



GOVERNMENT OF KERALA

18

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# **MANPOWER STUDIES**

## **No. 45**

### **A REPORT**

### **ON**

### **THE SUPPLY OF AND DEMAND FOR ENGINEERING PERSONNEL IN KERALA DURING THE PERIOD 1978-83**

MANPOWER DIVISION  
DEPARTMENT OF ECONOMICS & STATISTICS, KERALA  
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## FOREWORD

Educated unemployment is a serious problem facing the Kerala Economy. Technically qualified persons, also are victims of this menace. Skill drain, has thus become more a necessary evil, than a matter of petro-dollar attraction. Our economy is deprived of the benefit of skill utilisation. In this context, the Manpower Cell in the P. W. D., found it of extreme use to Study the Supply and Demand of Engineering Personnel in Kerala during the plan period 1978-83 with the specific objectives of ascertaining the extent of unemployment among the engineering category and reviving the plan strategy in reducing this malady. This study is limited to Engineering personnel in the public sector.

I am presenting this report prepared by Sri K. Madhavan Unni, Manpower Officer in the P.W.D. Hope that this study will be of much use to planners and administrators.

Trivandrum,  
7-6-1982.

DR. R. S. KURUP,  
*Director.*

## INTRODUCTION

The goal of Indian planning is the achievement of rapid growth of the economy consistent with the other primary objectives of self-sufficiency, self-reliance and equity. Much progress has indeed taken place in the last 30 years of planning in this direction, as a result of the substantial investment made in the various sectors like Agriculture, Irrigation, Industries, etc. However the fact remains that the growth in the national income has been rather slow and the objective of equity in development with its emphasis on removal of poverty has not been adequately realised.

Kerala occupies an area of 38,864 sq. km. which is about 1.18% of the total area of the country. The population of the State has increased from 213.47 lakhs, in 1971 to 254.03 lakhs in 1981; Kerala accounts for nearly 3.9% of the total population of the country.

In our State, the problem of Unemployment has now assumed serious proportions. As at the national level, at the State level also no dent could be made in to this problem. The two causative factors, in the aggravation of unemployment, viz., increase in the labour force, and the slow growth of productive activities, are more acute in Kerala than in many other states. Hence the unemployment situation tended to worsen over the plan periods. According to Employment Exchange figures, unemployment in the State shows an increasing trend over the years. By the end of 1973, the total number of job seekers registered with the Employment Exchanges was about 2 lakhs, this shot upto 8.5 lakhs by the end of 1977. Out of the 8.5 lakhs of job seekers, 4.5 lakhs are having educational qualifications of S.S.L.C. and above. The estimates of unemployment made by planning commission indicate that, Kerala which accounted for 3.36% of the all India labour force had 10.11% of the total unemployed in India. Unemployment rate in the State measured as a ratio of the unemployed to the total labour force was the highest in India. In 1972-73, it was 25.23% for Kerala as against 8.34% for India as a whole.

This fact has been seriously considered in the formulation of the sixth plan of the State. Naturally one of the plan objectives is to create as many job opportunities as possible to solve the massive unemployment problem. The strategy adopted for this purpose is that the plan allocations should aim at employment-oriented development by:—

- (i) Adopting an employment-intensive approach to sectoral and regional development.
- (ii) Directing and regulating technological change in favour of rapid employment generation through financial and physical policy instruments, and
- (iii) Drawing up area-specific development plans and beneficiary-based programmes for full employment.

In this context it was felt necessary to conduct a study on the supply of and demand for Engineering personnel in the State during the period 1978-83, in order to ascertain, how far the employment situation for Engineering personnel can be improved by properly implementing the various scheme both plan and non-plan.

### Importance of Manpower Planning

The implementation of Five-Year Plans increased the supply of and demand for Engineering personnel in the State. However not much has been done to study and assess in a systematic and comprehensive way, the supply of and demand for Engineering personnel in the State. Science and Technology have come to be recognised an essential ingredient of economic development. For this the most important factor is human resources. Human beings are the means as well as the end of production. That is why Man Power Planning is considered as sine-qua-non of the process of planning.

