ANNUAL TECHNICAL MANPOWER REVIEW

(Draft Report)

ASSAM –2008

ENGINEERING

NATIONAL TECHNICAL MANPOWER INFORMATION SYSTEM
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INTRODUCTION

India has had a long tradition of research in the physical sciences starting from the pre-independence days. In the engineering or more broadly in the technical education filed, it really started in a big way in the 50's. Present quality and development of technical education is far better than 50's. Particularly the success of the software industry in India in terms of its global impact has clearly underscored the fact that Indian engineer's can rival, the best in the world.

During the eleventh five year plan, Government of India has emphasis to develop in higher and technical educations. Particularly, expansion, inclusion and excellence are the main objectives to uplift the higher and technical educations during the eleventh five year plan. On this line 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 2004 and institutional survey 2005-2006. 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 2004 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 2005-2006. 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.

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 student's 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

At present facilities of technical education in Assam is good compare to other north east states, but not sufficient. Before five years back 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 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 institutions and 10 diploma level institutions 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 and diploma courses by discipline wise are presented in tables 1.5A and 1.5B. From the tables it is seen that the sanctioned intake in 2006 was 1417

and 1265 at degree and at diploma level respectively. Variation of sanctioned intake in degree and diploma are presented in table 1.6 from the year 1991-2006.

1.4 ACTUAL INTAKE

Actual intakes in degree and diploma courses are presented in tables 1.7A and 1.7B. In 2006 at degree and diploma levels actual intakes were 1292 and 1243 respectively.

Intakes in gender wise are shown in tables 1.8A-1.8B for the batch year 2005. From the tables it is revealed that at degree level 803(86%) males and 128(14%) females were intakes and in diploma level 1046(84%) males and 196(16%) females were intakes during the year 2005. The intakes in category wise are presented in tables' 1.9A-1.9B for degree and diploma levels.

1.5 OUTTURN

The outturns for the years 1991-2006 are furnished in tables' 1.10A-1.10B. 688 degree and 608 diploma students were passed out during the year 2005. The outturn in gender wise is shown in tables 1.11A –1.11B for the batch year 2005. From the tables it is revealed that at degree level 594(86%) males and 94(14%) females and at diploma level 506(83%) males and 102(17%) females were pass out during the year 2005. The outturn in category wise is presented in tables 1.12A –1.12B for degree and diploma levels for the batch year 2005.

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	1981	3	0	7	0
8	1986	3	0	9	1
9	1993	3	0	9	0
10	1994	4	1	9	0
11	1995	4	0	9	0
12	1997	4	0	9	0
13	1998	4	0	10	1
14	2003	4	0	10	0
15	2004	4	0	10	0
16	2005	4	0	10	0
17	2006	6	2	10	0
18	2007	6	2	10	0

Table 1.2

Growths of Educational Institutions by type and level (1991 - 2007)

S.No.	Type	Engineering College			Polytechnics		
		1991	2001	2007	1991	2001	2007
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 2007

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 (1991-2006)

S.No.	Type of Institutions		1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	Govt Institutions	No	645	745	745	858	858	858	918	955	955	963	1002	1177
		%	100	100	100	100	100	100	100	100	100	100	100	82.2
2	Aided Institutions	No	-	-	-	-	-	-	-	-	-	-		
		%												
3	Private Institutions	No	-	-	-	-	-	-	-	-	-	-	-	240
		%												17.8
	Total	No	645	745	745	858	858	858	918	955	955	963	1002	1417
		%	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 (1991-2006)

S.No.	Type of Institutions		1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	Govt Institutions	No	1170	1180	1210	1240	1205	1205	1205	1220	1220	1275	1265	1265
		%	100	100	100	100	100	100	100	100	100	100	100	100
2	Aided Institutions	No	-	-	-	-	-	-	-	-	-	-		
		%												
3	Private Institutions	No	-	-	-	-	-	-	-	-	-	-		
		%												
	Total	No	1170	1180	1210	1240	1205	1205	1205	1220	1220	1275	1265	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 (1991-2006)

S.No	Discipline	1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	B. Design	-	-	-	15	15	15	15	26	25	26	28	30
2	Chemical Engg	30	30	30	30	30	30	30	56	55	60	64	70
3	Civil Engineering	185	185	185	200	200	200	224	224	220	216	210	230
4	Computer Science	60	85	85	113	113	113	120	120	120	126	138	252
5	E&T /ETC Engg	35	85	85	92	92	92	100	100	100	104	118	230
6	Electrical Engg.	165	145	145	145	145	145	145	145	145	146	150	160
7	Industrial & Prod	-	-	-	20	20	20	20	20	20	20	20	20
8	Instrumentation Engg	-	20	20	40	40	40	40	40	40	40	40	100
9	Information Technology	-	-	-	-	-	-	-	-	-	-	-	60
10	Mechanical Engg	170	195	195	203	203	203	224	224	230	225	234	265
	Total	645	745	745	858	858	858	918	955	955	963	1002	1417

Table 1.5B
Distribution of Sanctioned Intake into Diploma Courses by Discipline (1991-2006)

S.N	Discipline	1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
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	420	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	110	110	110	110	110	110	110	110	110	110
8	Electrical Engg.	170	170	170	170	165	165	165	165	165	170	170	170
9	Fashion Technology	-	-	-	-	-	-	-	-	-	20	20	20
10	Garment Technology	-	-	-	-	-	-	-	-	-	20	20	20
11	Handloom Tech.	30	30	30	30	30	30	30	45	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	175	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	30
16	Textile Technology	30	40	40	40	40	40	40	40	40	40	30	30
	Total	1170	1180	1210	1240	1205	1205	1205	1220	1220	1275	1265	1265

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
2006	1417	415	41.4	1265	0	0.0

Table 1.7A
Distribution of Actual Intake into Degree Courses by Discipline (1991-2006)

S.No.	Discipline	1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	B. Design	-	-	-	12	12	12	12	15	20	19	17	24
2	Chemical Engg	30	26	30	31	30	30	30	50	54	54	58	70
3	Civil Engineering	185	162	177	198	189	185	192	199	204	202	190	219
4	Computer Science	60	85	89	90	110	108	113	115	114	127	132	240
5	E&T/ETC Engg	35	85	119	89	89	88	94	97	98	98	113	210
6	Electrical Engg.	165	157	145	163	149	147	143	140	141	133	140	151
7	Industrial & Prod	-	-	-	-	20	18	20	19	21	20	19	0
8	Instru. Engg	-	20	20	20	20	39	39	37	40	36	37	75
9	Information Tech.	-	-	-	-	-	-	-	-	-	-	-	44
10	Mechanical Engg	170	191	200	209	200	196	194	220	209	224	225	259
	Total	645	726	780	812	819	823	837	892	901	913	931	1292

Table 1.7B
Distribution of Actual Intake into Diploma Courses by Discipline (1991-2006)

S.No.	Discipline	1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	Agricultural Engg	30	8	4	4	30	25	30	30	30	30	30	30
2	Architectural Asst	28	7	7	18	18	19	22	30	30	28	30	30
3	Automobile Engg	45	19	17	25	45	38	45	45	45	45	45	46
4	Chemical Engg	30	30	31	30	30	24	27	30	30	28	30	30
5	Civil Engineering	420	225	250	337	435	357	408	417	409	426	421	423
6	Computer Engg	50	50	49	52	50	45	49	50	49	54	49	50
7	E&T Engineering	80	78	75	75	87	95	107	112	110	112	109	110
8	Electrical Engg.	170	132	160	163	175	156	166	170	161	172	170	171
9	Fashion Technology	-	-	-	-	-	-	-	-	-	20	20	20
10	Garment Technology	-	-	-	-	-	-	-	-	-	20	20	20
11	Handloom Tech.	30	22	25	27	28	27	27	41	43	41	41	48
12	Instrumentation Engg	30	15	27	27	30	21	30	30	30	30	30	30
13	Mechanical Engg	198	138	151	156	166	146	167	165	165	169	165	165
14	Modern office Mgmnt	-	-	-	30	30	28	8	30	30	21	28	30
15	Textile Chemistry	-	-	-	-	23	28	4	5	17	24	24	30
16	Textile Technology	30	30	41	40	31	30	19	16	38	39	30	30
	Total	1141	754	837	984	1178	1039	1109	1171	1187	1259	1242	1243

Table 1.8A

Distribution of Actual Intake into Degree Courses by Gender and Discipline 2005 Batch

S.No.	Discipline	Male	Female	Total	Ratio of Male to Female
1	B. Design	12	5	17	0.42
2	Chemical Engg	50	8	58	0.16
3	Civil Engineering	162	28	190	0.17
4	Computer Science	114	18	132	0.16
5	E&T Engineering	101	12	113	0.12
6	Electrical Engg.	114	26	140	0.23
7	Industrial & Prod	17	2	19	0.12
8	Instrumentation Engg	29	8	37	0.28
9	Mechanical Engg	204	21	225	0.10
Total		803	128	931	0.16

