Courses are being offered in Computer Science, Electronics and Telecommunication, Civil and Mechanical Engineering along with research degrees leading to PhD.

From the current year (2006) two new Engineering College has started in Assam, where one is at private sector in Guwahati and another one is at Tezpur University.

The growth of technical educational facilities is shown in table 1.1.

At present 6 engineering institutes and 10 diploma level institutes in the State are running its academic programme. Details breakup are presented in table 1.2.

1.2 DISTRIBUTION OF TECHNICAL INSTITUTIONS IN PLACE WISE:

Distribution of engineering institutions among various districts of the state is presented in Table 1.3. From the table it is revealed that out of 27 districts only 6 engineering institutions in four districts and 10 diploma-engineering institutions in 7 districts. There is no technical institution in the remaining 18 districts. Most of the institutions are located in Kamrup district (Guwahati).

1.3 SANCTIONED INTAKE

Year wise sanctioned intake into engineering degree and diploma courses by different type of institutions are shown in tables 1.4A and 1.4B.

Distributions of sanctioned intake into degree, diploma and post graduate courses by discipline wise are presented in tables 1.5A to 1.5C. From the tables it is seen that the sanctioned intake in 2004

was 963 and 1275 at degree and at diploma level respectively. Variation of sanctioned intake in degree and diploma are presented in table 1.6 from the year 1991-2005.

1.4 ACTUAL INTAKE

Actual intake in degree, diploma, and post-graduate courses are presented in tables 1.7A to 1.7C. In 2004 at degree, diploma and post-graduate levels actual intake were 913, 1259 and 395 respectively. Renewable Energy, which is at Tezpur University has upgraded to P.G. degree from the year 2003 and rename as Energy Technology.

Intake in gender wise is shown in tables 1.8A-1.8B for the batch year 2004. From the tables it is revealed that at degree level 816(89%) males and 97(11%) females were intake and in diploma level 1049(83%) males and 210(17%) females were intake during the year 2004. The intake in category wise is presented in tables 1.9A-1.9B for degree and diploma levels.

1.5 OUTTURN

The outturns for the years 1991-2005 are furnished in tables 1.10A to 1.10C. 692 degree, 602 diploma and 332 post-graduate students were passed out during the year 2004. The outturn in gender wise is shown in tables 1.11A –1.11B for the batch year 2004. From the tables it is revealed that at degree level 606(88%) males and 86(12%) females and at diploma level 490(81%) males and 112(19%) females. The outturn in category wise is presented in tables 1.12A –1.12B for degree and diploma levels for the batch year 2004.

1.6 LIST OF INSTITUTIONS

List of engineering institutions are presented in tables 1.13A and 1.13B with type and year of establishment.

Table 1.1
Growths of Technical Educational Facilities

S.No.	Year	Engineering Colleges		Polytechnics	
		Existing at the end of the year	Started during the year	Existing at the end of the year	Started during the year
1	1946	0	0	2	0
2	1951	0	0	3	0
3	1956	1	1	3	0
4	1961	2	0	5	1
5	1966	2	0	7	0
6	1971	3	0	7	0
7	1976	3	0	7	0
8	1981	3	0	7	0
9	1986	3	0	9	1
10	1989	3	0	9	0
11	1992	3	0	9	0
12	1993	3	0	9	0
13	1994	4	1	9	0
14	1995	4	0	9	0
15	1996	4	0	9	0
16	1997	4	0	9	0
17	1998	4	0	10	1
18	1999	4	0	10	0
19	2000	4	0	10	0
20	2001	4	0	10	0
21	2002	4	0	10	0
22	2003	4	0	10	0
23	2004	4	0	10	0
23	2005	4	0	10	0
24	2006	6	2	10	0

Table 1.2

Growths of Educational Institutions by type and level (1993 - 2006)

S.No.	Type	Engineering College			Polytechnics		
		1993	1999	2006	1993	1999	2006
1	Govt. Institutions	3	4	5	9	10	10
2	Aided Institutions	-	-	-	-	-	-
3	Private Institutions	-	-	1	-	-	-
	Total	3	4	6	9	10	10

Table 1.3
Distribution of Engineering Colleges among various Districts of the State during the Year 2006

S.No	District	Engineering Colleges	Polytechnics	Ratio of Engineering to Polytechnics
1	Kamrup(Urban)	3	4	1:1.3
2	Jorhat	1	1	1:1.0
3	Cachar	1	1	1:1.0
4	Dibrugarh	-	1	-
5	Nagaon	-	1	-
6	Bongaigaon	-	1	-
7	Golaghat	-	1	-
8	Sonitpur	1	0	-
Total		6	10	1:1.7

Table 1.4A

Year-wise Sanctioned Intake into Engineering Degree Courses by Different Type of Institution (1991-2005)

S.No.	Type of Institutions		1991	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	Govt Institutions	No	645	745	745	745	858	858	858	918	955	955	963	1002
		%	100	100	100	100	100	100	100	100	100	100	100	100
2	Aided Institutions	No	-	-	-	-	-	-	-	-	-	-	-	
		%												
3	Private Institutions	No	-	-	-	-	-	-	-	-	-	-	-	
		%												
	Total	No	645	745	745	745	858	858	858	918	955	955	963	1002
		%	100	100	100	100	100	100	100	100	100	100	100	100

Table 1.4B

Year-wise Sanctioned Intake into Engineering Diploma Courses by Different Type of Institutions (1991-2005)

S.No.	Type of Institutions		1991	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	Govt Institutions	No	1170	1170	1180	1210	1240	1205	1205	1205	1220	1220	1275	1265
		%	100	100	100	100	100	100	100	100	100	100	100	100
2	Aided Institutions	No	-	-	-	-	-	-	-	-	-	-	-	
		%												
3	Private Institutions	No	-	-	-	-	-	-	-	-	-	-	-	
		%												
	Total	No	1170	1170	1180	1210	1240	1205	1205	1205	1220	1220	1275	1265
		%	100	100	100	100	100	100	100	100	100	100	100	100

Table 1.5A

Distribution of Sanctioned Intake into Degree Courses by Discipline (1991-2005)

S.No	Discipline	1991	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	B. Design	-	-	-	-	15	15	15	15	26	25	26	28
2	Chemical Engg	30	30	30	30	30	30	30	30	56	55	60	64
3	Civil Engineering	185	185	185	185	200	200	200	224	224	220	216	210
4	Computer Science	60	85	85	85	113	113	113	120	120	120	126	138
5	E&T Engineering	35	85	85	85	92	92	92	100	100	100	104	118
6	Electrical Engg.	165	145	145	145	145	145	145	145	145	145	146	150
7	Industrial & Prod	-	-	-	-	20	20	20	20	20	20	20	20
8	Instrumentation Engg	-	20	20	20	40	40	40	40	40	40	40	40
9	Mechanical Engg	170	195	195	195	203	203	203	224	224	230	225	234
	Total	645	745	745	745	858	858	858	918	955	955	963	1002

Table 1.5B

Distribution of Sanctioned Intake into Diploma Courses by Discipline (1991-2005)

S.N	Discipline	1991	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	Agricultural Engg	30	30	30	30	30	30	30	30	30	30	30	30
2	Architectural Asst	30	30	30	30	30	30	30	30	30	30	30	30
3	Automobile Engg	45	45	45	45	45	45	45	45	45	45	45	45
4	Chemical Engg	30	30	30	30	30	30	30	30	30	30	30	30
5	Civil Engineering	450	450	450	450	450	420	420	420	420	420	420	420
6	Computer Engineering	50	50	50	50	50	50	50	50	50	50	50	50
7	E&T Engineering	80	80	80	110	110	110	110	110	110	110	110	110
8	Electrical Engg.	170	170	170	170	170	165	165	165	165	165	170	170
9	Fashion Technology	-	-	-	-	-	-	-	-	-	-	20	20
10	Garment Technology	-	-	-	-	-	-	-	-	-	-	20	20
11	Handloom Tech.	30	30	30	30	30	30	30	30	45	45	45	45
12	Instrumentation Engg	30	30	30	30	30	30	30	30	30	30	30	30
13	Mechanical Engg	165	165	165	165	165	165	165	165	165	165	175	175
14	Modern office Mgmnt	30	30	30	30	30	30	30	30	30	30	30	30
15	Textile Chemistry	-	-	-	-	30	30	30	30	30	30	30	30
16	Textile Technology	30	30	40	40	40	40	40	40	40	40	40	30
	Total	1170	1170	1180	1210	1240	1205	1205	1205	1220	1220	1275	1265

Table1.5C
Distribution of Sanctioned Intake into Post Graduate Courses by Discipline (1991-2005)

S.No.	Discipline	1991	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	P.G.Degree												
1	Applied Geology	8	15	15	15	15	15	15	15	12	12	22	22
2	Bio Electronics	-	-	-	-	-	-	-	-	-	-	15	15
3	Chemical Engineering	-	-	-	-	-	-	-	-	-	20	20	20
4	Civil Engineering	25	25	25	25	25	40	40	40	50	60	65	101
5	Computer Sc.Engg	-	-	-	25	25	25	40	40	40	40	40	40
6	Electrical Engineering	-	-	-	-	-	-	-	-	-	-	18	36
7	E & C Engineering	-	-	-	40	40	40	40	40	40	40	40	40
8	Electronics Sc.	14	14	14	14	15	15	15	15	20	20	13	20
9	Electronics Design*	-	-	-	-	20	20	20	20	20	20	18	18
10	Energy Technology										15	18	18
11	Petroleum Technology	-	-	-	-	-	-	20	20	20	20	20	28
12	M.C.A	40	40	40	60	60	90	90	90	90	90	155	150
13	Mechanical Engg	-	-	-	40	40	40	40	40	40	40	50	86
	P.G.Diploma												
14	Instrumentation Sc				15	15	15	15	15	12	12	16	15
	Total	87	94	94	234	255	300	335	335	344	389	510	609

*Rename from Electronics Sc. of Tezpur University

Table 1.6
Variations of Total Sanctioned Intake into Educational Institutions.

Year	Degree Courses			Diploma Courses		
	Total Sanctioned Intake	Variation over previous year	Percentage of variation	Total Intake	Variation over previous year	Percentage of variation
1991	645	0	0.0	1170	0	0.0
1992	645	0	0.0	1170	0	0.0
1993	645	0	0.0	1170	0	0.0
1994	645	0	0.0	1170	0	0.0
1995	745	100	15.5	1170	0	0.0
1996	745	0	0.0	1180	10	0.09
1997	745	0	0.0	1210	30	2.5
1998	858	107	14.4	1240	30	2.5
1999	858	0	0.0	1205	-35	-2.8
2000	858	0	0.0	1205	0	0.0
2001	918	60	7.0	1205	0	0.0
2002	955	37	4.0	1220	15	1.2
2003	955	0	0.0	1220	0	0.0
2004	963	8	0.8	1275	55	4.3
2005	1002	39	3.9	1265	-10	-0.07

Table 1.7A

Distribution of Actual Intake into Degree Courses by Discipline (1991-2005)

S.No.	Discipline	1991	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	B. Design	-	-	-	-	12	12	12	12	15	20	19	17
2	Chemical Engg	30	28	26	30	31	30	30	30	50	54	54	29
3	Civil Engineering	185	179	162	177	198	189	185	192	199	204	202	190
4	Computer Science	60	74	85	89	90	110	108	113	115	114	127	132
5	E&T Engineering	35	70	85	119	89	89	88	94	97	98	98	113
6	Electrical Engg.	165	156	157	145	163	149	147	143	140	141	133	140
7	Industrial & Prod	-	-	-	-	-	20	18	20	19	21	20	19
8	Instru. Engg	-	20	20	20	20	20	39	39	37	40	36	37
9	Mechanical Engg	170	199	191	200	209	200	196	194	220	209	224	225
	Total	645	726	726	780	812	819	823	837	892	901	913	928

Table 1.7B

Distribution of Actual Intake into Diploma Courses by Discipline (1991-2005)

S.No.	Discipline	1991	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	Agricultural Engg	30	7	8	4	4	30	25	30	30	30	30	30
2	Architectural Asst	28	28	7	7	18	18	19	22	30	30	28	33
3	Automobile Engg	45	7	19	17	25	45	38	45	45	45	45	45
4	Chemical Engg	30	30	30	31	30	30	24	27	30	30	28	30
5	Civil Engineering	420	169	225	250	337	435	357	408	417	409	426	421
6	Computer Engg	50	38	50	49	52	50	45	49	50	49	54	49
7	E&T Engineering	80	62	78	75	75	87	95	107	112	110	112	109
8	Electrical Engg.	170	80	132	160	163	175	156	166	170	161	172	170
9	Fashion Technology	-	-	-	-	-	-	-	-	-	-	20	20
10	Garment Technology	-	-	-	-	-	-	-	-	-	-	20	20
11	Handloom Tech.	30	23	22	25	27	28	27	27	41	43	41	41
12	Instrumentation Engg	30	15	15	27	27	30	21	30	30	30	30	30
13	Mechanical Engg	198	80	138	151	156	166	146	167	165	165	169	165
14	Modern office Mgmnt	-	-	-	-	30	30	28	8	30	30	21	31
15	Textile Chemistry	-	-	-	-	-	23	28	4	5	17	24	24
16	Textile Technology	30	40	30	41	40	31	30	19	16	38	39	30
	Total	1141	579	754	837	984	1178	1039	1109	1171	1187	1259	1248

Table 1.7C

Distribution of Actual Intake into Post Graduate Courses by Discipline (1991-2005)