Table 1.8 B

Distribution of Actual Intake into Diploma Courses by Gender and Discipline 2005 Batch

S.No.	Discipline	Male	Female	Total	Ratio of Male to Female
1	Agricultural Engg	29	1	30	0.03
2	Architectural Asst	0	30	30	
3	Automobile Engg	45	0	45	0.00
4	Chemical Engg	29	1	30	0.03
5	Civil Engineering	393	28	421	0.07
6	Computer Engineering	38	11	49	0.29
7	E&T Engineering	75	34	109	0.45
8	Electrical Engg.	155	15	170	0.10
9	Fashion Technology	16	4	20	0.25
10	Garment Technology	19	1	20	0.05
11	Handloom Tech.	32	9	41	0.28
12	Instrumentation Engg	25	5	30	0.20
13	Mechanical Engg	163	2	165	0.01
14	Modern office Mgmnt	0	28	28	-
15	Textile Chemistry	0	24	24	-
16	Textile Technology	27	3	30	0.11
Total		1046	196	1242	0.19

Table 1.9A

Distribution of Actual Intake into Degree Courses by Category and Discipline 2005 Batch

S.No.	Discipline	SC	ST	OBC	Others	Total	Ratio of others with SC, ST & Others
1	B. Design	0	0	-	17	17	
2	Chemical Engg	9	4	5	40	58	2.22
3	Civil Engineering	18	13	20	139	190	2.73
4	Computer Science	17	13	7	95	132	2.57
5	E&T Engineering	20	9	5	79	113	2.32
6	Electrical Engg.	11	17	15	97	140	2.26
7	Industrial & Prod	2	3	2	12	19	1.71
8	Instrumentation Engg	4	2	5	26	37	2.36
9	Mechanical Engg	26	23	22	154	225	2.17
Total		107	84	81	659	931	2.42

Table 1.9B

Distribution of Actual Intake into Diploma Courses by Category and Discipline 2005 Batch

S.No.	Discipline	SC	ST	OBC	Others	Total	Ratio of others with SC,ST &OBC
1	Agricultural Engg	2	5	5	18	30	1.50
2	Architectural Asst	3	5	6	16	30	1.14
3	Automobile Engg	3	7	7	28	45	1.65
4	Chemical Engg	2	5	5	18	30	1.50
5	Civil Engineering	39	64	93	225	421	1.15
6	Computer Engineering	3	7	7	32	49	1.88
7	E&T Engineering	7	13	17	72	109	1.95
8	Electrical Engg.	14	30	26	100	170	1.43
9	Fashion Technology	2	3	9	6	20	0.43
10	Garment Technology	2	3	9	6	20	0.43
11	Handloom Tech.	4	5	0	32	41	3.56
12	Instrumentation Engg	2	4	5	19	30	1.73
13	Mechanical Engg	12	25	32	96	165	1.39
14	Modern office Mgmnt	3	3	8	14	28	1.00
15	Textile Chemistry	2	4	6	12	24	1.00
16	Textile Technology	1	5	15	9	30	0.43
Total		101	188	250	703	1242	1.30

Table 1.10A

Distribution of Outturn of Engineering Degree holders by Discipline (1991-2006)

S.No.	Discipline	1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	B. Design	-	-	-	-	-	-	-	12	9	17	17	16
2	Chemical Engg	15	17	25	24	26	23	30	24	52	22	25	53
3	Civil Engineering	189	106	122	120	104	100	105	103	103	116	98	132
4	Computer Science	0	49	55	58	67	80	71	86	123	104	109	115
5	E&T Engineering	43	34	40	49	78	76	84	88	128	93	102	103
6	Electrical Engg.	96	66	77	99	68	73	70	70	117	142	117	95
7	Industrial & Prod	-	-	-	-	-	-	-	-	8	2	2	0
8	Instrumentation Engg	-	-	-	12	13	16	15	17	44	19	35	31
9	Mechanical Engg	166	116	148	144	161	170	167	174	224	177	183	200
	Total	509	388	467	506	517	538	542	574	808	692	688	745

Table 1.10B

Distribution of Outturn of Engineering Diploma holders by Discipline (1991-2006)

S.No.	Discipline	1991	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
1	Agricultural Engg	23	8	8	4	1	1	2	0	1	1	2	0
2	Architectural Asst	2	13	19	4	4	13	5	10	7	10	8	0
3	Automobile Engg	17	6	20	10	3	6	2	9	21	15	15	3
4	Chemical Engg	16	25	10	25	12	13	25	27	24	33	17	35
5	Civil Engineering	378	228	348	138	93	50	74	116	136	170	173	205
6	Computer Engineering	9	45	34	53	18	33	32	29	40	32	33	34
7	E&T Engineering	39	52	42	39	27	16	71	74	89	75	57	71
8	Electrical Engg.	130	90	126	84	41	39	42	62	87	92	122	98
9	Handloom Tech.	35	24	26	25	25	26	12	29	25	21	30	35
10	Instrumentation Engg	12	9	9	5	7	3	17	19	15	18	12	7
11	Mechanical Engg	98	74	141	71	39	42	76	95	98	111	116	105
12	Modern office Mgmnt	11	18	12	10	10	15	16	10	20	2	9	21
13	Textile Chemistry	-	-	-	-	10	9	9	1	1	0	0	*
14	Textile Technology	37	32	18	17	23	24	13	5	16	22	14	17
	Total	807	624	813	485	313	290	396	486	580	602	608	631

* Data not available

Table 1.11A

Distribution of Outturn of Degree Holders by Gender and Discipline 2005 Batch

S.No.	Discipline	Male	Female	Total	Ratio of Male to Female
1	B. Design	16	1	17	0.06
2	Chemical Engg	23	2	25	0.09
3	Civil Engineering	89	9	98	0.10
4	Computer Science	97	12	109	0.12
5	E&T Engineering	82	20	102	0.24
6	Electrical Engg.	93	24	117	0.26
7	Industrial & Prod	2	0	2	0.00
8	Instrumentation Engg	27	8	35	0.30
9	Mechanical Engg	165	18	183	0.11
	Total	594	94	688	0.16

Table 1.11B

Distribution of Outturn of Diploma Holders by Gender and Discipline 2005 Batch

S.No.	Discipline	Male	Female	Total	Ratio of Male to Female
1	Agricultural Engg	2	0	2	0.00
2	Architectural Asst	0	8	8	
3	Automobile Engg	15	0	15	0.00
4	Chemical Engg	13	4	17	0.31
5	Civil Engineering	144	29	173	0.20
6	Computer Engineering	21	12	33	0.57
7	E&T Engineering	52	5	57	0.10
8	Electrical Engg.	107	17	124	0.16
9	Handloom Tech.	20	10	30	0.50
10	Instrumentation Engg	10	2	12	0.20
11	Mechanical Engg	111	3	114	0.03
12	Modern office Mgmnt	0	9	9	
13	Textile Chemistry	0	0	0	
14	Textile Technology	11	3	14	0.27
Total		506	102	608	0.20

Table 1.12A

Distribution of Outturn Degree holders by Category and Discipline 2005 Batch

S.No.	Discipline	SC	ST	OBC	Others	Total	Ratio of others with SC,ST &OBC
1	B. Design	0	0	0	17	17	
2	Chemical Engg	2	2	6	15	25	1.50
3	Civil Engineering	9	9	10	70	98	2.50
4	Computer Science	7	11	9	82	109	3.04
5	E&T Engineering	2	9	5	86	102	5.38
6	Electrical Engg.	6	10	16	85	117	2.66
7	Industrial & Prod	1	0	1	0	2	0.00
8	Instrumentation Engg	1	2	5	27	35	3.38
9	Mechanical Engg	9	15	17	142	183	3.46
Total		37	58	69	524	688	3.20

Table 1.12B

Distribution of Outturn Diploma holders by Category and Discipline 2005 Batch

S.No.	Discipline	SC	ST	OBC	Others	Total	Ratio of others with SC,ST &OBC
1	Agricultural Engg	0	0	0	2	2	
2	Architectural Asst	1	1	3	3	8	0.60
3	Automobile Engg	3	3	4	5	15	0.50
4	Chemical Engg	4	1	5	7	17	0.70
5	Civil Engineering	32	22	38	81	173	0.88
6	Computer Engineering	3	4	4	22	33	2.00
7	E&T Engineering	5	6	13	33	57	1.38
8	Electrical Engg.	21	14	38	51	124	0.70
9	Handloom Tech.	5	4	1	20	30	2.00
10	Instrumentation Engg	3	2	2	5	12	0.71
11	Mechanical Engg	13	12	34	55	114	0.93
12	Modern office Mgmnt	1	1	4	3	9	0.50
13	Textile Chemistry	0	0	0	0	0	
14	Textile Technology	5	0	3	6	14	0.75
	Total	96	70	149	293	608	0.93

Table 1.13A

List of Engineering Colleges in State during the year 2007

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 Chowdhury Institute of Management and Technology, N.H. 37, Hatkhowapara, Azara, Guwahati -781017	Private	2006

Table 1.13B

List of Polytechnics in State during the year 2007

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 2005 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 249 technical teachers were in position against the total sanctioned post 332, i.e,. 25% teaching post were lying vacant during the year 2005. At diploma level 171 technical teachers were in position against the 297 sanctioned posts. The teacher student ratio in degree level was 1:14, which means there was one teacher for every 14 student at degree level. At diploma level the teacher student ratio was 1:22. At degree level, no teacher in Industrial and Production and at Instrumentation Engineering, as 1 is position against the 7 sanctioned posts.