S.No.	Discipline	1991	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	P.G.Degree												
1	Applied Geology	15	*	*	11	11	10	11	8	10	6	19	*
2	Bio Electronics	-	-	-	-	-	-	-	-	-	-	11	8
3	Chemical Engineering	-	-	-	-	-	-	-	-	-	*	17	18
4	Civil Engineering	25	25	25	25	25	25	40	38	32	49	57	44
5	Computer Sc.Engg	-	-	-	25	25	25	40	40	29	32	34	37
6	Electrical Engg	-	-	-	-	-	-	-	-	-	-	2	9
7	E& C Engineering	-	-	-	40	40	40	40	40	23	36	34	37
8	Electronics Sc.	14	13	14	30	25	30	27	33	40	37	13	16
9	Electronics Desgin**	-	-	-	-	-	-	-	-	-	-	15	17
10	Petroleum Technology	-	-	-	-	-	6	6	6	13	13	15	14
11	M.C.A	40	40	35	60	60	60	74	72	79	91	116	138
12	Mechanical Engg	-	-	-	40	40	40	40	40	24	39	43	61
13	Energy Technology	-	-	-	-	-	-	-	-	-	10	12	7
	P.G.Diploma												
14	Instrumentation Sc	15	13	*	10	7	1	1	0	9	6	7	15
	Total	109	91	74	241	233	237	279	277	259	319	395	421

* Data not available ** Electronics Sc. of Tezpur University rename as Electronics Design

Table 1.8A

Distribution of Actual Intake into Degree Courses by Gender and Discipline 2004 Batch

S.No.	Discipline	Male	Female	Total	Ratio of Male to Female
1	B. Design	17	2	19	1: 0.11
2	Chemical Engg	45	9	54	1: 0.20
3	Civil Engineering	181	21	202	1: 0.12
4	Computer Science	117	10	127	1: 0.09
5	E&T Engineering	86	12	98	1: 0.12
6	Electrical Engg.	110	23	133	1: 0.21
7	Industrial & Prod	18	2	20	1: 0.11
8	Instrumentation Engg	28	8	36	1: 0.29
9	Mechanical Engg	214	10	224	1: 0.05
	Total	816	97	913	1: 0.12

Table 1.8B

Distribution of Actual Intake into Diploma Courses by Gender and Discipline 2004 Batch

S.No.	Discipline	Male	Female	Total	Ratio of Male to Female
1	Agricultural Engg	27	3	30	1: 0.11
2	Architectural Asst	0	28	28	-
3	Automobile Engg	45	0	45	1:0.0
4	Chemical Engg	26	2	28	1: 0.07
5	Civil Engineering	395	31	426	1: 0.08
6	Computer Engineering	49	5	54	1: 0.10
7	E&T Engineering	73	39	112	1: 0.53
8	Electrical Engg.	164	8	172	1: 0.05
9	Fashion Technology	6	14	20	1:2.3
10	Garment Technology	6	14	20	1:2.3
11	Handloom Tech.	31	10	41	1: 0.32
12	Instrumentation Engg	26	4	30	1: 0.17
13	Mechanical Engg	163	3	166	1: 0.02
14	Modern office Mgmnt	0	21	21	-
15	Textile Chemistry	0	24	24	-
16	Textile Technology	38	1	39	1: 0.03
	Total	1049	210	1259	1: 0.20

Table 1.9A

Distribution of Actual Intake into Degree Courses by Category and Discipline 2004 Batch

S.No.	Discipline	SC	ST	OBC	Others	Total	Ratio of others with SC,ST &OBC
1	B. Design	0	0	-	19	19	-
2	Chemical Engg	4	6	5	39	54	1: 2.6
3	Civil Engineering	17	22	20	143	202	1: 2.4
4	Computer Science	10	8	8	101	127	1: 3.9
5	E&T Engineering	12	7	8	71	98	1: 2.6
6	Electrical Engg.	14	14	17	88	133	1: 2.5
7	Industrial & Prod	2	3	2	13	20	1: 1.9
8	Instrumentation Engg	3	5	7	21	36	1:1:4
9	Mechanical Engg	33	17	20	154	224	1: 2.2
	Total	95	82	87	649	913	1:.3.0

Table 1.9B

Distribution of Actual Intake into Diploma Courses by Category and Discipline 2004 Batch

S.No.	Discipline	SC	ST	OBC	Others	Total	Ratio of others with SC,ST &OBC
1	Agricultural Engg	2	4	5	19	30	1: 1.7
2	Architectural Asst	2	7	9	10	28	1: 0.6
3	Automobile Engg	3	6	7	29	45	1: 1.8
4	Chemical Engg	2	5	5	16	28	1: 1.3
5	Civil Engineering	34	59	61	272	426	1: 1.8
6	Computer Engineering	3	8	7	36	54	1: 2.0
7	E&T Engineering	8	14	16	74	112	1: 1.9
8	Electrical Engg.	12	29	22	85	172	1: 1.3
9	Fashion Technology	4	2	8	6	20	1: 0.4
10	Garment Technology	5	5	2	8	20	1: 0.7
11	Handloom Tech.	4	5	0	32	41	1: 3.5
12	Instrumentation Engg	2	4	5	19	30	1: 1.7
13	Mechanical Engg	12	24	24	106	166	1: 1.8
14	Modern office Mgmnt	4	0	7	10	21	1:0.9
15	Textile Chemistry	2	4	6	12	24	1:1.0
16	Textile Technology	6	9	15	9	39	1:0.3
	Total	105	185	199	770	1259	1: 1.6

Table 1.10A

Distribution of Outturn of Engineering Degree holders by Discipline (1991-2005)

S.No.	Discipline	1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	B. Design	-	-	-	-	-	-	-	12	9	17	17
2	Chemical Engg	15	17	25	24	26	23	30	24	52	22	25
3	Civil Engineering	189	106	122	120	104	100	105	103	103	116	98
4	Computer Science	0	49	55	58	67	80	71	86	123	104	109
5	E&T Engineering	43	34	40	49	78	76	84	88	128	93	102
6	Electrical Engg.	96	66	77	99	68	73	70	70	117	142	117
7	Industrial & Prod	-	-	-	-	-	-	-	-	8	2	2
8	Instrumentation Engg	-	-	-	12	13	16	15	17	44	19	35
9	Mechanical Engg	166	116	148	144	161	170	167	174	224	177	183
	Total	509	388	467	506	517	538	542	574	808	692	688

Table 1.10B

Distribution of Outturn of Engineering Diploma holders by Discipline (1991-2005)

S.No.	Discipline	1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1	Agricultural Engg	23	8	8	4	1	1	2	0	1	1	2
2	Architectural Asst	2	13	19	4	4	13	5	10	7	10	8
3	Automobile Engg	17	6	20	10	3	6	2	9	21	15	15
4	Chemical Engg	16	25	10	25	12	13	25	27	24	33	17
5	Civil Engineering	378	228	348	138	93	50	74	116	136	170	173
6	Computer Engineering	9	45	34	53	18	33	32	29	40	32	33
7	E&T Engineering	39	52	42	39	27	16	71	74	89	75	57
8	Electrical Engg.	130	90	126	84	41	39	42	62	87	92	122
9	Handloom Tech.	35	24	26	25	25	26	12	29	25	21	30
10	Instrumentation Engg	12	9	9	5	7	3	17	19	15	18	12
11	Mechanical Engg	98	74	141	71	39	42	76	95	98	111	116
12	Modern office Mgmnt	11	18	12	10	10	15	16	10	20	2	9
13	Textile Chemistry	-	-	-	-	10	9	9	1	1	0	0
14	Textile Technology	37	32	18	17	23	24	13	5	16	22	14
	Total	807	624	813	485	313	290	396	486	580	602	608

Table 1.10C

Distribution of Outturn of Engineering Post-Graduate by Discipline (1991-2005)

S.No.	Discipline	1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	P.G.Degree											
1	Applied Geology	6	7	9	9	*	*	10	11	10	11	0
2	Chemical Engineering	-	-	-	-	-	-	-	-	-	17	-
3	Civil Engineering	11	18	*	*	12	9	12	23	28	50	22
4	Computer Sc. Engg	-	-	-	-	-	13	14	20	23	25	32
5	E&C Engineering						12	14	17	18	37	16
6	Electronics Design	-	-	-	-	-	-	-	-	13	10	17
7	Electronics Sc.	-	-	-	-	-	-	32	29	19	16	16
8	Energy Technology	-	-	6	7	7	7	11	11	0	12	10
9	Petroleum Technology	-	-	-	-	-	6	*	10	6	13	0
10	M.C.A	13	40	33	*	55	30	57	67	80	103	102
11	Mechanical Engg	-	-	-	-	-	8	11	15	24	33	18
	P.G.Diploma											
12	Instrumentation Sc	2	*	2	2	5	0	0	0	2	5	0
	Total	32	65	50	18	79	85	161	203	223	332	233

- Data not available

Table 1.11A

Distribution of Outturn of Degree Holders by Gender and Discipline 2004 Batch

Discipline	Male	Female	Total	Ratio of Male to Female
B. Design	16	1	17	1: 0.06
Chemical Engg	17	5	22	1: 0.29
Civil Engineering	103	13	116	1: 0.13
Computer Science	86	18	104	1: 0.21
E&T Engineering	77	16	93	1: 0.21
Electrical Engg.	121	21	142	1: 0.17
Industrial & Prod	2	0	2	1: 0.0
Instrumentation Engg	12	7	19	1: 0.58
Mechanical Engg	172	5	177	1: 0.03
Total	606	86	692	1: 0.14

Table 1.11B

Distribution of Outturn of Diploma Holders by Gender and Discipline 2004 Batch

S.No.	Discipline	Male	Female	Total	Ratio of Male to Female
1	Agricultural Engg	1	0	1	1:0.0
2	Architectural Asst	0	10	10	-
3	Automobile Engg	14	1	15	1: 0.07
4	Chemical Engg	30	3	33	1: 0.09
5	Civil Engineering	148	22	170	1: 0.15
6	Computer Engineering	23	9	32	1: 0.39
7	E&T Engineering	46	29	75	1: 0.63
8	Electrical Engg.	81	11	92	1: 0.14
9	Handloom Tech.	12	9	21	1: 0.75
10	Instrumentation Engg	17	1	18	1: 0.06
11	Mechanical Engg	102	9	111	1: 0.09
12	Modern office Mgmnt	0	2	2	-
13	Textile Chemistry	0	0	0	-
14	Textile Technology	16	6	22	1: 0.38
	Total	490	112	602	1: 0.23

Table 1.12A

Distribution of Outturn Degree holders by Category and Discipline 2004 Batch

S.No.	Discipline	SC	ST	OBC	Others	Total	Ratio of others with SC,ST &OBC
1	B. Design	1	0	0	16	17	1:16.0
2	Chemical Engg	2	0	5	15	22	1: 2.1
3	Civil Engineering	11	15	6	84	116	1: 2.6
4	Computer Science	12	5	7	80	104	1: 3.3
5	E&T Engineering	10	1	5	77	93	1: 4.8
6	Electrical Engg.	10	8	17	107	142	1: 3.1
7	Industrial & Prod	0	1	1	0	2	1:0.0
8	Instrumentation Engg	1	1	5	12	19	1: 1.7
9	Mechanical Engg	20	12	14	131	177	1: 2.8
	Total	67	43	60	522	692	1: 3.1

Table 1.12B

Distribution of Outturn Diploma holders by Category and Discipline 2004 Batch

S.No.	Discipline	SC	ST	OBC	Others	Total	Ratio of others with SC,ST &OBC
1	Agricultural Engg	0	0	1	1	2	1: 1.0
2	Architectural Asst	2	0	1	7	10	1:2.3
3	Automobile Engg	1	3	3	8	15	1:1.1
4	Chemical Engg	2	1	2	28	33	1:5.6
5	Civil Engineering	13	20	22	115	170	1:2.1
6	Computer Engineering	2	3	6	21	32	1:1.9
7	E&T Engineering	7	6	15	47	75	1:1.7
8	Electrical Engg.	12	8	15	57	92	1:1.6
9	Handloom Tech.	0	8	0	13	21	1:1.6
10	Instrumentation Engg	0	2	4	12	18	1:2.0
11	Mechanical Engg	10	15	23	63	111	1:1.3
12	Modern office Mgmnt	0	0	1	1	2	1:1.0
13	Textile Chemistry	0	0	0	0	0	-
14	Textile Technology	0	4	9	9	22	1:0.7
	Total	49	70	102	381	602	1:1.7

Table 1.13A
List of Engineering Colleges in State during the year 2006

S.No	Name & Location of the College	Type of Institutions	Year of Establishment
1	Assam Engineering College, Guwahati	Government	1956
2	Jorhat Engineering College, Jorhat	Government	1960
3	National Institute of Technology, Silchar	Autonomous	1967
4	Indian Institute of Technology, Guwahati	Autonomous	1994
5	School of Engineering, Tezpur University	Government	2006
6	Girija Nanda Institute of Management and Technology, Azara-781017, Kamrup(Urban)	Private	2006

Table 1.13B
List of Polytechnics in State during the year 2006

S.No	Name & Location of the College	Type of Institutions	Year of Establishment
1	Assam Textile Institute, Guwahati	Government	1920
2	POW Institute, Jorhat	Government	1927
3	Assam Engineering Institute, Guwahati	Government	1948
4	Silchar Polytechnic, Silchar	Government	1960
5	Nagon Polytechnic, Nagaon	Government	1961
6	Girls' Polytechnic, Guwahati	Government	1964
7	Dibrugarh Polytechnic, Dibrugarh	Government	1965
8	Institute of Handloom Technology, Guwahati	Government	1982
9	Bongaigaon Polytechnic, Bongaigaon	Government	1986
10	Residential Girls' Polytechnic, Golaghat	Government	1987

CHAPTER II

CURRENT ARRANGEMENT OF TEACHING STAFF IN ENGINEERING INSTITUTIONS

2.0 INTRODUCTION

The institutional survey conducted by the Nodal Centre gathers the information about the staff structure. The engineering institutions of Assam under NTMIS programme are:

1. Engineering Colleges.
2. Indian Institute of Technology, Guwahati.
3. National Institute of Technology, Silchar
4. Polytechnics.
5. Assam Textile Institute.
6. Indian Institute of Handloom Technology.
7. University Departments.

2.1 TEACHING STAFF AND TEACHER-STUDENT RATIO IN ENGINEERING INSTITUTIONS

Actual and sanctioned strength of teaching staff and teacher-student ratio in engineering institutions by discipline for the year 2004 is derived and presented in tables 2.1A and 2.1B. The information about student enrolment and strength of staff is gathered through institutional survey. It is found that at degree level only 224 technical teachers were in position against the total sanctioned post 316, i.e,. 29% teaching post were lying vacant during the year 2004. At diploma level 182 technical teachers were in position against the 296 sanctioned post. The teacher student ratio in degree level was 1:15, which means there was one teacher for every 15 student at degree level. At diploma level the teacher student ratio was 1:20. At degree level, this figure for Computer Science department was worst where there was one teacher for every 31 students.

2.2 DISTRIBUTION OF TEACHERS BY QUALIFICATIONS

All technical teachers in the technical institutions of Assam are distributed according to their highest qualification and presented in tables 2.2A and 2.2B. From the tables it is revealed that out of 224 total teaching staff in Engineering Colleges 54%, 36% and 10% were Ph.D, post-graduate and graduate

respectively. During the year 2004 in Polytechnics out of total 182 teachers, 0.5%, 54% and 45.5% were Ph.D, post-graduate and graduate respectively.

2.3 SUMMERY OF FACILITIES FOR TECHNICAL EDUCATION IN THE STATE OF ASSAM

The summary of facilities for technical education in the state of Assam is presented in table 2.3. From the table it is clear that there was no major change in technical education scenario during the last fourteen years.

2.4 CONCLUSION

Analyzing the faculty structure it is observed that there is huge shortage of faculty at both degree and diploma levels. The reason for the shortage may be noted as;

- Most of the technical degree holders are willing to seek employment in Multinational companies, Public and Private sectors organizations for better facilities rather than joining in Educational Institutions.
- Due to the recent recession and financial condition of the state, the vacant posts are not being filled up.

Table 2.1A

Actual and Sanctioned Strength of Teaching Staff and Teacher Student Ratio in Engineering Colleges by Discipline (2004)

S.No	Discipline	Teaching Staff		% A/S	Enrollment	Teacher Student Raio
		Actual	Sanctioned			
1	B. Design	8	8	100.0	68	1:8.5
2	Chemical Engg	18	21	85.7	186	1: 10.3
3	Civil Engineering	57	75	76.0	674	1: 11.8
4	Computer Science	16	39	41.0	492	1: 30.8
5	E&T Engineering	26	35	74.3	472	1: 18.2
6	Electrical Engg.	37	58	63.8	571	1: 15.4
7	Industrial & Prod	0	0	-	27	-
8	Instrumentation Engg	0	0	-	150	-
9	Mechanical Engg	62	80	77.5	817	1:13.2
	Total	224	316	70.9	3457	1:15.4

Table 2.1B
Actual and Sanctioned Strength of Teaching Staff and Teacher-Student Ratio in Polytechnics by Discipline (2004)

S.No	Discipline	Teaching Staff		% A/S	Enrollment	Teacher Student Raio
		Actual	Sanctioned			
1	Agricultural Engg	3	3	100.0	61	1: 20.3
2	Architectural Asst	4	12	33.3	80	1: 20.0
3	Automobile Engg	6	14	42.9	122	1: 20.3
4	Chemical Engg	4	6	66.7	141	1: 35.3
5	Civil Engineering	51	84	60.7	1262	1: 24.7
6	Computer Engineering	9	10	90.0	203	1: 22.6
7	E&T Engineering	14	18	77.8	349	1: 24.9
8	Electrical Engg.	27	51	72.5	511	1: 13.8
9	Handloom Tech.	2	8	25.0	89	1: 44.5
10	Instrumentation Engg	2	4	50.0	85	1: 42.5
11	Mechanical Engg	39	60	65.0	542	1: 13.9
12	Modern office Mgmnt	0	0		50	-
13	Textile Chemistry	2	7	28.6	38	1: 19.0
14	Textile Technology	19	19	100.0	66	1: 3.5
	Total	182	296	61.5	3599	1:19.8

Table 2.2A

Distribution of Teachers in Engineering Colleges by Highest Educational Qualification,

Gender and Discipline (2004)

S.No.	Discipline	Ph.D			Post Graduate			Graduate			Others			Total		
		M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
1	B. Design	2	0	2	4	0	4	2	0	2	0	0	0	8	0	8
2	Chemical Engg	11	0	11	4	3	7	0	0	0	0	0	0	15	3	18
3	Civil Engineering	30	2	32	17	2	19	6	0	6	0	0	0	53	4	57
4	Computer Science	9	0	9	4	1	5	2	0	2	0	0	0	15	1	16
5	E&T Engineering	14	1	15	6	3	9	2	0	2	0	0	0	22	4	26
6	Electrical Engg.	11	1	12	13	5	18	5	2	7	0	0	0	29	8	37
7	Industrial & Prod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Instrumentation Engg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Mechanical Engg	38	1	39	17	1	18	5	0	5	0	0	0	60	2	62
Total		115	5	120	65	15	80	22	2	24	0	0	0	202	22	224

M=Male, F=Female

Table 2.2B
Distribution of Teachers in Polytechnics by Highest Educational Qualification,
Gender and Discipline (2004)

S.No.	Discipline	Ph.D			Post Graduate			Graduate			Others			Total		
		M	F	Total	M	F	Total	M	F	Total	M	F	Total	M	F	Total
1	Agricultural Engg	0	0	0	0	1	1	2	0	2	0	0	0	2	1	3
2	Architectural Asst	0	0	0	1	0	1	1	2	3	0	0	0	2	2	4
3	Automobile Engg	0	0	0	1	0	1	5	0	5	0	0	0	6	0	6
4	Chemical Engg	0	0	0	0	1	1	2	1	3	0	0	0	2	2	4
5	Civil Engineering	1	0	1	25	5	30	16	4	20	0	0	0	42	9	51
6	Computer Engg	0	0	0	2	3	5	2	2	4	0	0	0	4	5	9
7	E&T Engineering	0	0	0	3	1	4	9	1	10	0	0	0	12	2	14
8	Electrical Engg.	0	0	0	9	4	13	12	2	14	0	0	0	21	6	27
9	Handloom Tech.	0	0	0	0	0	0	2	0	2	0	0	0	2	0	2
10	Instrumentation Engg	0	0	0	0	0	0	2	0	2	0	0	0	2	0	2
11	Mechanical Engg	0	0	0	21	4	25	13	1	14	0	0	0	34	5	39
12	Modern office Mgmnt	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	Textile Chemistry	0	0	0	0	1	1	0	1	1	0	0	0	0	2	2
14	Textile Technology	0	0	0	17	0	17	2	0	2	0	0	0	19	0	19
Total		1	0	1	79	20	99	68	14	82	0	0	0	148	34	182

M=Male, F=Female

Table 2.3

Summery of Facilities for Technical Education in the State of Assam

S No.	Parameters	1990	1995	2000	2005
1	Total No of Degree Institutions	3	4	4	4
2	Total No of Diploma Institutions	9	9	10	10
3	Sanction Intake in Degree level	645	745	858	1002
4	Sanction Intake in Diploma level	1170	1170	1205	1265
5	Actual Intake in Degree level	645	726	823	928
6	Actual Intake in Diploma level	1089	579	1039	1248
7	Outturn in Degree level	541	447	538	688
8	Outturn in Diploma level	812	420	290	608

CHAPTER III

MIGRATION ASSOCIATED WITH EDUCATION AND EMPLOYMENT

3.0 INTRODUCTION

The migration of technical manpower for education and employment from the state of Assam occur due to the mismatch between the education facilities and job opportunities. For better opportunities and non availability of the desired field of technical education, student moves to outside the state for educational purpose. Also for better and satisfying job opportunities technical manpower of the state migrates to other states and even to abroad.

Hence migrations for engineering manpower from one state to another for educational and employment purpose has an important role on the planning of technical education in the country as the demand and the supply position in the state depends on the number of technical manpower available for employment.

The migration occurs due to the following reasons:

- Students migrate for educational purpose because of the inadequacy or non-availability of certain courses in their native states.
- Qualified technical degree holders migrate for better employment opportunity.

3.1 COLLECTION OF DATA

The information of migration associated with education and employment are collected through the students' follow-up survey. The number of migrants from other states in the outturn can be found from the permanent addresses. The numbers of migrants who are residents of the state but obtained educational qualification in other states are gathered through respective Nodal Centers. Migration for employment can be found from students' follow-up questionnaire.

3.2 MIGRATION FOR EDUCATION

Tables 3.1A to 3.1B show the distribution of migrants for educational purpose for the batch year 2003. At degree level, a total of 226 students belonging to other states in the country came to Assam for education and 111 students of Assam went outside the state to obtain their degree. Some of the students went to study subjects which are not available in their own state. At diploma level 35 students came to Assam to get diploma in various disciplines. 34 students went outside the state to obtain diploma. The most popular

discipline at diploma level offered by the state of Assam is Handloom Technology where 72% (18 out of 25) of the outturn came from outside the state.

3.3 MIGRATION FOR EMPLOYMENT

The information regarding the place of employment gives the data about the migration for employment. These data are collected through graduate follow-up survey. The statistics are furnished in tables 3.2A to 3.2B.

At degree level, out of 627 employed graduates only 136 (22%) were employed within the state, 483 (77%) outside the state and 8 (1%) were employed abroad.

At diploma level out of 215 employed diploma holders 151 (70%) were employed within the state, 64 (30%) employed outside the state but within the country. None went abroad for employment.

3.4 AREA OF RESIDENCE

Distribution of engineering degree, diploma and post-graduate by area of residence for the batch year 2003 are furnished in the tables 3.3A –3.3B.

Out of 808 total graduate engineers 658(81%) were from urban area and 150(19%) from rural area. Out of 578 total diploma engineers 209(36%) were from urban area and 369(64%) from rural area.

3.5 CONCLUSION

A few conclusions can be made from the migration data:

(a) Looking at the migration due to education for last five year (1999-2003 ref the ATMR) the percentage of inward migration from other state to the state of Assam is as follows:

Years	Degree	Diploma
1999	34%	11%
2000	32%	13%
2001	32%	5%
2002	36%	8%
2003	28%	6%

It is seen that at degree level proportion of migrants coming to Assam are more than the Diploma level.

(b) The employment pattern of the technical manpower during the last five years is as follows:

Batch year	Degree (% of number employed):			Diploma (% of number employed):		
	Within the State	Other State	Abroad	Within the State	Other State	Abroad
1999	21%	77%	2%	68%	32%	-
2000	23%	77%	-	63%	37%	-
2001	31.8%	65.9%	2.3%	81.6%	18.4%	-
2002	23%	76%	1%	62%	38%	-
2003	22%	77%	1%	70%	30%	-

Although most of diploma holders seek employment within the state, a few number of diploma holders were going outside the state for employment. At degree level also prospects of outside employment seems to be better as more and more technical manpower went outside the state for employment.