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 249 total teaching staff in Engineering Colleges 57%, 35% and 8% were Ph.D, post-graduate and graduate respectively. During the year 2005 in Polytechnics out of total 171 teachers, 35% and 65% were 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 (2005)

S.No	Discipline	Teaching Staff		Percentage Of actual	Enrollment	Teacher Student ratio
		Actual	Sanctioned			
1	B. Design	10	10	100.0	68	6.8
2	Chemical Engg	23	26	88.5	214	9.3
3	Civil Engineering	67	84	79.8	697	10.4
4	Computer Science	23	32	71.9	508	22.1
5	E&T Engineering	23	35	65.7	420	18.3
6	Electrical Engg.	40	58	69.0	643	16.1
7	Industrial & Prod	0	0		27	
8	Instrumentation Engg	1	7	14.3	153	153.0
9	Mechanical Engg	62	80	77.5	804	13.0
	Total	249	332	75.0	3457	13.9

Table 2.1B
Actual and Sanctioned Strength of Teaching Staff and Teacher-Student Ratio in Polytechnics by Discipline (2005)

S.No	Discipline	Teaching Staff		Percentage Of actual	Enrollment Student	Teacher student Raio
		Actual	Sanctioned			
1	Agricultural Engg	3	4	75.0	42	14.0
2	Architectural Asst	4	12	33.3	78	19.5
3	Automobile Engg	6	14	42.9	138	23.0
4	Chemical Engg	4	6	66.7	93	23.3
5	Civil Engineering	47	84	56.0	1176	25.0
6	Computer Engineering	9	10	90.0	146	16.2
7	E&T Engineering	14	18	77.8	332	23.7
8	Electrical Engg.	29	51	56.9	709	24.4
9	Handloom Tech.	1	8	12.5	120	120.0
10	Instrumentation Engg	2	4	50.0	79	39.5
11	Mechanical Engg	39	60	65.0	509	13.1
12	Modern office Mgmnt	0	0		65	
13	Textile Chemistry	2	7	28.6	59	29.5
14	Fashion Technology	0	0		35	
15	Garment Technology	0	0		35	
16	Textile Technology	11	19	57.9	76	6.9
	Total	171	297	57.6	3692	21.6

Table 2.2A

Distribution of Teachers in Engineering Colleges by Highest Educational Qualification, Gender and Discipline (2005)

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	4	0	4	4	0	4	2	0	2	0	0	0	10	0	10
2	Chemical Engg	16	0	16	4	3	7	0	0	0	0	0	0	20	3	23
3	Civil Engineering	39	3	42	17	3	20	3	2	5	0	0	0	59	8	67
4	Computer Science	13	0	13	7	0	7	1	2	3	0	0	0	21	2	23
5	E&T Engineering	12	1	13	6	2	8	2	0	2	0	0	0	20	3	23
6	Electrical Engg.	12	2	14	16	5	21	3	2	5	0	0	0	31	9	40
7	Industrial & Prod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	Instru Engg	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1
9	Mechanical Engg	38	1	39	18	2	20	3	0	3	0	0	0	59	3	62
	Total	13	7	141	73	15	88	14	6	20	0	0	0	221	28	249

Table 2.2B
Distribution of Teachers in Polytechnics by Highest Educational Qualification, Gender and Discipline (2005)

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	0	0	2	2	4	0	0	0	2	2	4
5	Civil Engineering	0	0	0	20	1	21	19	7	26	0	0	0	39	8	47
6	Computer Engg	0	0	0	0	0	0	6	3	9	0	0	0	6	3	9
7	E&T Engineering	0	0	0	0	0	0	12	2	14	0	0	0	12	2	14
8	Electrical Engg.	0	0	0	8	0	8	14	7	21	0	0	0	22	7	29
9	Handloom Tech.	0	0	0	0	0	0	1	0	1	0	0	0	1	0	1
10	Instru Engg	0	0	0	0	0	0	2	0	2	0	0	0	2	0	2
11	Mechanical Engg	0	0	0	17	1	18	18	3	21	0	0	0	35	4	39
12	MOM	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	9	0	9	2	0	2	0	0	0	11	0	11
	Total	0	0	0	56	4	60	84	27	111	0	0	0	140	31	171

M=Male, F=Female

Table 2.3

Summery of Facilities for Technical Education in the State of Assam

S No.	Parameters	1991	1996	2001	2006
1	Total No of Degree Institutions	3	4	4	6
2	Total No of Diploma Institutions	9	9	10	10
3	Sanction Intake in Degree level	645	745	918	1417
4	Sanction Intake in Diploma level	1170	1170	1205	1265
5	Actual Intake in Degree level	645	726	837	1292
6	Actual Intake in Diploma level	1141	754	1109	1243
7	Outturn in Degree level	509	388	542	745
8	Outturn in Diploma level	807	624	396	631

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 2004. At degree level, a total of 252 students belonging to other states in the country came to Assam for education and 140 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 34 students came to Assam to get diploma in various disciplines. 33 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 76% (16 out of 21) 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 562 employed graduates only 147(26.2%) were employed within the state, 381 (67.9%) outside the state and 33 (5.9%) were employed abroad.

At diploma level out of 256 employed diploma holders 182 (70.2%) were employed within the state, 74 (29.8%) employed outside the state but within the country. None went abroad for employment.

3.4 AREA OF RESIDENCE

Distribution of engineering degree and diploma holders by area of residence for the batch year 2004 are furnished in the tables 3.3A –3.3B.

Out of 692 total graduate engineers 666(96.2%) were from urban area and 26(3.8%) from rural area. Out of 602 total diploma engineers 443(73.6%) were from urban area and 159(26.4%) 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 (2000-2004 ref the ATMR) the percentage of inward migration from other state to the state of Assam is as follows:

Years	Degree	Diploma
2000	32%	13%
2001	32%	5%
2002	36%	8%
2003	28%	6%
2004	36%	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
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%	-
2004	26%	68%	6%	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-2004 Batch

S.No	Discipline	Total Outturn	Migrants From other States	To Other States**	Addition to the net Outturn	Net Outrun
1	Agri Engineering	0	0	4	4	4
2	Arch Engineering	0	0	6	6	6
3	Chemical Engg	22	1	2	1	23
4	Civil Engineering	116	49	15	-34	82
5	Computer Science	104	53	39	-14	90
6	Design	17	16		-16	1
7	E&T Engineering	93	51		-51	42
8	Electrical Engg.	142	27	11	-16	126
9	Electronics & Instrumenation	0	0	4	4	4
10	Electronics Engg	0	0	10	10	10
11	Et&Communication	0	0	17	17	17
12	Information Science	0	0	6	6	6
13	Information Technology	0	0	3	3	3
14	Instrumentation Engg	19	1		-1	18
15	Mechanical Engg	177	54	17	-37	140
16	Petrolium Engineering	0	0	1	1	1
17	Production	2	0		0	2
18	Sugar Technology	0	0	1	1	1
19	Telecomn Engineering	0	0	3	3	3
20	Textile Engineering	0	0	1	1	1
Total		692	252	140	-112	580

Table 3.1B
Distribution of Migrants in total Outturn of Diploma Courses by discipline-2004 Batch

S.No	Discipline	Total Outturn	Migrants From other States	To Other States**	Addition to the net Outturn	Net Outturn
1	Agricultural Engineering	1	0	3	3	4
2	Architectural Asst	10	0	0	0	10
3	Automobile Engg	15	0	1	1	16
4	Chemical Engg	33	0	0	0	33
5	Civil Engineering	170	14	3	-11	159
6	Computer Engineering	32	0	4	4	36
7	E&T Engineering	75	0	0	0	75
8	Electrical Engg.	92	2	1	-1	91
9	Electronices & Comn Engg	0	0	9	9	9
10	Film & Television	0	0	1	1	1
11	Handloom Tech.	21	16	0	-16	5
12	Instrumentation Engg	18	0	0	0	18
13	Interior Decoration	0	0	1	1	1
14	Mechanical Engg	111	2	7	5	116
15	MOM	2	0	0	0	2
16	Printing Technology	0	0	3	3	3
17	Textile Technology	22	0	0	0	22
Total		602	34	33	-1	601