Table 3.1A

Distribution of Migrants in total Outturn of Degree Courses by discipline-2003 Batch

S.No	Discipline	Total Outturn	Migrants		Addition to the net Outturn	Net Outurn
			From other States	To Other States**		
1	Arch Engineering	0	0	4	4	4
2	Chemical Engg	52	1	1	0	52
3	Civil Engineering	103	37	11	-26	77
4	Computer Science	123	52	23	-29	94
5	E&T Engineering	128	51	18	-33	95
6	Electrical Engg.	117	21	10	-11	106
7	Instrumentation Engg	44	1	0	-1	43
8	Mechanical Engg	224	54	26	-28	196
9	Production	8	0	3	3	11
10	Design	9	9	0	-9	0
11	Et&Communication	0	0	4	4	4
12	Industrial Engineering	0	0	1	1	1
13	Metallurgy	0	0	2	2	2
14	Electrical & Electronics	0	0	1	1	1
15	Textile Technology	0	0	1	1	1
17	Instrumentation Electr.	0	0	1	1	1
18	Agri Engineering	0	0	1	1	1
19	Power Engineering	0	0	2	2	2
20	Applied Chemistry	0	0	2	2	2
Total		808	226	111	-115	693

**** Data received from all Nodal Centres except Uttar Pradesh, Tamil Nadu and Rajasthan.**

Table 3.1B
Distribution of Migrants in total Outturn of Diploma Courses by discipline-2003 Batch

S.No	Discipline	Total Outturn	Migrants		Addition to the net Outturn	Net Outurn
			From other States	To Other States**		
1	Architectural Asst	7	1	0	-1	6
2	Automobile Engg	21	0	0	0	21
3	Chemical Engg	24	0	0	0	24
4	Civil Engineering	136	13	1	-12	124
5	Computer Engineering	40	0	2	2	42
6	E&T Engineering	89	3	11	8	97
7	Electrical Engg.	87	0	7	7	94
8	Handloom Tech.	25	18	0	-18	7
9	Instrumentation Engg	15	0	0	0	15
10	Mechanical Engg	98	0	3	3	101
11	CDDM	0	0	1	1	1
12	MOM	20	0	0	0	20
13	Sound & T.V	0	0	2	2	2
14	Textile Chemistry	0	0	0	0	0
15	Textile Technology	16	0	0	0	16
16	Interior Decoration	0	0	1	1	1
17	Printing Technology	0	0	6	6	6
Total		578	35	34	-1	577

**** Data received from all Nodal Centres except Uttar Pradesh, Tamil Nadu and Rajasthan.**

Table 3.2A
Distribution of Employed Degree Holders by Place of Work and Discipline –2003 Batch

S.No	Discipline	Within the State		Outside the State		Abroad		Total
		No	%	No	%	No	%	
1	Chemical Engg	11	45.8	13	54.2	0	0.0	24
2	Civil Engineering	42	50.0	38	45.2	4	4.8	84
3	Computer Science	7	6.1	107	93.9	0	0.0	114
4	E&T Engineering	14	12.1	102	87.9	0	0.0	116
5	Electrical Engg.	26	30.2	60	69.8	0	0.0	86
6	Instrumentation Engg	13	46.4	15	53.6	0	0.0	28
7	Mechanical Engg	22	13.6	138	85.2	2	1.2	162
8	Production	1	25.0	3	75.0	0	0.0	4
9	Design	0	0.0	7	77.8	2	22.2	9
Total		136	21.7	483	77.0	8	1.3	627

Table 3.2B

Distribution of Employed Diploma Holders by Place of Work and Discipline -2003 Batch

S.No	Discipline	Within the State		Outside the State		Abroad		Total
		No	%	No	%	No	%	
1	Automobile Engg.	4	66.7	2	0	0	0	6
2	Architectural Asst	5	100.0	0	0.0	0	0.0	5
3	Chemical Engg	3	60.0	2	40.0	0	0.0	5
4	Civil Engineering	34	72.3	13	27.7	0	0.0	47
5	Computer Engineering	7	77.8	2	22.2	0	0.0	9
6	E&T Engineering	18	66.7	9	33.3	0	0.0	27
7	Electrical Engg.	31	91.2	3	8.8	0	0.0	34
8	Handloom Tech.	0	0.0	20	100.0	0	0.0	20
9	Instrumentation Engg	10	100.0	0	0.0	0	0.0	10
10	Mechanical Engg	34	79.1	9	20.9	0	0.0	43
11	Textile Technology	0	0.0	4	100.0	0	0.0	4
12	MOM	5	100.0	0	0.0	0	0.0	5
Total	Total	151	70.2	64	29.8	0	0.0	215

Table 3.3A
Distribution of Degree Holders by Area of Residence and Discipline -2003 Batch

S.No	Discipline	Urban Area	Rural Area	Total	Ratio of Urban to Rural
1	Chemical Engg	41	11	52	1:0.27
2	Civil Engineering	76	27	103	1:0.36
3	Computer Science	105	18	123	1:0.17
4	E&T Engineering	105	23	128	1:0.22
5	Electrical Engg.	100	17	117	1:0.17
6	Instrumentation Engg	41	3	44	1:0.07
7	Mechanical Engg	175	49	224	1:0.28
8	Production	6	2	8	1:0.33
9	Design	9	0	9	1:0.0
Total		658	150	808	1:0.22
Percentage		81.4	18.6	100	

Table 3.3B

Distribution of Diploma Holders by Area of Residence and Discipline -2003 Batch

S.No	Discipline	Urban Area	Rural Area	Total	Ratio of Urban to Rural
1	Architectural Asst	5	2	7	1:4
2	Automobile Engg	10	11	21	1:1
3	Chemical Engg	9	15	24	1:1.66
4	Civil Engineering	53	83	136	1:1.56
5	Computer Engineering	16	24	40	1:1.5
6	E&T Engineering	23	66	89	1:2.87
7	Electrical Engg.	39	48	87	1:1.23
8	Handloom Tech.	5	20	25	1:4
9	Instrumentation Engg	0	15	15	0
10	Mechanical Engg	34	64	98	1:1.88
11	Modern office Mgmnt	7	13	20	1:1.86
12	Textile Technology	8	8	16	1:1
Total		209	369	578	1.:1.77
Percentage		36.2	63.8	100	

CHAPTER IV
ANALYSIS OF ENGINEERING LABOUR MARKET

4.0 INTRODUCTION

The different aspects of engineering labour market is analysed under two headings such as **"Flow Dimension"** and **"Stock Dimension".** The analysis comes under the heading **"Flow Dimension "** are based on the students' follow-up survey for the batch year 2003. The analysis of engineering labour market based on establishment survey done by the BOPT, Kolkata comes under the heading **"Stock Dimension"**.

4.1 FLOW DIMENSION

4.1.1 DATA COLLECTION

The different aspect of "Flow Dimension" is to know the status of the technical manpower, the activity after two years from result declaration, occupation and emoluments of employed technical personals are discussed in this chapter. This information is gathered through the students' follow-up questionnaire.

4.1.2 ACTIVITY STATUS

The activity status of engineering degree, diploma and post-graduate holders from two years from result declaration for the batch year 2003 is presented in tables 4.1A and 4.1B. The activities are broadly divided into the following categories:

1. Paid employment in (a) India or (b) Abroad
2. Self- employment in Family/ Own enterprises.
3. Studying in (a) India or (b) Abroad
4. Undergoing Apprenticeship training,
5. Unemployed
6. Other activities

At degree level, out of 808 passed out student 78% were employed, 9% unemployed, 9% were studying, 1% were self-employed and rest 3% were undergoing apprenticeship training , having other activities or received appointment. At diploma level, out of 578 passed out student 37% were employed, 42% were unemployed, 10% were engaged in higher study and 10% were undergoing apprenticeship training and remaining 1% were self employed and having other activities.

4.1.3 OCCUPATIONS

The information regarding the occupation of employed engineers are given in tables 4.2A & 4.2B. At degree level, out of 627 employed graduates, 618 (99%) were engaged in engineering activities, and rest 9 (1%) were engaged in other non engineering activities.

Out of 215 employed diploma holders, 194 (90.2%) were engaged in engineering activities and 21(9.8%) were engaged in other non-engineering activities.

4.1.4 MONTHLY EMOLUMENTS

The salary structure in terms of average monthly wages and time taken for first employment for 2003 batch are given in tables 4.3A & 4.3B.

At degree level, Design degree holders were earning the highest average salary of Rs. 24333.50 per month whereas Instrumentation Engineering degree holders were paid the lowest average salary of Rs.7083.29 per month.

At diploma level, Textile Technology diploma holders were paid the highest average salary of Rs.7000 per month. The Instrumentation Engineering diploma holders were paid the least average salary Rs. 1950.00 per month.

4.2 STOCK DIMENSION 2004-05

The analysis of data relating to the size of employment in various main activities and provides the characteristics of employment, types of functions they performed etc has been done by the BOPT, Kolkata. They sent the establishment questionnaires to different organisation both governments, private and public sectors who employ the technical manpower. The questionnaires are specially designed to have all information regarding employment of technical personnel. Questionnaires with replies when received at BOPT, data were analysed and specified in tabulated forms. These tabulated data are then sent to respective Nodal Centre in order to enable them to include those in their final report. In the year 2004-05 altogether 35 numbers of establishments were responded (Table No. 4.4).

Based on the establishment survey (2004-2005) conducted by the Board of Practical Training, Kolkata the analysis regarding the stock dimension has been presented. The analysis is done with respect to the following main activities.

1. Manufacturing & Processing
2. Electricity, Gas & Water
3. Research & Development
4. Transportation
5. Mining
6. Administration
7. Construction
8. Others.

Also, the analysis has been conducted with respect to the following sectors of employment-

1. Central Govt. Undertaking s
2. State Govt. Departments
3. State Govt. undertakings
4. Public Ltd. Co.
5. Private Ltd. Co.
6. Other form of Organisations.
7. Co-op Society

4.2.2 DISTRIBUTION OF ENGINEERS:

The data collected from the establishment covered in the survey in respect of employment characteristic of engineers working there in are analysed in two categories.

(i) Analysis with respect to main activity

(ii) Analysis with respect to sector of employment

Table 4.5 provides distribution of employed engineers by main activity and level of education. From the table it is revealed that activities of maximum number of engineers were in construction work. Out of 4030 total engineers, 3.03% were post graduate, 43.75% graduate and 53.23% were diploma.

Table 4.6 provides distribution of employed engineers by sector and level of education. Out of 4030-employed technical manpower State Govt was absorbed 2712 numbers.

Distribution of employed engineers by main activates and disciplines are presented in tables 4.7A – 4.7C.

From the table 4.7A, it is seen that 39% graduates were employed in Construction followed by Electricity Gas etc (26.9%), Manufacturing (25.2%), others(3.2%), Mining (3.1%) and remaining activities like Administration, Research & Dev.

In table 4.7B, it is seen that, most of the diploma holders were employed in Construction (40.3%) followed by Electricity, Gas etc (34.6%), Manufacturing & processing (14.5%), Mining (6.7%), and Transportation, Administration, Research &Dev and other activity (3.7%)

Table 4.7C gives data regarding the postgraduate holders. Most of the postgraduate holders were employed in Manufacturing & Processing (36.9%) followed by Electricity, Gas etc and R&D (13.9%) each, Construction (12.3%) and mining (0.8%).

Similar survey has been done with respect to the different sector of establishments. This analysis is presented in table 4.8A, table 4.8B and table 4.8C.

From the table 4.8A, it is seen that most of the graduate engineers were employed in state govt. department (64.6%) followed by central govt. undertakings(27.1%) , State Govt. undertaking (5.9%), Private sector(1.4) and other sectors (0.9%).

From the table 4.8B, it is seen that most of the diploma engineers were employed in state govt. department (70.7%) followed by central govt. undertakings(20.0%) , State Govt. Undertaking(6.3%), Private Sector(1.6%) and other sectors (1.1%).

From the table 4.8C, it is seen that most of the postgraduate holders were employed in state govt department (46.7%) followed by Central Govt Undertaking (36.9%), other (19.2%) , state govt undertaking (2.4%) and co-op society (1.2%).

4.2.3 DISTRIBUTION OF WORKERS BY NATURE OF APPOINTMENTS

(a) WITH RESPECT OF MAIN ACTIVITY

Estimates of total engineers among the total employment and main activities were tabulated in table 4.9. From the table it is revealed that out of 72916 total employments, 4030 numbers were engineer and ratio of engineers to total employed was 1:0.06

Estimates of total engineers among the total employment by sector of employment were tabulated in table 4.10. From the table it is revealed that total employed was highest in state govt department (23711).

Distribution of total employment by main activity, sex and nature of appointment are analysed and tabulated in table 4.11. The nature of jobs is divided into two categories, regular and ad-hoc.

From table 4.11 it is seen that out of 58158 male workers, 55590(96%) were employed on regular basis and 2568(4%) were on ad-hoc basis. Out of 14758 female workers, 10534(71%) were employed on regular basis and 4224(29%) on ad-hoc basis.

(b) WITH RESPECT TO THE SECTOR OF EMPLOYMENT

The distribution of workers by sector of employment, sex and nature of appointment are given in table 4.12. Most of the regular male workers were employed in state government departments (39%) and most of the female regular workers were employed in private sectors (74%) .

4.2 CONCLUSION

Both at degree and diploma levels absorption rate for the batch year 2003 are better than the previous years.

Table 4.1A Distribution of Engineering Degree Holders from two years from result declaration -2003Batch

S.No	Discipline	Paid Job in		Self	Unemployed and interested in self employment	Studying in		Apprentice	Unemployed		Received	Other	Total
		India	Abroad	Employed in Family/Own Enterprises		India	Abroad		Looking for job	Not Looking	Appoint	Activity	
1	Chemical Engg	24	0	0	0	11	0	2	13	0	0	2	52
2	Civil Engineering	80	4	2	0	2	6	0	9	0	0	0	103
3	Computer Science	114	0	0	0	2	0	0	2	0	0	5	123
4	E&T Engineering	116	0	3	0	6	0	0	3	0	0	0	128
5	Electrical Engg.	86	0	0	0	9	0	0	19	0	3	0	117
6	Instrumentation Eng	28	0	0	0	5	3	0	5	0	3	0	44
7	Mechanical Engg	160	2	4	0	29	0	0	23	0	0	6	224
8	Production	4	0	0	0	1	1	0	2	0	0	0	8
9	Design	7	2	0	0	0	0	0	0	0	0	0	9
Total		619	8	9	0	65	10	2	76	0	6	13	808
Percentage		76.6	1.0	1.1	0.0	8.0	1.2	0.2	9.4	0.0	0.7	1.6	

Table 4.1BDistribution of Engineering Diploma Holders from two years from result declaration -2003 Batch