Table 3.2A

Distribution of Employed Degree Holders by Place of Work and Discipline –2004 Batch

S.No	Discipline	Within the State		Outside the State		Abroad		Total
		No	%	No	%	No	%	
1	Chemical Engg	6	27.3	16	72.7	0	0	22
2	Civil Engineering	29	33.3	46	52.9	12	13.8	87
3	Computer Science	10	9.7	83	80.6	10	9.7	103
4	E&T Engineering	5	5.7	71	81.6	11	12.6	87
5	Electrical Engg.	50	46.7	57	53.3	0	0	107
6	Instrumentation Engg	0	0.0	0	0.0	0	0	0
7	Mechanical Engg	45	33.1	91	66.9	0	0	136
8	Production	2	100.0	0	0.0	0	0	2
9	Design	0	0.0	17	100.0	0	0	17
Total		147	26.2	381	67.9	33	5.9	561

Table 3.2B

Distribution of Employed Diploma Holders by Place of Work and Discipline -2004 Batch

S.No	Discipline	Within the State		Outside the State		Abroad		Total
		No	%	No	%	No	%	
1	Automobile Engg.	10	100.0	0	0.0	0	0.0	10
2	Architectural Asst	8	100.0	0	0.0	0	0.0	8
3	Chemical Engg	10	76.9	3	23.1	0	0.0	13
4	Civil Engineering	61	91.0	6	9.0	0	0.0	67
5	Computer Engineering	11	100.0	0	0.0	0	0.0	11
6	E&T Engineering	22	73.3	8	26.7	0	0.0	30
7	Electrical Engg.	18	54.5	15	45.5	0	0.0	33
8	Handloom Tech.	0	0.0	11	100.0	0	0.0	11
9	Instrumentation Engg	3	33.3	6	66.7	0	0.0	9
10	Mechanical Engg	35	70.0	15	30.0	0	0.0	50
11	Textile Technology	3	23.1	10	76.9	0	0.0	13
12	Agricultural Engg	1	100.0	0	0.0	0	0.0	1
	Total	182	70.2	74	29.8	0	0	256

Table 3.3A

Distribution of Degree Holders by Area of Residence and Discipline -2004 Batch

S.No	Discipline	Urban Area	Rural Area	Total	Ratio of Urban to Rural
1	Chemical Engg	22	0	22	-
2	Civil Engineering	109	7	116	15.57
3	Computer Science	102	2	104	51.00
4	E&T Engineering	92	1	93	92.00
5	Electrical Engg.	133	9	142	14.78
6	Instrumentation Engg	19	0	19	-
7	Mechanical Engg	170	7	177	24.29
8	Production	2	0	2	-
9	Design	17	0	17	-
Total		666	26	692	25.62
Percentage		96.2	3.8	100	

Table 3.3B

Distribution of Diploma Holders by Area of Residence and Discipline -2004 Batch

S.No	Discipline	Urban Area	Rural Area	Total	Ratio of Urban to Rural
1	Architectural Asst	8	2	10	4.00
2	Automobile Engg	10	5	15	2.00
3	Chemical Engg	31	2	33	15.50
4	Civil Engineering	125	45	170	2.78
5	Computer Engineering	18	14	32	1.29
6	E&T Engineering	59	16	75	3.69
7	Electrical Engg.	73	19	92	3.84
8	Handloom Tech.	17	4	21	4.25
9	Instrumentation Engg	12	6	18	2.00
10	Mechanical Engg	77	34	111	2.26
11	Agricultural Engg	0	1	1	0.00
12	Textile Technology	12	10	22	1.20
13	MOM	1	1	2	1.00
Total		443	159	602	2.79
Percentage		73.6	26.4	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 2004. The analysis of engineering labour market based on establishment survey done by the BOPT, Kolkata comes under the heading **"Stock Dimension"**. Since the establishment data yet to received, so the tables and analysis of Stock dimension are not included.

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 2004 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 692 passed out student 81% were employed, 12% were studying and 7% unemployed. At diploma level, out of 602 passed out student 43% were employed, 42% were unemployed, 13% were engaged in higher study and remaining 2% were engaged in apprenticeship training, 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 561 employed graduates, 554 (99%) were engaged in engineering activities, and rest 7 (1%) were engaged in other non engineering activities.

Out of 256 employed diploma holders, 248(97 %) were engaged in engineering activities, 3(1%) were engaged in civil service and 5(2 %) 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 2004 batch are given in tables 4.3A & 4.3B.

At degree level, Design degree holders were earning the highest average salary of Rs. 29333/- per month whereas Electrical Engineering degree holders were paid the lowest average salary of Rs.11583/- per month.

At diploma level, Handloom Technology diploma holders were paid the highest average salary of Rs.7000 per month. The Architectural Assistantship Engineering diploma holders were paid the least average salary Rs. 3567/- per month.

4.2 CONCLUSION

Both at degree and diploma levels absorption rate for the batch year 2004 are better than the previous years.

Table 4.1A Distribution of Engineering Degree Holders from two years from result declaration -2004 Batch

S.No	Discipline	Paid Job in		Self employed in own/family enterprises	Unemployed and interested in self employ-yment	Studying in		Appren-ticeip trg	Unem Ployed & Looking for job	Not Looking	Received Appoint	Other Activity	Total
		India	Abroad			India	Abroad						
1	Chemical Engg	22	0	0	0	0	0	0	0	0	0	0	22
2	Civil Engineering	75	12	0	0	17	0	0	12	0	0	0	116
3	Computer Science	93	10	0	0	1	0	0	0	0	0	0	104
4	E&T Engineering	76	11	0	0	0	6	0	0	0	0	0	93
5	Electrical Engg.	107	0	0	0	7	7	0	21	0	0	0	142
6	Instru Engg	0	0	0	0	12	0	0	7	0	0	0	19
7	Mechanical Engg	136	0	0	0	36	0	0	5	0	0	0	177
8	Production	2	0	0	0	0	0	0	0	0	0	0	2
9	Design	17	0	0	0	0	0	0	0	0	0	0	17
Total		528	33	0	0	73	13	0	45	0	0	0	692
Percentage		76.3	4.8	0.0	0.0	10.5	1.9	0.0	6.5	0.0	0.0	0.0	

Table 4.1BDistribution of Engineering Diploma Holders from two years from result declaration -2004 Batch

S.No	Discipline	Paid Job in		Self Employed in Family/Own Enterprises	Unemployed and interested in self employment	Studying in		Appren-tice	Unemployed		Received Appoint	Other Activity	Total
		India	Abroad			India	Abroad		Looking for job	Not Looking			
1	Architectural Asst	8	0	0	0	2	0	0	0	0	0	0	10
2	Automobile Engg	10	0	0	0	0	0	0	5	0	0	0	15
3	Chemical Engg	13	0	0	0	9	0	0	11	0	0	0	33
4	Civil Engineering	67	0	0	0	21	0	3	79	0	0	0	170
5	Computer Engg	11	0	0	0	5	0	0	15	0	0	1	32
6	E&T Engineering	30	0	0	0	13	0	2	30	0	0	0	75
7	Electrical Engg.	33	0	3	0	5	0	2	49	0	0	0	92
8	Handloom Tech.	11	0	0	0	7	0	0	3	0	0	0	21
9	Instrumentation Engg	9	0	0	0	1	0	7	0	0	0	1	18
10	Mechanical Engg	50	0	0	0	10	0	0	51	0	0	0	111
11	Modern office Mgmnt	0	0	0	0	2	0	0	0	0	0	0	2
12	Textile Technology	13	0	0	0	2	0	0	7	0	0	0	22
13	Agricultural Engg	1	0	0	0	0	0	0	0	0	0	0	1
Total		256	0	3	0	77	0	14	250	0	0	2	602
Percentage		42.5	0.0	0.5	0.0	12.8	0.0	2.3	41.5	0.0		0.3	

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	22	0	0	0	22
2	Civil Engineering	87	0	0	0	87
3	Computer Science	103	0	0	0	103
4	E&T Engineering	87	0	0	0	87
5	Electrical Engg.	100	0	0	7	107
6	Instrumentation Engg	0	0	0	0	0
7	Mechanical Engg	136	0	0	0	136
8	Production	2	0	0	0	2
9	Design	17	0	0	0	17
Total		554	0	0	7	561
Percentage		98.8	0.0	0.0	1.2	