S.No	Discipline	Paid Job in		Self	Unemployed and interested in self employment	Studying in		Apprentice	Unemployed		Received	Other	Total
		India	Abroad	Employed in Family/Own Enterprises		India	Abroad		Looking for job	Not Looking	Appoint	Activity	
1	Architectural Asst	5	0	0	0	0	0	0	2	0	0	0	7
2	Automobile Engineering	6	0	0	0	0	0	0	15	0	0	0	21
3	Chemical Engg	5	0	0	0	5	0	3	11	0	0	0	24
4	Civil Engineering	47	0	2	0	8	0	17	58	0	0	4	136
5	Computer Engineering	9	0	0	0	16	0	0	15	0	0	0	40
6	E&T Engineering	27	0	0	0	11	0	16	35	0	0	0	89
7	Electrical Engg.	34	0	0	0	9	0	2	42	0	0	0	87
8	Handloom Tech.	20	0	0	0	0	0	0	5	0	0	0	25
9	Instrumentation Engg	10	0	0	0	0	0	5	0	0	0	0	15
10	Mechanical Engg	43	0	0	0	5	0	14	36	0	0	0	98
11	Modern office Mgmnt	5	0	0	0	0	0	0	15	0	0	0	20
13	Textile Technology	4	0	0	0	2	0	0	10	0	0	0	16
Total		215	0	2	0	56	0	57	244	0	0	4	578
Percentage		37.2	0.0	0.3	0.0	9.7	0.0	9.9	42.2	0.0		0.7	

Table 4.2A: Distribution of Engineering Degree Holders Occupation from two years from result

S.No.	Discipline	Engineering	Civil Services	Business Administration	Other Non-Engineering	Total
1	Chemical Engg	24	0	0	0	24
2	Civil Engineering	78	0	0	6	84
3	Computer Science	114	0	0	0	114
4	E&T Engineering	116	0	0	0	116
5	Electrical Engg.	83	0	0	3	86
6	Instrumentation Engg	28	0	0	0	28
7	Mechanical Engg	162	0	0	0	162
8	Production	4	0	0	0	4
9	Design	9	0	0	0	9
Total		618	0	0	9	627
Percentage		98.6	0.0	0.0	1.4	

Table 4.2B:Distribution of Engineering Diploma Holders Occupation from two years from result

S.No.	Discipline	Engineering	Civil Services	Business Administration	Other Non-Engineering	Total
1	Architectural Asst	5	0	0	0	5
2	Automobile Engg	6	0	0	0	6
3	Chemical Engg	5	0	0	0	5
4	Civil Engineering	43	0	0	4	47
5	Computer Engineering	2	0	0	7	9
6	E&T Engineering	25	0	0	2	27
7	Electrical Engg.	34	0	0	0	34
8	Handloom Tech.	20	0	0	0	20
9	Instrumentation Engg	5	0	0	5	10
10	Mechanical Engg	43	0	0	0	43
11	Modern office Mgmnt	2	0	0	3	5
12	Textile Technology	4	0	0	0	4
Total		194	0	0	21	215
Percentage		90.2	0.0	0.0	9.8	

Table 4.3A

Average Monthly Emoluments (in Rupees) of Employed Degree Holders Time taken for First Employment by Discipline- 2003 Batch

S.No	Disciplines	<=3 months	4 to 6 months	7 to 9 months	10 to 12 months	13 to 15 months	16 to 18 months	19 to 21 months	22 to 24 months	Overall Average
1	Chemical Engg	12000	14333	13550	9100	0	0	10950	14250	12363.8
2	Civil Engineering	13000	10000	11333	0	12000	13800	10500	10020	11521.9
3	Computer Science	21467	16833	23950	16000	0	17160	12000	33662	20153.1
4	E&T Engineering	20790	19125	13500	22875	0	0	0	16167	18491.4
5	Electrical Engg.	9727	15862	14750	19450	6000	8000	14400	17000	13148.6
6	Instrumentation Engg	9333	9000	7750	7000	2000	0	6500	8000	7083.29
7	Mechanical Engg	17353	13636	14357	19787	24667	0	9000	24041	17548.7
8	Production	17500	15000	15000	0	0	0	0	0	15833.3
9	Design	18000	0	30667	0	0	0	0	0	24333.5

Table 4.3B

Average Monthly Emoluments (in Rupees) of Employed Diploma Holders Time taken for First Employment by Discipline- 2003 Batch

S.No	Disciplines	<=3 months	4 to 6 months	7 to 9 months	10 to 12 months	13 to 15 months	16 to 18 months	19 to 21 months	22 to 24 months	Overall Average
1	Architectural Asst	0	0	2000	0	2500	0	0	0	2250
2	Automobile Engg	6000	3500	0	0	0	0	0	3500	4333.33
3	Chemical Engg	0	3500	0	0	0	2800	0	2700	3000
4	Civil Engineering	4500	2500	0	6250	0	10000	5800	0	5810
5	Computer Engg	3000	0	0	0	7790	0	5500	6000	5572.5
6	E&T Engineering	2600	5331	2800	2500	4000	5000	0	4750	3854.43
7	Electrical Engg.	2750	3000	2750	6000	0	2625	3678	3143	3420.86
8	Handloom Tech.	7500	0	2500	5000	0	0	0	0	5000
9	Instrumentation Eng	0	0	0	0	0	0	0	1950	1950
10	Mechanical Engg	3500	3800	4583	1600	1550	3833	2467	4400	3216.63
11	Modern office Mgmnt	2000	3000	0	0	0	0	0	0	2500
12	Textile Technology	0	8000	0	6000	0	0	0	0	7000

Table 4.4
Distributions of Establishments by Main Activity &Sector of Employment

Main Activity	Central Govt.	State Govt.	Public Sector		Private Sector	Co-op Society	Other	Total
			Central	State				
Mining	-	-	2		-	-	-	2
Manufacturing	-	-	6	1	9	-	-	16
Construction	-	1	-	1	-	-	-	2
Transportation	-	-	-	1	-	-	-	1
Electricity & Water	-	1	-	2	-	-	-	3
Administration	-	1	-	-	-	-	-	1
Research & Dev	-	-	-	-	-	1	1	2
Other Services	2	1	-	1	2	-	1	8
Total	2	5	8	6	11	1	2	35
Percentage	5.7	14.2	22.9	17.1	31.4	2.9	5.7	100

Table 4.5
Distributions of Employed Engineers by Main Activity and Level of Education

Main Activity	Post-graduate (P)		Graduate (G)		Diploma Holders(D)		Total	Ratio of P:G:D
	No	%	No	%	No	%		
Mining & Quarrying	1	0.50	55	27.64	143	71.86	**199**	1:55:143
Manfg/Processing	45	5.62	444	55.43	312	38.95	**801**	1:9.8:6.3
Construction	15	0.96	688	43.88	865	55.17	**1568**	1:45.9:57.9
Transportation			10	47.62	11	52.38	**21**	-
Electricity, Gas etc	17	1.38	475	38.46	743	60.16	**1235**	1:27.9:43.7
Research & Dev	17	26.56	17	26.56	30	46.88	**64**	1:1:1.8
Administration			15	100.00			**15**	-
Other Services	27	21.26	59	46.46	41	32.28	**127**	1:2.2:1.5
Total	**122**	**3.03**	**1763**	**43.75**	**2145**	**53.23**	**4030**	1:14.5:17.6

Table 4.6
Distributions of Employed Engineers by Sector of Employment and level of Education

Main Sector	Post-graduate (P)		Graduate (G)		Diploma Holders(D)		Total	Ratio of P:G:D
	No	%	No	%	No	%		
Central Govt Dept	-	-	-	-	-	-	-	-
State Govt Dept	57	2.10	1139	42.00	1516	55.90	**2712**	1:19.9:26.5
Pub Sec (Central)	45	4.72	478	50.16	430	45.12	**953**	1:10.6:9.3
Pub Sec (State)	3	1.23	105	43.21	135	55.56	**243**	1:35.0:45.0
Pvt Sector	-	-	24	41.38	34	58.62	**58**	-
Co-operative Soc	1	12.50	-	-	7	87.50	**8**	1:0:7.0
Others	16	28.57	17	30.36	23	41.07	**56**	1:1.1:1.4
Total	**122**	**3.03**	**1763**	**43.75**	**2145**	**53.23**	**4030**	1:14.5:17.6

Table 4.7A
Distribution of Employed Graduate Engineers by Main Activities and Discipline

Discipline	Mining	Manufacturing	Construction	Transportation	Electricity & Gas Education	Administration	Research & Development	Others	Total
AMIE	-	7	-	-	-	-	-	1	8
Architecture	1	-	-	-	-	-	-	-	1
Chemical	-	167	-	-	21	-	4	7	199
Civil Engg	4	18	-	-	333	-	1	5	875
Comp. Sc.	1	8	514	-	6	-	-	-	15
Electrical Engg	6	45	-	-	3	-	-	12	121
Electronics		15	55	-	-	-	-	-	15
Geology	1	-	-	-	-	-	-	-	1
Handloom	-	-	-	-	-	-	1	-	1
Hotel Management	-	-	-	-	-	-	-	2	2
Instrumentation	-	15	-	-	-	-	-		15
Leather Tech	-	-	-	-	-	-	-	1	1
Mechanical Engg	3	142	119	10	112	15	3	24	428
Metallurgy	-	-	-	-	-	-	-	2	2
Mining	38	2	-	-	-	-		-	40
Other	-	1	-	-	-	-	8	-	9
Pharmacy	-		-	-	-	-	-	3	3
Plastic	-		-	-	-	-	-	1	1
Production	-	4	-	-	-	-	-	1	5
Telecomn	1		-	-	-	-	-	-	1
Textile	-	20	-	-	-	-	-	-	20
Total	55	444	688	10	475	15	17	59	1763
Percentage	3.1	25.2	39.0	0.6	26.9	0.9	0.96	3.2	100

Table 4.7B
Distribution of Employed Diploma Engineers by Main Activities and Discipline

Discipline	Mining	Manufacturing	Construction	Transportation	Electricity & Gas Education	Administration	Research & Development	Others	Total
Architecture	-	-	-	-	-	-	-	1	1
Automobile	1	2	-	-	1	-	-	-	4
BOE	-	12	-	-	-	-	-	-	12
Chemical	-	113	-	-	20	-	-	3	136
Civil Engg	34	28	678		700		5	27	1472
Comp. Sc.	-	7	-	-	3		-	-	10
Electrical Engg	69	47	54	-	-	-	8	-	178
Electronics	8	2	-	-	-	-	-	-	10
Handloom	-	-	-	-	-	-	5	-	5
Hotel Management	-	-	-	-	-	-	-	6	6
Instrumentation	6	9	-	-	-	-	-		15
Mechanical Engg	15	45	133	11	19		2	1	226
Mining	8	1	-	-	-	-	-	-	9
Other	-	-	-	-	-	-	9	3	12
Pharmacy	-	6	-	-	-	-	-	-	6
Printing	-		-	-	-	-	1	-	1
Production	-	15	-	-	-	-	-	-	15
Safety	-	3	-	-	-	-	-	-	3
Survey	2	-	-	-	-	-	-	-	2
Textile	-	22	-	-	-	-	-	-	22
Total	143	312	865	11	743	-	30	41	2145
Percentage	6.7	14.5	40.3	0.5	34.6	-	1.3	1.9	

Table 4.7C

Distribution of Employed Post Graduate Engineers by Main Activities and Discipline

Discipline	Mining	Manufacturing	Construction	Transportation	Electricity & Gas Education	Administration	Research & Development	Others	Total
Chemical	-	30		-		-	6	2	38
Civil Engg	-	3	15	-	15	-	-	2	35
Comp. Sc.	-	3	-	-	2	-	-	-	5
Electrical Engg	-	1	-	-	-	-	-	4	5
Geology	1	-	-	-	-	-	-	-	1
MCA	-	-	-	-	-	-	1	-	1
Mechanical Engg	-	2	-	-		-	2	16	20
Other	-	-	-	-	-	-	8	3	11
Textile	-	6	-	-	-	-	-	-	6
Total	1	45	15		17	-	17	27	122
Percentage	0.8	36.9	12.3	-	13.9	-	13.9	22.1	

Table 4.8A

Distribution of Employed Graduate Engineers by Sector and Discipline

Discipline	Central Govt	State Govt	Public Sector		Private Sector	Other	Total
			Central	State			
AMIE	-	-	7	1	-	-	**8**
ARCHITECTURE	-	-	1	-	-	-	**1**
CHEMICAL	-	22	163	6	4	4	**199**
CIVIL	-	830	21	21	2	1	**875**
COMPUTER SC	-		9	6	-	-	**15**
ELECTRICAL	-	59	49	11	2	-	**121**
ELECTRONICS	-	-	15			-	**15**
GEOLOGY	-	-	1	-	-	-	**1**
HANDLOOM	-	-	-	-	-	1	**1**
HOTEL MANGMNT	-	-	-	-	2	-	**2**
INSTRUMENTATION	-	-	14		1	-	**15**
LEATHER	-	-	-	1	-	-	**1**
MECHANICAL	-	225	134	55	11	3	**428**
METALLURGY	-	-	-	2	-	-	**2**
MINING	-	-	40	-	-	-	**40**
OTHERS	-	-	1	-	-	8	**9**
PHARMACY	-	3		-	-	-	**3**
PLASTIC	-	-		1	-	-	**1**
PRODUCTION	-	-	2	1	2	-	**5**
TELECOM	-	-	1	-	-	-	**1**
TEXTILE	-	-	20	-	-	-	**20**
TOTAL	-	**1139**	**478**	**105**	**24**	**17**	**1763**
Percentage	-	**64.6**	**27.1**	**5.9**	**1.4**	**0.9**	