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	Agricultural Engg	1	0	0	0	1
2	Architectural Asst	8	0	0	0	8
3	Automobile Engg	10	0	0	0	10
4	Chemical Engg	13	0	0	0	13
5	Civil Engineering	64	3	0	0	67
6	Computer Engineering	8	0	0	3	11
7	E&T Engineering	30	0	0	0	30
8	Electrical Engg.	31	0	0	2	33
9	Handloom Tech.	11	0	0	0	11
10	Instrumentation Engg	9	0	0	0	9
11	Mechanical Engg	50	0	0	0	50
12	Textile Technology	13	0	0	0	13
Total		248	3	0	5	256
Percentage		96.9	1.2	0.0	2.0	

Table 4.3A
Average Monthly Emoluments (in Rupees) of Employed Degree Holders Time taken for First Employment by Discipline- 2004 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	27000	0	15500	27500	0	0	0	0	21375
2	Civil Engineering	17300	8000	13000	7000	8000	12000	0	16000	13167
3	Computer Science	27600	17300	50000	25875	0	0	0	0	25800
4	E&T Engineering	22000	0	21500	0	0	13500	0	0	18656
5	Electrical Engg.	7500	16978	11763	7267	0	0	5000	0	11583
6	Instru Engg	0	0	0	0	0	0	0	0	0
7	Mechanical Engg	19754	8325	9950	12500	0	26500	40000	0	16597
8	Production	0	0	5000	0	0	20000	0	0	12500
9	Design	29000	0	30000	0	0	0	0	0	29333

Table 4.3B
Average Monthly Emoluments (in Rupees) of Employed Diploma Holders Time taken for First Employment by Discipline- 2004 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	5500	0	0	0	0	0	0	2600	3567
2	Automobile Engg	0	0	0	5600	3500	0	0	0	4500
3	Chemical Engg	8000	3400	0	0	2500	0	3500	0	4350
4	Civil Engineering	5000	5750	7750	5167	7523	0	5300	7425	6315
5	Computer Engg	4250	0	7000	0	4000	0	5000	6000	5083
6	E&T Engineering	7686	7125	2500	6000	0	0	10000	6500	6750
7	Electrical Engg.	5000	6924	0	10050	5200	4000	3000	4000	5722
8	Handloom Tech.	6500	0	0	0	0	0	0	10000	7000
9	Instru Eng	6000	10000	6500	5000	0	0	0	6500	6750
10	Mechanical Engg	3000	3667	8078	6333	5833	0	10000	5750	5791
11	Agricultural Engg	0	0	0	0	0	0	4700	0	4700
12	Textile Tech.	5000	6500	2000	0	0	0	0	5000	4188

CHAPTER FIVE

FURTHER ANALYSIS OF ENGINEERING LABOUR MARKET

5.0 INTRODUCTION

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 2008.

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 561 employed engineers,70.2% were absorbed in private sectors, 12.8% in public sectors, 10.4% in govt. sectors and rest 6.6% were in other sectors.

Out of 256 employed diploma holders, 73.0% were absorbed in private sectors, 11.3% in public sectors, 10.5% in govt. sectors, 5.2% in cooperative society and other sectors.

5.2 SIZE OF ESTABLISHMENT

For the batch year 2004, 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 7.5% of employed engineers were absorbed in small establishment. Remaining 92.5% employed engineers were absorbed in large scale establishment.

At diploma level 51.6% of employed diploma engineers were absorbed in small establishment. Remaining 48.4% 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. Out of 561 employed degree engineers 54.2% were got employment through direct application. 35.7% were employed through training and placement. 1.6% were employed through public service commission. Rest 8.5% employed engineers obtained employment through other means. Out of 256 diploma engineers 78.5% got their job through direct applications, 10.2% through Training & Placement. 1.6% employed through employment exchange, 1.2% got their job through public service commission and 8.5% of diploma engineers got their job 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	0.9	0
Processing	3.4	2.0
Manufacturing	17.1	19.1
Construction	18.2	27.7
Transportation	0.9	2.0
Communication	0	3.1
Electricity	5.5	3.9
Health	0	0.8
Education	4.3	2.7
Administration	0	0.8
Repairing	1.2	11.3
Others	48.5	26.6

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	7.3	10.5
Management	3.4	1.2
Design /Planning	4.6	9.0
Imparting Training	1.6	2.0
Teaching	3.4	3.1
Production /Operation	1.8	9.0
Service	3.7	7.8
Sales/Purchase/Publicity	2.0	7.8
Technical Supervision	27.1	29.7
Manufacturing and Repairing	8.7	5.5
Testing Quality Control	3.7	5.5
Administration	0.0	0.0
Research & Development	5.2	0.8
Store Management	0.7	1.2
Software development	17.5	0
Other function	9.3	**7.0**

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. 73.4% of the total employed degree holders obtained employment on permanent basis and 26.6% on temporary basis. At diploma level, 34.8% of the totals employed were on permanent and 65.2% 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, 99.3% were against full time jobs and 0.7% were against part time job. At diploma level, out of total employed, 98.8% were against full time jobs and 1.2% were against part time jobs.

5.8 TIME TAKEN TO GET FIRST EMPLOYMENT

The data of employed technical personnel for the batch year 2004 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, at degree level out of total labour force, 82% were absorbed within first year after they pass out and 10% were employed in second year. (Table 5.8A)

At diploma level out of total labour force 26% were absorbed within the first year and 22% 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 2004 batch are presented in tables 5.9A and 5.9B.

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

At diploma level, Agricultural Engineering diploma holders were absorbed within two years. Automobile Engineering, Arch. Assistantship, Handloom Technology and Textile Technology diploma holders took two years for complete absorption. Chemical Engineering, Computer Engineering, Instrumentation Engineering and Mechanical Engineering diploma holders took 4 years for complete absorption. Civil Engineering, E&T Engineering and Electrical Engineering 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 2004 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 2004, 2005,2006, 2007. The outturn for the year 2008 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 2008. The outturns of 2007 are also estimated in this report as the outturns of 2007 are 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 2008 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 2008 is worked out as follows:

YEAR	LABOUR FORCE	ABSORBED DURING THE YEARS				SIZE OF UNEMPLOYMENT AT THE END OF 2008
		2004	2005	2006	2007	
2004	A	$A_1=A.p_1$	$A_2=A.p_2$	$A_3=A.p_3$	$A_4=A.p_4$	$A'=A-(A_1+A_2+A_3+A_4)$
2005	B	-	$B_1=B.p_1$	$B_2=B.p_2$	$B_3=B.p_3$	$B'=B-(B_1+B_2+B_3)$
2006	C	-	-	$C_1=C.p_1$	$C_2=C.p_2$	$C'=C-(C_1+C_2)$
2007	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 2008, has been estimated with the help of absorption rates of the total labour force and the outturn of 2004, 2005, 2006 and 2007 and presented in tables 5.10A and 5.10B. Since the outturn of 2007 has not been come out, outturn of 2007 has also been estimated from the previous year data. At end of year 2008 total estimated unemployment will be 272 at degree level and 939 at diploma level. The total number of degree and diploma holders estimated to be absorbed at the end of 2008 is719 and 562 respectively

5.12 CONCLUSION

From the above analysis it is seen that estimated unemployment rate decreasing year by year for both degree and diploma levels. Since the present rate of absorption at degree level is very good, in near future unemployment number may also go also zero level. But in diploma level absorption pattern is not good as degree level.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
2008	272	939	719	562

Table 5.1A

Distribution of Employed Degree Holders by Sector of Employment and Discipline 2004 Batch

SN	Discpline	Sector of Establishment							Total
		Central Govt.	State Govt.	Local Body	Public Sector	Private Sector	Co-op-Society	Other	
1	Chemical Engg	5	0	0	5	12	0	0	22
2	Civil Engineering	5	5	0	17	49	0	11	87
3	Computer Sc	15	0	0	5	78	0	5	103
4	E&T Engineering	5	0	0	10	67	0	5	87
5	Electrical Engg.	0	0	0	21	79	0	7	107
6	Instru Engg	0	0	0	0	0	0	0	0
7	Mechanical Engg	18	4	0	13	92	0	9	136
8	Production	1	0	0	1	0	0	0	2
9	Design	0	0	0	0	17	0	0	17
	Total	49	9	0	72	394	0	37	561
	Percentage	8.7	1.6	0.0	12.8	70.2	0.0	6.6	

Table 5.1B

istribution of Employed Diploma Holders by Sector of Employment and Discipline 2004 batch