Table 4.8B

Distribution of Employed Diploma Engineers by Sector and Discipline

Discipline	Central Govt	State Govt	Public	Sector Private		Co-op Society	Other	Total
			Central	State	Sector			
ARCHITECTURE	-	-	-	1	-	-	-	**1**
AUTOMOBILE	-	-	2	1	1	-	-	**4**
BOE	-	-	12			-	-	**12**
CHEMICAL	-	20	112	3	1	-	-	**136**
CIVIL	-	1297	61	105	4	-	5	**1472**
COMPUTER SC	-		5	3	2	-		**10**
ELECTRICAL	-	53	109	1	7	6	2	**178**
ELECTRONICS	-	-	9	-	1	-	-	**10**
HANDLOOM	-	-	-	-		-	5	**5**
HOTEL MANGMENT	-	-	-	-	6	-	-	**6**
INSTRUMENTATION	-	-	15	-		-	-	**15**
MECHANICAL	-	143	51	21	9	-	2	**226**
MINING	-		9	-	-	-	-	**9**
OTHERS	-	3		-	-	-	9	**12**
PHARMACY	-	-	3	-	3	-	-	**6**
PRINTING	-	-		-	-	1	-	**1**
PRODUCTION	-	-	15	-	-	-	-	**15**
SAFETY	-	-	3	-	-	-	-	**3**
SURVEY	-	-	2	-	-	-	-	**2**
TEXTILE	-	-	22	-	-	-	-	**22**
TOTAL	-	**1516**	**430**	**135**	**34**	**7**	**23**	**2145**
Percentage	-	**70.7**	**20.0**	**6.3**	**1.6**	**0.3**	**1.1**	

Table 4.8C

Distribution of Employed Post Graduate Engineers by Sector and Discipline

Discipline	Central Govt	State Govt	Public Sector		Private Sector	Co-op Society	Other	Total
			Central	State				
					-			
CHEMICAL	-	2	30	-	-	-	6	**38**
CIVIL	-	32	2	1	-	-	-	**35**
COMPUTER SC	-	-	3	2	-	-	-	**5**
ELECTRICAL	-	4	1	-	-	-	-	**5**
GEOLOGY	-	-	1	-	-	-	-	**1**
MCA	-	-	-	-	-	1	-	**1**
MECHANICAL	-	16	2	-	-	-	2	**20**
OTHERS	-	3	-	-	-	-	8	**11**
TEXTILE	-	-	6	-	-	-		**6**
TOTAL	-	**57**	**45**	**3**	-	**1**	**16**	**122**
	-	**46.7**	**36.9**	**2.4**	-	**1.2**	**19.2**	

Table 4.9

Estimates of Total Engineers among Total Employed in Employment and Main Activity

Main Activity	Total Employees	Total Engineers	Ratio of Engineers to Total Employees
Mining & Quarrying	10987	199	0.018112
Manfg/Processing	30645	801	0.026138
Construction	13123	1568	0.119485
Tranportation	2813	21	0.007465
Elec, Gas, Water etc	13740	1235	0.089884
Research & Dev	839	64	0.076281
Administration	77	15	0.194805
Other Services	692	127	0.183526
Total	**72916**	**4030**	**0.055269**

Table 4.10
Estimates of Total Engineers out of Total Workers in Employment by Sector of Employment

Sector of Employment	Total Employed	Total Engineers Employed	Ratio of Engineers to Total Employees
Central Govt Dept	39		
State Govt Dept	23711	2712	0.114377
Public Sector(Central)	18998	953	0.050163
Public Sector(State)	6603	243	0.036801
Private Sector	22759	58	0.002548
Co-operative Society	358	8	0.022346
Others	448	56	0.125
Total	**72916**	**4030**	**0.055269**

Table 4.11

Distribution of Total Employed by Main Activity, Sex and nature of Appointment

Main Activity	Regular			Adhoc			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Mining & Quarrying	10476	511	10987	0	0	0	10476	511	**10987**
Manfg/Processing	15764	8183	23947	2498	4200	6698	18262	12383	**30645**
Construction	12574	549	13123	0	0	0	12574	549	**13123**
Tranportation	2704	109	2813	0	0	0	2704	109	**2813**
Elec, Gas, Water etc	12644	1019	13663	59	18	77	12703	1037	**13740**
Research & Dev	750	78	828	8	3	11	758	81	**839**
Administration	70	6	76	1	0	1	71	6	**77**
Other Services	608	79	687	2	3	5	610	82	**692**
Total	**55590**	**10534**	**66124**	**2568**	**4224**	**6792**	**58158**	**14758**	**72916**

Table 4.12

Distribution of Total Employed by Sector, Sex and nature of Appointment

Sector	Regular			Adhoc			Total		
	Male	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
Central Govt Dept	31	8	39	0	0	0	31	8	**39**
State Govt Dept	22565	1145	23710	1	0	1	22566	1145	**23711**
Public Sector(Central)	16961	1272	18233	140	625	765	17101	1897	**18998**
Public Sector(State)	5915	606	6521	61	21	82	5976	627	**6603**
Private Sector	9368	7458	16826	2358	3575	5933	11726	11033	**22759**
Co-operative Society	321	37	358	0	0	0	321	37	**358**
Others	429	8	437	8	3	11	437	11	**448**
Total	**55590**	**10534**	**66124**	**2568**	**4224**	**6792**	**58158**	**14758**	**72916**

CHAPTER FIVE

FURTHER ANALYSIS OF ENGINEERING LABOUR MARKET

5.0 INTRODUCTION

The. The analysis of different aspects of engineering labour market for the state of Assam are discussed in this chapter which is based on the data received from graduate follow –up survey. The main focus of the chapter is to find the absorption pattern of the engineering labour market and also the estimation of unemployed engineers at the end of 2007.

5.1 SECTOR OF ESTABLISHMENT

The users of technical manpower defined as establishments are mainly categorized as:

1. Central Government	2. State Government	3. Local body
4. Public Sector	5. Private Sector	6. Co-operative Societies
7. Others.		

The distribution of employed engineers according to their employment in various sectors are furnished in tables 5.1A and 5.1B.

At degree level, out of 627 employed engineers, 60% were absorbed in private sectors, 16% in public sectors, 13% in govt. sectors and rest 11% were in local body, cooperative society and other sectors.

Out of 215 employed diploma holders, 60% were absorbed in private sectors, 11% in govt. sectors, 12% in public sectors,and 17% were in local body, cooperative society and other sectors.

5.2 SIZE OF ESTABLISHMENT

For the batch year 2003, sizes of Establishment of employed engineers are presented in tables 5.2A and 5.2B. The establishments are classified as (a) small if the total number of workforce is less than 50 persons and (b) large, if the total number of workforce is greater than 50 persons. From tables 5.2A and 5.2B

It is observed that at degree level only 8% of employed engineers were absorbed in small establishment. Remaining 92% employed engineers were absorbed in large scale establishment

At diploma level 34% of employed diploma engineers were absorbed in small establishment. Remaining 66% diploma engineers were absorbed in large scale establishment.

5.3 SOURCE OF EMPLOYMENT

Source of employment for employed engineers are tabulated in tables 5.3A and 5.3B. The percentage of degree holders who obtained their employment through direct applications was 50%. 39% were employed through training and placement. Rest 11% of degree holders obtained employment through Public Service commission and by other means. 50% of diploma holders were obtained their employment through direct applications, 14% through Training & Placement while 3% of diploma holders went through employment exchanges. Rest 33% of diploma holders went through other means.

5.4 NATURE OF ACTIVITY:

The nature of activity of organisation of employed engineers is presented in tables 5.4A and 5.4B. The summary of nature of activity in percentage is as follows:

Nature of activity	Degree (%)	Diploma(%)
Mining & Quarring	2	4
Processing	3	11
Manufacturing	24	14
Construction	14	16
Transportation	2	8
Communication	0	3
Electricity	3	1
Health	negligible	0
Education	5	8
Administration	1	1
Repairing	1	12
Others	45	22

5.5 MAIN FUNCTIONS

The main functions performed by the employed engineers are shown in tables 5.5A and 5.5B. The summary of main function in percentage is as follows:

Main Function	Degree(%)	Diploma(%)
Undergoing Training	4	9
Management	11	2
Design /Planning	18	16
Imparting Training	4	3
Teaching	3	6
Production /Operation	5	15
Service	5	6
Sales/Purchase/Publicity	1	4
Technical Supervision	6	19
Maintenance	3	13
Testing Quality Control	0	1
Administration	1	0
Research & Development	10	0
Store Management	2	3
Software development	24	0
Other function	3	**3**

5.6 NATURE OF EMPLOYMENT

The nature of jobs means whether the employment is on a (a) permanent or (b) temporary. The employed technical hands are distributed according to the nature of jobs and presented in tables 5.6A and 5.6B. 78% of the total employed degree holders obtained employment on permanent basis and 22% on temporary basis. At diploma level, 41% of the total employed were on permanent and 59% on temporary basis.

5.7 TYPE OF EMPLOYMENT

The type of employment means whether the employment is full time or part time. The employed technical hands are distributed according to the type of job and presented in tables 5.7A and 5.7B. At degree level, out of total employed, 99% were against full time jobs and 1% were against part time job. At diploma level, out of total employed, 89% were against full time jobs and 11% were against part time jobs.

5.8 TIME TAKEN TO GET FIRST EMPLOYMENT

The data of employed technical personnel for the batch year 2003 are distributed on the basis of the time taken for obtaining first employment and presented in tables 5.8A and 5.8B. The data regarding the absorption of employed technical trends are very important to find out the absorption rates for the total labour force.

From the table 5.8A, it is observed that, out of total employed degree engineers, 82% were absorbed within first year after they pass out and remaining 18% were employed in second year. (Table 5.8A)

Out of total employed diploma engineers, 57% were absorbed within the first year and remaining, 43% were employed in 2nd year (Table 5.8B).

5.9 ABSORPTION RATES OF TOTAL LABOUR FORCE

The absorption rates and time of absorption of technical manpower of 2003 batch are presented in tables 5.9A and 5.9B.

At degree level , B.Design degree holders took only one year for complete absorption. Electronics & Telecommunication and Production Engineering degree holders took two years for complete absorption. Computer Science ,Chemical Engineering, Civil Engineering, Electrical ,

Instrumentation Engineering and Mechanical Engineering degree holders took three years for complete absorption.

At diploma level, Handloom Technology diploma holders were quickest to be absorbed within 2 years. Architecture Assistantship and Instrumentation Engineering diploma holders took 3 years for complete absorption. Automobile Engineering, Computer Engineering, Electrical and Mechanical engineering diploma holders took 4 years for complete absorption. Remaining diploma holders took more than 4 years for complete absorption.

5.10 METHODOLOGY ADOPTED FOR ESTIMATION OF UNEMPLOYMENT

The methodology for estimating the size of unemployment is as follows:

Absorption rates for technical hands for 2003 batch are worked out in section 5.10 for all disciplines and levels. (Table 5.9)

Let p_1, p_2, p_3, p_4 are the absorption rates for 1st, 2nd, 3rd and 4th year respectively for a particular discipline and A, B, C, D are the numbers available for employment for the years 2003, 2004,2005, 2006. The outturn for the year 2007 is excluded from this estimation.

The estimate of unemployment for each discipline as given in the last column whose sum provides the size of unemployment at the end of 2007. The outturn of 2006 are also estimated in this report as the outturn of 2006 is not available due to non publication of the result of final examination.

Applying the above methodology, the estimated size of unemployment at the end of year 2007 has been worked out for each level and discipline and these statistics are presented in Table 5.10. Then the estimated size of unemployment at the end of 2007 is worked out as follows:

YEAR	LABOUR FORCE	ABSORBED DURING THE YEARS				SIZE OF UNEMPLOYMENT AT THE END OF 2007
		2004	2005	2006	2007	
2003	A	$A_1=A.p_1$	$A_2=A.p_2$	$A_3=A.p_3$	$A_4=A.p_4$	$A^{/}=A-(A_1+A_2+A_3+A_4)$
2004	B	-	$B_1=B.p_1$	$B_2=B.p_2$	$B_3=B.p_3$	$B^{/}=B-(B_1+B_2+B_3)$
2005	C	-	-	$C_1=C.p_1$	$C_2=C.p_2$	$C^{/}=C-(C_1+C_2)$
2006	D	-	-	-	$D_1=D.p_1$	$D^{/}=D-D_1$

Hence the estimated size of unemployment is A'+B'+C'+D'

5.11 ESTIMATION OF ABSORPTION AND UNEMPLOYMENT

The number of technical manpower to be absorbed at the end of 2007, has been estimated with the help of absorption rates of the total labour force and the outturn of 2003, 2004, 2005 and 2006 and presented in tables 5.10A and 5.10B. Since the outturn of 2006 has not been come out, outturn of 2006 has also been estimated from the previous years data. The total estimated unemployment was 334 at degree and 1087 at diploma level. The total number of degree and diploma holders estimated to be absorbed at the end of 2007 is 691 and 540 respectively

5.12 CONCLUSION

Although the estimated number of unemployment at the end of 2007 is still very high , it is less than the previous years and the absorption of manpower is increasing at both degree and diploma levels which is good sign for the manpower scenario in the state of Assam. The comparison of unemployment and absorption for the last 3 years is shown below:

AT THE END OF(YEARS)	**TOTAL UNEMPLOYMENT**		**TOTAL ABSORPTION**	
	DEGREE	DIPLOMA	DEGREE	DIPLOMA
2005	884	1181	530	272
2006	579	1114	679	340
2007	334	1087	691	540

Table 5.1A

Distribution of Employed Degree Holders by Sector of Employment and Discipline 2003 Batch