S.No	Discipline	Sector of Establishment							Total
		Central Govt.	State Govt.	Local Body	Public Sector	Private Sector	Co-op-Society	Other	
1	Automobile Engg	0	0	0	5	5	0	0	10
2	Architectural Asst	0	0	0	0	8	0	0	8
3	Agricultural Engg	0	0	0		1	0	0	1
4	Chemical Engg	0	0	0	0	13	0	0	13
5	Civil Engineering	6	6	0	3	52	0	0	67
6	Computer Engineering	1	0	0	1	9	0	0	11
7	E&T Engineering	5	0	0	5	20	0	0	30
8	Electrical Engg.	0	0	0	5	28	0	0	33
9	Handloom Tech.	0	2	0	0	7	0	2	11
10	Instrumentation Engg.	0	0	0	3	6	0	0	9
11	Mechanical Engg	5	2	0	7	29	0	7	50
12	Textile Technology	0	0	0	0	9	1	3	13
	Total	17	10	0	29	187	1	12	256
	Percentage	6.6	3.9	0.0	11.3	73.0	0.4	4.7	

Table 5.2A

Distribution of Employed Degree Holders by Size of Establishment and Discipline –2004 Batch

S.No	Discipline	Size of Establishment						Total
		<=50	51-99	100-499	500-499	2500-9999	>=10000	
1	Chemical Engg	0	12	5	0	5	0	22
2	Civil Engineering	5	3	11	40	23	5	87
3	Computer Science	0	6	10	36	36	15	103
4	E&T Engineering	10	3	16	32	21	5	87
5	Electrical Engg.	14	30	0	28	21	14	107
6	Instru. Engg	0	0	0	0	0	0	0
7	Mechanical Engg	13	12	18	49	22	22	136
8	Production	0	0	1	0	1	0	2
9	Design	0	1	0	11	0	5	17
	Total	42	67	61	196	129	66	561
	Percentage	7.5	11.9	10.9	34.9	23.0	11.8	

Table 5.2B

Distribution of Employed Diploma Holders by Size of Establishment and Discipline –2004 Batch

S.No	Discipline	Size of Establishment						Total
		<=50	51-99	100-499	500-2499	2500-9999	>=10000	
1	Architectural Asst	7	1	0	0	0	0	8
2	utomobile Enginerring	5	0	0	0	5	0	10
3	Agricultural Engg	1	0	0	0	0	0	1
4	Chemical Engg	9	1	3	0	0	0	13
5	Civil Engineering	45	4	9	6	3	0	67
6	Computer Engineering	7	2	0	1	1	0	11
7	E&T Engineering	13	8	2	5	2	0	30
8	Electrical Engg.	14	7	2	5	0	5	33
9	Handloom Tech.	5	4	2	0	0	0	11
10	Instrumentation Engg	0	2	1	3	3	0	9
11	Mechanical Engg	22	6	5	5	5	7	50
12	Textile Technology	4	1	5	0	3	0	13
	Total	132	36	29	25	22	12	256
	Percentage	51.6	32.1	11.3	9.8	8.6	4.7	

Table 5.3A

Distribution of Employed Degree Holders by Source of Obtaining First Paid Employment and Discipline -2004 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	17	5	0	22
2	Civil Engineering	0	5	48	29	5	87
3	Computer Science	0	0	57	41	5	103
4	E&T Engineering	0	0	28	54	5	87
5	Electrical Engg.	0	0	79	14	14	107
6	Instrumentation Engg	0	0	0	0	0	0
7	Mechanical Engg	0	4	69	45	18	136
8	Production	0	0	0	1	1	2
9	Design	0	0	6	11	0	17
Total		0	9	304	200	48	561
Percentage		0.0	1.6	54.2	35.7	8.6	

Table 5.3B

Distribution of Employed Diploma Holders by Source of Obtaining First Paid Employment and Discipline -2004 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	8	0	0	8
2	Automobile Engg.	0	0	5	5	0	10
3	Agricultural Engg	0	0	1	0	0	1
4	Chemical Engg	0	0	10	0	3	13
5	Civil Engineering	0	3	58	3	3	67
6	Computer Engg	0	0	11	0	0	11
7	E&T Engineering	2	0	23	5	0	30
8	Electrical Engg.	0	0	29	2	2	33
9	Handloom Tech.	2	0	9	0	0	11
10	Instrumentation Engg	0	0	2	1	6	9
11	Mechanical Engg	0	0	33	10	7	50
12	Textile Technology	0	0	12	0	1	13
Total		4	3	201	26	22	256
Percentage		1.6	1.2	78.5	10.2	8.6	

Table 5.4A
Distribution of Employed Degree Holders by Nature of Activity and Discipline –2004 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	5	0	0	0	0	0	0	0	0	0	17	22
2	Civil Engg	0	0	5	58	0	0	5	0	5	0	0	14	87
3	Computer Sc.	0	0	10	0	0	0	5	0	10	0	0	78	103
4	E&T Engg	5	0	10	0	5	0	5	0	0	0	0	62	87
5	Electrical Engg	0	0	21	35	0	0	7	0	0	0	7	37	107
6	Instru. Engg	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Mech. Engg	0	13	45	9	0	0	9	0	9	0	0	51	136
8	Production	0	1	0	0	0	0	0	0	0	0	0	1	2
9	Design	0	0	5	0	0	0	0	0	0	0	0	12	17
Total		5	19	96	102	5	0	31	0	24	0	7	272	561
Percentage		0.9	3.4	17.1	18.2	0.9	0.0	5.5	0.0	4.3	0.0	1.2	48.5	

Table 5.4B

Distribution of Employed Diploma Holders by Nature of Activity and Discipline –2004 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	5	0	0	0	0	0	0	0	3	8
2	Automobile Engg	0	0	0	0	0	0	0	0	0	0	5	5	10
3	Agri Engg	0	0	1	0	0	0		0	0	0	0	0	1
4	Chemical Engg.	0	0	9	0	0	0	0	0	0	0	0	4	13
5	Civil Engg	0	0	3	54	0	0	0	0	6	0	0	4	67
6	Computer Engg	0	0	0	0	0	0	0	0	0	0	1	10	11
7	E&T Engg	0	0	8	0	2	0	0	0	0	0	8	12	30
8	Electrical Engg.	0	0	8	2	2	0	5	0	0	0	5	11	33
9	Handloom Tech.	0	0	2	0	0	0	0	0	0	2	0	7	11
10	Instrumentation	0	0	6	0	1	1	0	0	0	0	0	1	9
11	Mechanical Engg	0	0	7	10	0	7	5	2	0	0	10	9	50
12	Textile Tech.	0	5	5	0	0	0	0	0	1	0	0	2	13
Total		0	5	49	71	5	8	10	2	7	2	29	68	256
Percentage		0.0	2.0	19.1	27.7	2.0	3.1	3.9	0.8	2.7	0.8	11.3	26.6	

Table 5.5A
Distribution of Employed Degree Holders by Main Function Performed and Discipline –2004 Batch

S.N	Discipline	Undergoing Training	Direction & Management	Design & Planning	Imparting Training	Teachinig	Production & Operation	Service	Sales/Purchase/Publicity	Technical Supervision	Manufacturing & Repairing	Store Management	Testing & Qualitiy Control	Administration	Research & Development	Software Developmentr	Other	Total
1	Chemical Engg	0	0	0	0	0	0	0	0	7	0	0	0	0	5	10	0	22
2	Civil Engg	0	5	5	5	5	0	11	0	41	5	0	0	0	5	0	5	87
3	Computer Sc.	0	0	0	0	10	0	5	0	11	0	0	5	0	5	57	10	103
4	E&T Engg	0	5	16	0	0	0	0	0	20	5	0	5	0	5	10	21	87
5	Electrical Engg	28	0	0	0	0	0	0	7	30	21	0	7	0	0	7	7	107
6	Instru. Engg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Mech. Engg	13	9	0	4	4	9	4	4	41	18	4	4	0	9	9	4	136
8	Production	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	2
9	Design	0	0	5	0	0	0	0	0	2	0	0	0	0	0	5	5	17
Total		41	19	26	9	19	10	21	11	152	49	4	21	0	29	98	52	561
Percentage		7.3	3.4	4.6	1.6	3.4	1.8	3.7	2.0	27.1	8.7	0.7	3.7	0.0	5.2	17.5	9.3	

Table 5.5B

Distribution of Employed Diploma Holders by Main Function Performed and Discipline –2004 Batch