S. no	Discpline	Sector of Establishment							Total
		Central Govt.	State Govt.	Local Body	Public Sector	Private Sector	Co-op-Society	Other	
1	Chemical Engg	2	0	0	2	18	0	2	24
2	Civil Engineering	6	21	2	13	38	2	2	84
3	Computer Science	14	0	0	16	75	0	9	114
4	E&T Engineering	6	0	0	34	65	0	11	116
5	Electrical Engg.	9	0	3	17	48	0	9	86
6	Instrumentation Engg	0	3	0	3	17	0	5	28
7	Mechanical Engg	20	0	2	13	101	2	24	162
8	Production	0	0	0	0	3	0	1	4
9	Design	0	0	0	0	9	0	0	9
	Total	57	24	7	98	374	4	63	627
	Percentage	9.1	3.8	1.1	15.6	59.6	0.6	10.0	

Table 5.1B

Distribution of Employed Diploma Holders by Sector of Employment and Discipline 2003 batch

S.No	Discipline	Sector of Establishment							Total
		Central Govt.	State Govt.	Local Body	Public Sector	Private Sector	Co-op-Society	Other	
1	Automobile Engineering	0	0	0	0	6	0	0	6
2	Architectural Asst	0	0	0	0	5	0	0	5
3	Chemical Engg	0	0	2	0	3	0	0	5
4	Civil Engineering	2	2	2	4	27	2	8	47
5	Computer Engineering	3	2	0	0	4	0	0	9
6	E&T Engineering	0	0	2	0	20	0	5	27
7	Electrical Engg.	5	3	0	7	17	0	2	34
8	Handloom Tech.	0	2	0	0	16	2	0	20
9	Instrumentation Engg.	0	0	5	5	0	0	0	10
10	Mechanical Engg	2	0	0	9	28	0	4	43
11	Modern office Mgmnt	3	0	0	0	0	0	2	5
12	Textile Technology	0	0	0	0	4	0	0	4
	Total	15	9	11	25	130	4	21	215
	Percentage	7.0	4.2	5.1	11.6	60.5	1.9	9.8	

Table 5.2A
Distribution of Employed Degree Holders by Size of Establishment and Discipline –2003 Batch

S.No	Discipline	Size of Establishment						Total
		<=50	51-99	100-499	500-2499	2500-9999	>=10000	
1	Chemical Engg	0	2	11	7	2	2	24
2	Civil Engineering	15	5	11	15	27	11	84
3	Computer Science	2	11	2	32	21	46	114
4	E&T Engineering	6	1	9	26	17	57	116
5	Electrical Engg.	0	18	26	11	11	20	86
6	Instrumentation Engg	5	0	10	13	0	0	28
7	Mechanical Engg	18	14	35	44	22	29	162
8	Production	1	2	1	0	0	0	4
9	Design	0	0	0	9	0	0	9
Total		47	53	105	157	100	165	627
Percentage		7.5	47.3	16.7	25.0	15.9	26.3	

Table 5.2B
Distribution of Employed Diploma Holders by Size of Establishment and Discipline –2003 Batch

S.No	Discipline	Size of Establishment						Total
		<=50	51-99	100-499	500-2499	2500-9999	>=10000	
1	Architectural Asst	5	0	0	0	0	0	5
2	Automobile Enginerring	4	0	2	0	0	0	6
3	Chemical Engg	0	0	3	2	0	0	5
4	Civil Engineering	26	7	6	4	0	4	47
5	Computer Engineering	2	1	2	2	2	0	9
6	E&T Engineering	9	0	11	5	0	2	27
7	Electrical Engg.	12	8	9	2	3	0	34
8	Handloom Tech.	2	0	9	5	4	0	20
9	Instrumentation Engg	5	0	0	5	0	0	10
10	Mechanical Engg	9	7	14	4	7	2	43
11	Modern office Mgmnt	5	0	0	0	0	0	5
12	Textile Technology	0	0	2	2	0	0	4
Total		74	23	58	31	16	8	215
Percentage		34.4	20.5	27.0	14.4	7.4	3.7	

Table 5.3A
Distribution of Employed Degree Holders by Source of Obtaining First Paid Employment and Discipline -2003 Batch

S.No	Discipline	Source of obtaining first paid employment					Total
		Employment Exchange	Public Service Commission	Direct Application	Training & Placement	Others	
1	Chemical Engg	0	0	13	7	4	24
2	Civil Engineering	0	21	48	11	4	84
3	Computer Science	0	0	46	66	2	114
4	E&T Engineering	0	0	42	74	0	116
5	Electrical Engg.	0	0	55	14	17	86
6	Instrumentation Engg	0	0	20	5	3	28
7	Mechanical Engg	0	4	75	67	16	162
8	Production	0	0	3	0	1	4
9	Design	0	0	9	0	0	9
Total		0	25	311	244	47	627
Percentage		0.0	4.0	49.6	38.9	7.5	

Table 5.3B

Distribution of Employed Diploma Holders by Source of Obtaining First Paid Employment and Discipline -2003 Batch

S.No	Discipline	Source of obtaining first paid employment					Total
		Employment Exchange	Public Service Commission	Direct Application	Training & Placement	Others	
1	Architectural Asst	0	0	5	0	0	5
2	Automobile Engg.	0	0	4	0	2	6
3	Chemical Engg	0	0	5	0	0	5
4	Civil Engineering	2	0	20	2	23	47
5	Computer Engineering	0	0	3	3	3	9
6	E&T Engineering	2	0	9	2	14	27
7	Electrical Engg.	3	0	15	7	9	34
8	Handloom Tech.	0	0	16	2	2	20
9	Instrumentation Engg	0	0	0	5	5	10
10	Mechanical Engg	0	0	27	7	9	43
11	Modern office Mgmnt	0	0	0	2	3	5
12	Textile Technology	0	0	4	0	0	4
Total		7	0	108	30	70	215
Percentage		3.3	0.0	50.2	14.0	32.6	

Table 5.4A

Distribution of Employed Degree Holders by Nature of Activity and Discipline –2003 Batch

S.No	Discipline	Nature of Activity												Total
		Mining/ Quarrying g	Processing	Manufacturing	Construction	Transportation	Storage & Communication	Electricity & Gas	Health	Education	Administration	Repairing Services	Others	
1	Chemical Engg	0	4	4	2	2	0	0	0	4	0	0	8	24
2	Civil Engg	2	0	2	59	0	0	2	0	0	0	0	19	84
3	Computer Sc.	0	2	11	0	0	0	2	2	5	0	0	92	114
4	E&T Engg	9	0	31	0	11	0	3	0	3	0	0	59	116
5	Electrical Engg	0	0	14	6	0	0	14	0	3	0	0	49	86
6	Instru. Engg	0	5	10	0	3	0	0	0	5	0	0	5	28
7	Mech. Engg	0	7	71	18	0	0	0	0	9	4	4	49	162
8	Production	0	0	1	0	0	0	0	0	0	0	1	2	4
9	Design	0	2	5	0	0	0	0	0	0	0	0	2	9
Total		11	20	149	85	16	0	21	2	29	4	5	285	627
Percentage		1.8%	3%	24%	14%	2.5%	0	3%	0.3%	4.6%	0.6%	0.8%	45.4%	

Table 5.4B

Distribution of Employed Diploma Holders by Nature of Activity and Discipline –2003 Batch

S.No	Discipline	Nature of Activity												Total
		Mining/ Quarrying g	Processing	Manufacturing	Construction	Transportation	Storage & Communication	Electricity & Gas	Health	Education	Administration	Repairing Services	Others	
1	Architectural Asst	0	0	0	2	0	0	0	0	0	0	0	3	5
2	Automobile Engg	0	0	0	2	0	0	0	0	0	0	2	2	6
3	Chemical Engg.	0	2	2	1	0	0	0	0	0	0	0	0	5
4	Civil Engg	2	0	0	40	0	0	0	2	2	0	0	1	47
5	Computer Engg	0	0	2	0	0	0	0	0	7	0	0	0	9
6	E&T Engg	0	0	14	0	2	0	0	0	2	0	9	0	27
7	Electrical Engg.	2	0	7	2	2	0	10	0	0	0	2	9	34
8	Handloom Tech.	0	5	11	0	0	0	0	0	0	0	0	4	20
9	Instrumentation	5	0	0	0	0	0	0	0	5	0	0	0	10
10	Mechanical Engg	4	11	11	4	0	4	0	0	0	0	7	2	43
11	Modern Off mng	0	0	0	0	0	0	0	3	2	0	0	0	5
12	Textile Tech.	0	2	2	0	0	0	0	0	0	0	0	0	4
Total		13	20	49	52	4	4	10	5	19	0	20	19	215
Percentage		4%	11%	14%	16%	8%	3%	1%	0	8%	1%	12%	22%	

Table 5.5A
Distribution of Employed Degree Holders by Main Function Performed and Discipline –2003 Batch

S No	Discipline	Undergoing Training	Direction & Management	Design Planning	Imparting Training	Teaching	Production Operation	Service	Sales/Purchase /Publicity	Technical Supervision	Manufacture & Repairs	Store Management	Testing & quality Control	Administration	Research/ Development	Software Development	Others	Total
1	Chemical Engg	0	2	0	2	0	7	4	0	5	0	0	0	2	2	0	0	24
2	Civil Engg	2	29	21	0	0	0	2	0	18	0	4	0	0	4	0	4	84
3	Computer Sc.	2	5	5	2	2	0	0	0	3	0	0	0	0	18	75	2	114
4	E&T Engg	11	11	17	3	0	3	3	0	0	5	0	0	0	17	46	0	116
5	Electrical Engg	6	3	3	6	3	6	14	0	7	6	3	0	0	3	23	3	86
6	Instru. Engg	0	3	8	3	5	0	0	0	1	5	3	0	0	0	0	0	28
7	Mech. Engg	2	16	47	7	7	18	7	7	3	4	2	0	2	20	9	11	162
8	Production	0	1	0	0	0	0	2	0	0	0	0	0	0	0	1	0	4
9	Design	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
Total		23	70	110	23	17	34	32	7	36	21	12	0	4	64	154	20	627
Percentage		4%	11%	18%	4%	3%	5%	5%	1%	6%	3%	2%	0	1%	10%	24%	3%	

Table 5.5B

Distribution of Employed Diploma Holders by Main Function Performed and Discipline –2003 Batch

S.No	Discipline	Undergoing Training	Direction & Management	Design Planning	Imparting Training	Teaching	Production Operation	Service	Sales/Purchase /Publicity	Technical Supervision	Manufacture & Repairs	Store Management	Testing & quality Control	Administration	Research/ Development	Software Development	Others	Total
1	Architect. AssTtt.	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
2	Automobile Eng	0	0	0	0	0	0	0	2	4	0	0	0	0	0	0	0	6
3	Chemical Engg.	2	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	5
4	Civil Engg	4	2	15	0	2	0	2	0	18	0	2	0	0	0	0	2	47
5	Computer Engg	2	0	0	0	3	0	2	0	0	2	0	0	0	0	0	0	9
6	E&T Engg	0	0	0	2	0	5	9	0	2	9	0	0	0	0	0	0	27
7	Electrical Engg.	7	0	2	0	0	5	0	2	8	5	0	2	0	0	0	3	34
8	Handloom Tech.	0	2	9	5	0	2	0	0	0	0	2	0	0	0	0	0	20
9	Instrumentation	0	0	0	0	5	5	0	0	0	0	0	0	0	0	0	0	10
10	Mechanical Engg	4	0	2	0	0	9	0	4	9	11	2	0	0	0	0	2	43
11	Modern Off mng	0	0	0	0	3	2	0	0	0	0	0	0	0	0	0	0	5
12	Textile Tech.	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	4
Total		19	4	35	7	13	32	13	8	42	27	6	2	0	0	0	7	215
Percentage		9%	2%	16%	3%	6%	15%	6%	4%	19%	13%	3%	1%	0%	0%	0%	3%	

Table 5.6A

Distribution of Employed Degree Holders by Employment Nature and Discipline -2003 Batch

S.No	Discipline	Employment Nature		Total
		Permanent	Temporary	
1	Chemical Engg	17	7	24
2	Civil Engineering	42	42	84
3	Computer Science	109	5	114
4	E&T Engineering	110	6	116
5	Electrical Engg.	57	29	86
6	Instrumentation Engg	18	10	28
7	Mechanical Engg	125	37	162
8	Production	3	1	4
9	Design	9	0	9
Total		490	137	627
Percentage		78.1	21.9	

Table 5.6B

Distribution of Employed Diploma Holders by Employment Nature and Discipline -2003 Batch

S.No	Discipline	Employment Nature		Total
		Permanent	Temporary	
1	Architectural Asst	0	5	5
2	Automobile Engg	0	6	6
3	Chemical Engg	2	3	5
4	Civil Engineering	18	29	47
5	Computer Engineering	2	7	9
6	E&T Engineering	13	14	27
7	Electrical Engg.	12	22	34
8	Handloom Tech.	13	7	20
9	Instrumentation Engg	0	10	10
10	Mechanical Engg	25	18	43
11	Modern office Mgmnt	0	5	5
12	Textile Technology	4	0	4
Total		89	126	215
Percentage		41.4	58.6	100

Table 5.7A

Distribution of Employed Degree Holders by Employment Type and Discipline -2003 Batch

S.No	Discipline	Employment Type		Total
		Full- Time	Part -Time	
1	Chemical Engg	24	0	24
2	Civil Engineering	82	2	84
3	Computer Science	114	0	114
4	E&T Engineering	116	0	116
5	Electrical Engg.	86	0	86
6	Instrumentation Engg	23	5	28
7	Mechanical Engg	160	2	162
8	Production	4	0	4
9	Design	9	0	9
Total		618	9	627
Percentage		98.6	1.4	

Table 5.7B

Distribution of Employed Diploma Holders by Employment Type and Discipline -2003 Batch