S.N	Discipline	Undergoing Training	Direction & Management	Design & Planning	Imparting Training	Teachinig	Production & Operation	Service	Sales/Purchase/Publicity	Technical Supervision	Manufacturing & Repairing	Store Management	Testing & Qualitiy Control	Administration	Research & Development	Software Developmentr	Other	Total
1	Architect. Asstt.	0	0	7	0	0	0	0	0	1	0	0	0	0	0	0	0	8
2	Automobile Eng	5	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	10
3	Agri Engg	0	0	0	0	0	0	0	0	1	0	0	0	0		0	0	1
4	Chemical Engg.	0	0	0	0	0	3	3	0	1	0	0	6	0	0	0	0	13
5	Civil Engg	6	3	12	3	3	0	3	0	28	0	0	6	0	0	0	3	67
6	Computer Engg	0	0	0	0	0	0	1	1	3	1	0	0	0	0	0	5	11
7	E&T Engg	8	0	0	0	0	5	11	2	2	2	0	0	0	0	0	0	30
8	Electrical Engg.	0	0	0	2	0	2	0	2	11	11	0	0	0	0	0	5	33
9	Handloom Tech.	0	0	2	0	0	0	0	0	3	0	0	2	0	2	0	2	11
10	Instrumentation	1	0	0	0	4	0	0	2	1	0	1	0	0	0	0	0	9
11	Mechanical Engg	7	0	2	0	0	7	2	13	15	0	2	0	0	0	0	2	50
12	Textile Tech.	0	0	0	0	1	6	0	0	5	0	0	0	0	0	0	1	13
Total		27	3	23	5	8	23	20	20	76	14	3	14	0	2	0	18	256
Percentage		10.5	1.2	9.0	2.0	3.1	9.0	7.8	7.8	29.7	5.5	1.2	5.5	0.0	0.8	0.0	7.0	

Table 5.6A

Distribution of Employed Degree Holders by Employment Nature and Discipline -2004 Batch

S.No	Discipline	Employment Nature		Total
		Permanent	Temporary	
1	Chemical Engg	17	5	22
2	Civil Engineering	53	34	87
3	Computer Science	93	10	103
4	E&T Engineering	82	5	87
5	Electrical Engg.	58	49	107
6	Instrumentation Engg	0	0	0
7	Mechanical Engg	91	45	136
8	Production	1	1	2
9	Design	17	0	17
Total		412	149	561
Percentage		73.4	26.6	

Table 5.6B

Distribution of Employed Diploma Holders by Employment Nature and Discipline -2004 Batch

S.No	Discipline	Employment Nature		Total
		Permanent	Temporary	
1	Architectural Asst	1	7	8
2	Automobile Engg	0	10	10
3	Agricultural Engg	0	1	1
4	Chemical Engg	4	9	13
5	Civil Engineering	22	45	67
6	Computer Engineering	4	7	11
7	E&T Engineering	8	22	30
8	Electrical Engg.	13	20	33
9	Handloom Tech.	4	7	11
10	Instrumentation Engg	3	6	9
11	Mechanical Engg	25	25	50
12	Textile Technology	5	8	13
Total		89	167	256
Percentage		34.8	65.2	

Table 5.7A

Distribution of Employed Degree Holders by Employment Type and Discipline -2004 Batch

S.No	Discipline	Employment Type		Total
		Full- Time	Part -Time	
1	Chemical Engg	22	0	22
2	Civil Engineering	87	0	87
3	Computer Science	103	0	103
4	E&T Engineering	87	0	87
5	Electrical Engg.	132	4	136
6	Instrumentation Engg	0	0	0
7	Mechanical Engg	107	0	107
8	Production	2	0	2
9	Design	17	0	17
Total		557	4	561
Percentage		99.3	0.7	

Table 5.7B

Distribution of Employed Diploma Holders by Employment Type and Discipline -2004 Batch

S.No	Discipline	Employment Type		Total
		Full- Time	Part -Time	
1	Architectural Asst	8	0	8
2	Automobile Engg	10	0	10
3	Agricultural Engg	1	0	1
4	Chemical Engg	13	0	13
5	Civil Engineering	67	0	67
6	Computer Engineering	10	1	11
7	E&T Engineering	30	0	30
8	Electrical Engg.	33	0	33
9	Handloom Tech.	11	0	11
10	Instrumentation Engg	9	0	9
11	Mechanical Engg	48	2	50
12	Textile technology	13	0	13
Total		253	3	256
Percentage		98.8	1.2	

Table 5.8A

Distribution of Employed Degree Holders by Time Taken and Discipline –2004 Batch

S. No.	Discipline	Waititng Period								Total Employ-Ed	Labour Force	Outtrun
		<=3	4-6	7-9	10-12	13-15	16-18	19-21	21-24			
1	Chemical Engg	5	0	10	5	0	0	0	2	22	22	22
2	Civil Engineering	29	11	23	5	5	5	0	9	87	99	116
3	Computer Science	52	26	5	20	0	0	0	0	103	104	104
4	E&T Engineering	60	5	10	0	0	5	0	7	87	88	93
5	Electrical Engg.	14	35	28	21	0	0	7	2	107	128	142
6	Instru Engg	0	0	0	0	0	0	0	0	0	7	19
7	Mechanical Engg	59	18	18	27	0	9	4	1	136	141	177
8	Production	0	0	1	0	0	1	0	0	2	2	2
9	Design	11	0	5	0	0	0	0	1	17	17	17
Total		230	95	100	78	5	20	11	22	561	608	692
Percentage		37.8	15.6	16.4	12.8	0.8	3.3	1.8	3.6	92.3		

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

Table 5.8B

Distribution of Employed Diploma Holders by Time Taken and Discipline -2004 Batch

S.No	Discipline	Waititng Period								Total Emp-loyed	Labour Force	Outtrun
		<=3	4-6	7-9	10-12	13-15	16-18	19-21	21-24			
1	Architectural Asst	2	0	0	0	0	0	0	6	8	10	10
2	Automobile Engg	0	0	0	5	5	0	0	0	10	15	15
3	Agri Engineering	0	0	0	0	0	0	1	0	1	1	1
4	Chemical Engg	3	3	0	0	3	0	3	1	13	24	33
5	Civil Engineering	6	18	12	9	6	0	6	10	67	149	170
6	Computer Engg	3	0	1	0	1	0	1	5	11	27	32
7	E&T Engineering	5	11	2	5	0	0	2	5	30	62	75
8	Electrical Engg.	2	11	0	2	2	2	2	12	33	87	92
9	Handloom Tech.	5	0	0	0	0	0	0	6	11	14	21
10	Instrumentation Engg	1	1	3	1	0	0	0	3	9	17	18
11	Mechanical Engg	2	7	10	7	7	0	2	15	50	101	111
12	MOM	0	0	0	0	0	0	0	0	0	2	2
13	Textile Technology	6	1	1	0	0	0	0	5	13	22	22
Total		35	52	29	29	24	2	17	68	256	531	602
Percentage		6.6	9.8	5.5	5.5	4.5	0.4	3.2	12.8	48.2		

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

Table 5.9A

Distribution of Degree Holders by Absorption Rate and Discipline -2004 Batch

S.No	Discipline	Percentage of Absorption during the				
		I Year	II Year	III Year	IV Year	More than IV Year
1	Chemical Engg	91	9			
2	Civil Engineering	69	19	12		
3	Computer Science	99	1			
4	E&T Engineering	85	14	1		
5	Electrical Engg.	77	7	16		
6	Instrumentation Engg	0	0	0		
7	Mechanical Engg	87	9	4		
8	Production	50	50			
9	B.Design	94	6			
Average		82	10	8		

Table 5.9B

Distribution of Diploma Holders by Absorption Rate and Discipline -2004 Batch

S.No	Discipline	Percentage of Absorption during the				
		I Year	II Year	III Year	IV Year	More than IV Year
1	Auotomobile Engg	33	33	34		
2	Architectural Asst	20	60	20		
3	Agricultural Engg	0	100			
4	Chemical Engg	25	29	27	19	
5	Civil Engineering	30	15	20	20	15
6	Computer Engg	15	26	44	15	
7	E&T Engineering	37	8	28	22	5
8	Electrical Engg.	17	14	28	25	16
9	Handloom Tech.	36	43	21		
10	Instrumentation Engg	35	18	37	10	
11	Mechanical Engg	26	24	35	15	
12	Textile Technology	36	23	41		
Average		26	22	31	18	3

Table 5.10A
Estimates by Total Absorption, Availability and Size of Unemployment and Discipline at Degree Level

S.No	Discipline	Total estimated absorption during 2008	Outturn (Availibility for job during)				Size of Unemployment at the end of 2008(excluding the outturn 2008)
			2004	2005	2006	*2007	
1	Chemical Engg	50	22	25	53	50	2
2	Civil Engg	119	116	98	132	120	54
3	Computer Sc.	111	104	109	115	112	4
4	E&T Engg	102	93	102	103	102	16
5	Electrical Engg	107	142	117	95	106	40
6	Instrumention Engg	0	19	35	31	32	117
7	Mech. Engg	191	177	183	200	190	32
8	Production	6	2	4	2	10	5
9	B.Design	33	17	34	33	33	2
	Total	719	673	672	733	723	272

Table 5.10B
Estimates by Total Absorption, Availability and Size of Unemployment and discipline at Diploma Level

S.No	Discipline	Total estimated absorption during 2008	Outturn (Availability for job during)				Size of Unemployment at the end of 2008(excluding the outturn 2008)
			2004	2005	2005	*2007	
1	Architectural Asst	8	10	8	8	6	5
2	Auotomobile Engg	9	15	15	3	9	7
3	Agricultural Engg	0	1	2	0	5	5
4	Chemical Engg.	27	33	17	35	25	38
5	Civil Engg	152	170	173	205	180	325
6	Computer Engg	34	32	33	34	35	54
7	E&T Engg	65	75	57	71	65	93
8	Electrical Engg.	96	92	122	98	110	202
9	Handloom Tech.	34	21	30	35	35	29
10	Instrumentation	11	18	12	7	10	12
11	Mechanical Engg	111	111	116	105	110	152
13	Textile Tech.	15	22	14	17	15	17
Total		562	600	599	618	605	939

*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 2004 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, 99% of Computer Sc. and Engineering ,94% of B. Design, 91% of Chemical Engineering ,87% of Mechanical Engineering,85% of Electronics and Telecommunication Engineering, 77% of % Electrical Engineering ,69% of Civil Engineering and 50% of Industrial & Production engineering degree holders were absorbed within one year.
(Table No. 6.1).