S.No	Discipline	Employment Type		Total
		Full- Time	Part -Time	
1	Architectural Asst	5	0	5
2	Automobile Engg	6	0	6
3	Chemical Engg	5	0	5
4	Civil Engineering	41	6	47
5	Computer Engineering	9	0	9
6	E&T Engineering	22	5	27
7	Electrical Engg.	31	3	34
8	Handloom Tech.	20	0	20
9	Instrumentation Engg	5	5	10
10	Mechanical Engg	39	4	43
11	Modern office Mgmnt	5	0	5
12	Textile technology	4	0	4
Total		192	23	215
Percentage		89.3	10.7	

Table 5.8A

Distribution of Employed Degree Holders by Time Taken and Discipline –2003 Batch

S. No.	Discipline	Waiting Period								Total Employed	Labour Force	Outtrun
		<=3	4-6	7-9	10-12	13-15	16-18	19-21	21-24			
1	Chemical Engg	2	7	2	4	0	0	4	5	24	41	52
2	Civil Engineering	25	19	13	0	4	11	6	6	84	95	103
3	Computer Science	68	14	9	5	0	5	2	11	114	121	123
4	E&T Engineering	85	6	6	11	0	0	0	8	116	122	128
5	Electrical Engg.	31	14	6	11	3	3	14	4	86	108	117
6	Instru Engg	8	5	3	5	3	0	3	1	28	36	44
7	Mechanical Engg	71	24	31	16	7	0	4	9	162	195	224
8	Production	2	1	1	0	0	0	0	0	4	6	8
9	Design	2	0	7	0	0	0	0	0	9	9	9
Total		294	90	78	52	17	19	33	44	627	733	808
Percentage		46.9	14.4	12.4	8.3	2.7	3.0	5.3	7.0	77.6		

*** LABOUR FORCE = TOTAL OUTTURN- (No. Not looking for jobs+ studying)**

Table 5.8B

Distribution of Employed Diploma Holders by Time Taken and Discipline -2003 Batch

S. No	Discipline	Waiting Period								Total Employed	Labour Force	Outtrun
		<=3	4-6	7-9	10-12	13-15	16-18	19-21	21-24			
1	Architectural Asst	0	0	2	0	2	0	0	1	5	7	7
2	Automobile Engg	2	2	0	0	0	0	0	2	6	21	21
3	Chemical Engg	0	2	0	0	0	2	0	1	5	19	24
4	Civil Engineering	23	6	0	8	0	2	8	0	47	128	136
5	Computer Engineering	2	0	0	0	2	0	3	2	9	24	40
6	E&T Engineering	7	2	2	2	7	2	0	5	27	78	89
7	Electrical Engg.	3	5	3	3	0	3	3	14	34	78	87
8	Handloom Tech.	16	0	2	2	0	0	0	0	20	25	25
9	Instrumentation Engg	0	0	0	0	0	0	0	10	10	15	15
10	Mechanical Engg	9	4	5	2	4	5	5	9	43	93	98
11	Modern office Mgmnt	3	2	0	0	0	0	0	0	5	20	20
12	Textile Technology	0	2	0	2	0	0	0	0	4	14	16
Total		65	25	14	19	15	14	19	44	215	522	578
Percentage		30.2	11.6	6.5	8.8	7.0	6.5	8.8	20.5	37.2		

*** LABOUR FORCE = TOTAL OUTTURN- (No. Not looking for jobs+ studying)**

Table 5.9A

Distribution of Degree Holders by Absorption Rate and Discipline -2003 Batch

S.No	Discipline	Percentage of Absorption during the				
		I Year	II Year	III Year	IV Year	More than IV Year
1	Chemical Engg	37	21	42		
2	Civil Engineering	60	28	12		
3	Computer Science	78	16	6		
4	E&T Engineering	89	11	0		
5	Electrical Engg.	57	23	20		
6	Instrumentation Engg	58	20	22		
7	Mechanical Engg	73	10	17		
8	Production	67	33	0		
9	B.Design	100	0	0		
Average		69	18	13		

Table 5.9B

Distribution of Diploma Holders by Absorption Rate and Discipline -2003 Batch

S.No	Discipline	Percentage of Absorption during the				
		I Year	II Year	III Year	IV Year	More than IV Year
1	Auotomobile Engg	19	10	36	35	0
2	Architectural Asst	29	28	43	0	0
3	Chemical Engg	11	15	29	24	21
4	Civil Engineering	29	10	20	26	15
5	Computer Engineering	8	21	34	37	0
6	E&T Engineering	17	13	24	21	25
7	Electrical Engg.	18	29	36	17	0
8	Handloom Tech.	83	17		0	0
9	Instrumentation Engg	0	67	33	0	0
10	Mechanical Engg	22	24	29	25	0
11	Modern office Mgmnt	25	0	15	22	38
12	Textile Technology	29	0	16	25	30
Average		24	20	26	19	11

Table 5.10A

Estimates by Total Absorption, Availability and Size of Unemployment and discipline at Degree Level

S.No	Discipline	Total estimated absorption during 2007	Outturn (Availability for job during)				Size of Unemployment at the end of 2007(excluding the outturn 2007)
			2003	2004	2005	*2006	
1	Chemical Engg	27	52	22	25	37	38
2	Civil Engg	108	103	116	98	107	47
3	Computer Sc.	106	123	104	109	106	30
4	E&T Engg	92	128	93	102	97	32
5	Electrical Engg	126	117	142	117	125	77
6	Instru. Engg	33	44	19	35	35	18
7	Mech. Engg	179	224	177	183	180	84
8	Production	3	8	2	2	4	6
9	B.Design	17	9	17	17	17	2
Total		691	808	692	688	708	334

Table 5.10B

Estimates by Total Absorption, Availability and Size of Unemployment and discipline at Diploma Level

S.No	Discipline	Total estimated absorption during 2007	Outturn (Availability for job during)				Size of Unemployment at the end of 2007(excluding the outturn 2007)
			2003	2004	2005	*2006	
1	Architectural Asst	10	7	10	8	9	7
2	Auotomobile Engg	16	21	15	15	15	31
3	Chemical Engg.	21	24	33	17	25	55
4	Civil Engg	131	136	170	173	170	333
5	Computer Engg	38	40	32	33	35	61
6	E&T Engg	60	89	75	57	65	135
7	Electrical Engg.	99	87	92	122	112	185
8	Handloom Tech.	20	25	21	30	25	21
9	Instrumentation	14	15	18	12	15	19
10	Mechanical Engg	112	98	111	116	114	175
11	Modern Off mng	6	20	2	9	11	26
12	Textile Tech.	13	16	22	14	18	39
Total		540	578	601	606	614	1087

* Estimated

CHAPTER VI

PROSPECT AHEAD

6.0 INTRODUCTION

The focus of this chapter is to highlight the prospects and requirements of technical education and their absorption pattern. The analysis of absorption pattern for the batch 2003 with respect to waiting period and time taken for 95% of absorption are given in tables 6.1 and 6.2.

6.1 ABSORPTION PATTERN

At degree level, 100% of B. Design degree holders, 89% of Electronics and Telecommunication Engineering, 78% of Computer Sc. and Engineering, 37% Chemical Engineering, 73% Mechanical Engineering, , 60% Civil Engineering, 58% Instrumentation Engineering and 57% Electrical Engineering and 67% of Industrial & Production engineering degree holders were absorbed within one year. (Table No. 6.1).

At diploma level 80% Handloom Technology, 8% Computer Engineering, 29% Textile Technology, 17% E&T Engineering , 29% Architectural Engineering and, 29% Civil Engineering, 22% Mechanical Engineering , 11% Chemical Engineering, 67% Instrumentation Engineering ,18% Electrical Engineering , 25% of MOM and 19% of Automobile engineering diploma holders were absorbed within one year (Table No. 6.2).

Table 6.1

Comparative Analysis of Degree Holders by Absorption Period and Discipline –2003 Batch

S.No	Discipline	Time Taken for 95% Absorption (Years)	Absorption within one Year (Percentage)
1	Chemical Engg	3 years	37
2	Civil Engg	3 years	60
3	Computer Sc.	3 years	78
4	E&T Engg	2years	89
5	Electrical Engg	3 years	57
6	Instru. Engg	3 years	58
7	Mech. Engg	3 years	73
8	Production	2 years	67
9	B.Design	1 Year	100

Table 6.2

Comparative Analysis of Diploma Holders by Absorption Period and Discipline –2003 Batch

S.No	Discipline	Time Taken for 95% Absorption (Years)	Absorption within one Year (Percentage)
1	Automobile Engg	4 years	19
2	Architectural Asst	3 years	29
3	Chemical Engg.	More than 4 years	11
4	Civil Engg	More than 4 years	29
5	Computer Engg	More than 4 years	8
6	E&T Engg	More than 4 years	17
7	Electrical Engg.	3 years	18
8	Handloom Tech.	2 Years	80
9	Instrumentation	3 years	67
10	Mechanical Engg	4 years	22
11	Modern Off mng	More than 4 years	25
12	Textile Tech.	More than 4 years	29

CHAPTER VII

ANALYSIS OF SELF EMPLOYMENT

7.0 INTRODUCTION

Self employment of engineering degree and diploma holders is another important aspect of employment generation. It plays a vital role in the economic progress and development of the region. In this Chapter self employment scenario is analyzed . Self employed by area of activity, location, financial source and financial investment are discussed in this chapter.

7.1 SELF EMPLOYMENT BY AREA OF ACTIVITY

Area of activity of self employed engineering degree and diploma holders are presented in tables 7.1A and 7.1B respectively. At degree level out of total 9 self employed 3 were doing repairs and maintenance activity, 2 were in construction, 2 were in shop keeping and 2 were in other activity. At diploma level out of 2 self employed personals, all were engaged in shop keeping activity.

7.2 LOCATION

Location of self employed engineering degree holders are presented in tables 7.2A and 7.2B. At both degree and diploma levels all self employed were doing their business at town area.

7.3 FINANACIAL SOURCE

Financial source of self employed engineers are shown in tables 7.3A and 7.3B. At both degree and diploma levels all were self employed were with own finance.

7.4 FINANCIAL INVESTMENT

78% of the self employed degree holders and and 100% of diploma holders invested less than Rs 50,000. 22% of degree holders invested between Rs 50,000 and Rs 100,000

7.5 CONCLUSION

From the data received and analysed it can be said that self emloyment in the state of Assam is still not developing. Technical manpower of the state still look for jobs rather than going for self employment.

Table 7.1A

Distribution of Degree Holders Self-Employed by Area of Activity and Discipline 2003 Batch

S.No	Discipline	Manufacturing	Repair & Maintenance	Construction	Shop-Keeping	Consultancy	Farming	Financial Activity	Others	Total
1	Civil Engineering.	0	0	2	0	0	0	0	0	2
2	E&T Engineering	0	3	0	0	0	0	0	0	3
3	Mechanical Engg	0	0	0	2	0	0	0	2	4
Total		0	3	2	2	2	0	0	0	9
Percentage		0	34	22	22	0	0	0	22	100

Table 7.1B

Distribution of Diploma Holders Self-Employed by Area of Activity and Discipline 2003 Batch

S.No	Discipline	Manufacturing	Repair & Maintenance	Construction	Shop-Keeping	Consultancy	Farming	Financial Activity	Others	Total
1	Civil Engg.	0	0	0	2	0	0	0	0	2
Total		0	0	0	2	0	0	0	0	2
Percentage		0	0	0	100	0	0	0	0	100

Table 7.2A

Distribution of Degree Holders Self Employed by Location and Discipline –2003 Batch

	Discipline	Village	Town	Total
1	Civil Engineering.	0	2	2
2	E&T Engineering	0	3	3
3	Mechanical Engg	0	4	4
Total		0	9	9
Percentage		0	100	100

Table 7.2B

Distribution of Diploma Holders Self Employed by Location and Discipline –2003 Batch

	Discipline	Village	Town	Total
1	Civil Engg.	0	2	2
Total		0	2	2
Percentage		0	100	100

Table 7.3A

Distribution of Degree Holders Self Employed by Financial Source and Discipline

S.No	Discipline	Own	Relatives	Bank	Co-op Society	State Govt Agencies	Central Govt. Agencies	Money Lender	Others	Total
1	Civil Engineering.	2	0	0	0	0	0	0	0	2
2	E&T Engineering	3	0	0	0	0	0	0	0	3
3	Mechanical Engg	4	0	0	0	0	0	0	0	4
Total		9	0	0	0	0	0	0	0	9
Percentage		100	0	0	0	0	0	0	0	100

Table 7.3B

Distribution of Diploma Holders Self Employed by Financial Source and Discipline

S.No	Discipline	Own	Relatives	Bank	Co-op Society	State Govt Agencies	Central Govt. Agencies	Money Lender	Others	Total
1	Civil Engg.	2	0	0	0	0	0	0	0	2
Total		2	0	0	0	0	0	0	0	2
Percentage		100	0	0	0	0	0	0	0	100

Table 7.4A
Distribution of Degree Holders Self Employed by Financial Assistance (in Rupees) received and Discipline –2003 Batch

S.No	Discipline	<=50,000	50000-1,00,000	>1,00,000	Total
1	Civil Engineering.	2	0	0	2
2	E&T Engineering	3	0	0	3
3	Mechanical Engg	2	2	0	4
Total		7	2	0	9
Percentage		78	22	0	100

Table 7.4B
Distribution of Diploma Holders Self Employed by Financial Assistance (in Rupees) received and Discipline –2003Batch

S.No	Discipline	<=50,000	50000-1,00,000	>1,00,000	Total
1	Civil Engg.	2	0	0	2
Total		2	0	0	2
Percentage		100	0	0	100