At diploma level 37% of Electronics and Telecommunication Engineering,36% of Handloom Technology and Textile Technology, 35% of Instrumentation Engineering , 33% of Automobile Engineering, 30% of Civil Engineering, 26% of Mechanical Engineering, 25% of Chemical Engineering, 20% of Architectural Engineering, 17% of Electrical Engineering ,and 15% of Computer Engineering, 29% Textile Technology, 17% E&T Engineering , 29% and, 29% Civil 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 –2004 Batch

S.No	Discipline	Time Taken for 95% Absorption (Years)	Absorption within one Year (Percentage)
1	Chemical Engg	2 years	91
2	Civil Engg	3 years	69
3	Computer Sc.	1 year	99
4	E&T Engg	2years	85
5	Electrical Engg	3 years	77
6	Mech. Engg	2 years	87
7	Production	2 years	50
8	B.Design	2 Years	94

Table 6.2

Comparative Analysis of Diploma Holders by Absorption Period and Discipline –2004 Batch

S.No	Discipline	Time Taken for 95% Absorption (Years)	Absorption within one Year (Percentage)
1	Automobile Engg	3 years	33
2	Architectural Asst	3 years	20
3	Agricultural Engg	2 years	0
4	Chemical Engg.	4 years	25
5	Civil Engg	More than 4 years	30
6	Computer Engg	4 years	15
7	E&T Engg	4 years	37
8	Electrical Engg.	More than 4 years	17
9	Handloom Tech.	3 Years	36
10	Instrumentation	4 years	35
11	Mechanical Engg	4 years	26
12	Textile Tech.	3 years	36

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. At Degree level no self employment engineers. So here we only discuss the self-employment pattern for diploma engineers only.

7.1 SELF EMPLOYMENT BY AREA OF ACTIVITY

Area of activity of self employed engineering diploma holders are presented in table 7.1 respectively. At diploma level out of 5 self employed personal, 1 was engaged in manufacturing and remaining 4 were in other area.

7.2 LOCATION

Location of self employed engineering diploma holders were presented in table 7.2. All the self-employed diploma engineers, doing their business in town area.

7.3 FINANACIAL SOURCE

Financial source of self employed engineers are shown in tables 7.3. Out of 5 self-employed diploma engineers, 3 were self employed were with own finance and remaining 2 were self employed with other finace.

7.4 FINANCIAL INVESTMENT

All the self employed diploma engineers invested their business less than Rs 50,000.

7.5 CONCLUSION

From the data received and analysed it can be concluded that self-employment in the state of Assam is still not developing. Fresh engineers of the state still look for jobs rather than going for self employment.

Table 7.1

Distribution of Diploma Holders Self-Employed by Area of Activity and Discipline 2004 Batch

S.No	Discipline	Manufacturing	Repair & Maintenance	Construction	Shop-Keeping	Consultancy	Farming	Financial Activity	Others	Total
1	Electrical Engg	0	0	0	0	0	0	0	3	3
2	Textile Tech.	1	0	0	0	0	0	0	1	2
Total		1	0	0	0	0	0	0	4	5
Percentage		20	0	0	0	0	0	0	80	

Table 7.2

Distribution of Diploma Holders Self Employed by Location and Discipline –2004 Batch

	Discipline	Village	Town	Total
1	Electrical Engg	0	3	3
2	Textile Tech.	0	2	2
Total		0	5	5
Percentage		0	100	

Table 7.3

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	Electrical Engg	2	0	0	0	0	0	0	1	3
2	Textile Tech.	1	0	0	0	0	0	0	1	2
Total		3	0	0	0	0	0	0	2	5
Percentage		60	0	0	0	0	0	0	40	

Table 7.4

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	Electrical Engg	3	0	0	3
1	Textile Tech	2	0	0	2
Total		5	0	0	2
Percentage		100	0	0	100

Appendix

List of Technical Institutions of Assam

A. Degree Institutions

S.N.	Name and address of Institute	Year of Estt.	Branches Offered with sanctioned Intake	Phone/Fax	Email/ Website
1	Assam Engineering College, Jalukbari, Guwahati- 13	1956	Civil(60), Mechanical (60), Electrical (60), E&T Engg(30)., Industrial & Production (20) Instrumentation(20), Chemical(30),Computer Science(20)	0361-2570550 0361-2572215	ntmis_aec@sify.com www.aec.assam.org
2	Jorhat Engg College, Jorhat-785001	1960	Civil (60), Mechanical (60), Electrical (40), Instrumentation (20), Computer Sc(30).	0376-2320340 0376-2330134	principaljecin@yahoo.com
3	National Institute of Technology Silchar-788010	1967	Civil (56), Mechanical (50), Electrical (46), E&T(30), Computer Sc(30).	03842-233179 03842-233797	www.nits.ac.in
4	Indian Institute of Technology North Guwahati,Guwahati-781039	1994	Civil(40),Mech(52), Comp.Sc.(45), E&C(45), Chem(30), B.Design(26), Bio-Tech(30)	0361-2690321 0361-2690762	acad@iitg.ernet.in www.iitg.ernet.in
5	School of Engineering –Tezpur University, Tezpur-784039	2006	ECE(30), Mech(30), Comp.Sc (30)		
6	Girija Nanda Institute of Mangement and Technology, Azara-781017, Kamrup	2006	Comp.Sc(60), Information Tech(60), Instrumentation Engg(60), ECE (60)		

B. Diploma Institutions

S.N.	Name and address of Institute	Year of Estt.	Branches Offered with sanctioned Intake	Phone/Fax	Email/ Website
1	Assam Textile Institute, Ambari, Guwahati-781001	1920	Textile Technology (40),Fashion Tech(20), Garment Tech(20)	0361-2544116	
2	The Prince of Wales Institute Jorhat-785 001	1927	Civil (60), Electrical (35), Mechanical (35), Agriculture Engg.(30) Automobile Engg(30)., Instrumentation(30), E&T Engg(30)	0376-2320074 0376-2328557	
3	Assam Engineering Institute, Chandmari, Guwahati- 781003	1948	Civil(90), Mechanical (30), Electrical (30), E&T Engg(30)., Chemical(30),Computer Science(30)	0361-2550852 0361-2564693	
4	Silchar Polytechnic, Silchar-788 015	1960	Civil (90), Electrical (30), Mechanical (40), E&T. Engg.(20)	03842-240273 (Tele Fax)	
5	Nagaon Polytechnic Pulibar, Nagaon-782001	1961	Civil (60), Electrical (30), Mechanical (30), Computer Engg(20).	03672-222032	

S.N.	Name and address of Institute	Year of Estt.	Branches Offered with sanctioned Intake	Phone/Fax	Email/ Website
6	Girls' Polytechnic, Bamunimaidan, Guwahati-21	1964	Modern Office Management (30), Architectural Assistantship (30)	0361-2550208 0361-2550852	
7	Dibrugarh Polytechnic, Lahowal, Dibrugarh-786010.	1965	Civil (60), Electrical (30), Mechanical (30)	0373-2381749	
8	Indian Institute of Handloom Technology, Khanapara, Guwahati –781022	1982	Handloom Technology (30)	0361-2301(669/670) 0361-2301669	iihtghy@sancharnet.in
9	Bongaigaon Polytechnic, Bongaigaon-783 380	1986	Civil (60), Electrical (15), Automobile (15)	03668-242211	
10	Residential Girl's Polytechnic, Pulibar Golaghat-785621	1998	Electronics & Telecomm.(30) Textile Chemistry & Design.(30)	03774-284548	