### Object of the study

The object of the study is to ascertain the demand for Engineering personnel in detail during the period 1978-83 and to assess how far this demand can be met by the supply of Engineering personnel from the various Engineering Colleges, Polytechnics, and Industrial Training Institutes functioning in the State. We have a general idea that the supply of Engineering personnel in our state will be more than the demand (since the general trend in this regard is of this nature). However the study will enable us to have an idea of the unemployment situation among the Engineering personnel during the period, and how far the plan strategy has to be revised to reduce the unemployment rate.

### Technique of Investigation

To ascertain the demand for Engineering personnel during the period, each Department/Corporation/Board/other Government agency was contacted. The requirements of each unit in this regard was estimated. From the information thus obtained, the requirement of Engineering personnel, according to their qualification, during each year of 1978-83 was estimated.

To study the supply position, the annual intake capacity of the 6 Engineering Colleges, 14 Polytechnics, 21 Junior Technical Schools and 41 Industrial Training Institutes were studied. The results of the studies undertaken to determine, the wastage in Technical Education is taken into account to ascertain the availability of Engineering personnel, post-Graduate, Degree Holders etc., year-wise, during each year of the plan period.

A list of institutions imparting Technical Education in the State is furnished as Appendix I. Details of the

type of management, courses, of study offered in each institution, duration of each course, minimum qualification for admission to each course, annual intake capacity are also furnished.

### **Limitations of the study**

To get a correct picture of the demand for Engineering personnel in the State during the period, the demand that would arise both in public sector and private sector undertakings have to be considered. To get details of the demand in private sector, only census method will bear fruit, since one can not expect all the firms to send the requirement details correctly. Due to paucity of funds, such a method could not be adopted. Only the requirements of Engineering personnel in the public sector are dealt with in this report.

However efforts have been made to collect the data on Engineering personnel working in some leading private sector industries and their demand for Engineer-

ing personnel during the period 1978-83. The available data are furnished in Chapter 14.

The details relating to the supply side will also be inaccurate to the extent that it does not include the details of persons, who get themselves qualified for Engineering jobs by their studies outside the state. To get an idea of the opportunities available for students from Kerala, in the Engineering colleges of different states in India, details for one year viz., 1980-81 are furnished in Appendix I (Tables I and II).

There is demand for Engineering personnel in Middle East Countries and other foreign countries and many Keralites are going abroad seeking employment. In other states of India there are more employment opportunities for Engineering personnel and many Keralites are employed in various places. But data relating to out migration of such Engineering personnel are not readily available and hence have not been included in this report. This is another limitation of this study.

## REQUIREMENT OF ENGINEERING PERSONNEL IN THE PUBLIC WORKS DEPARTMENT

A brief description of the set up of the P.W.D. is furnished below, since this information would make it easier to ascertain the requirements of Engineering personnel in the Department during the period 1978-83.

The Public Works Department was functioning with the under-mentioned wings in 1978, the beginning of the plan period:

- (1) General, Buildings and Roads.
- (2) Projects
- (3) Irrigation and
- (4) National Highways.

Each of these, except projects, functioned under a separate Chief Engineer; in the Project wing due to heavy workload, there were 3 Chief Engineers. The Chief Engineer (General, Buildings & Roads) is exercising the powers relating to establishment matters.

The Buildings and Roads wing attends to all the works relating to roads and buildings (except National Highways) and the Building Works of various sister departments of the State Government. This wing also renders services to Panchayats, N. E. S. Blocks, Municipalities, etc., for the finalisation of estimates, execution of work etc. The valuation of buildings, issue of rent certificates required for the accommodation of Government Offices etc., issue of utilisation certificate in respect of construction of houses under loan schemes, electrification of Government buildings, installation and maintenance of Community Listening Sets and Public Address Equipments for the state functions etc., are also attended to by this wing.

The works taken up by this wing for construction and maintenance of roads can be broadly classified as follows:—

- (i) Development of Roads and Bridges under 'Transport and Communication'—Plan.
- (ii) Maintenance of Works of Roads and Bridges—Non-Plan
- (iii) Works relating to Roads of Inter-State on economic importance which are carried out under grant-in-aid of the Government of India.
- (iv) Investigation and Planning and
- (v) Highway Research.

The project wing mainly attends to:

- (i) Construction works of projects which have been commissioned, but the construction work of which have not yet been completed.
- (ii) Continuing the construction of works to projects which have been taken up already.

- (iii) Construction works relating to New projects taken up during the fifth plan period and
- (iv) Investigation and planning of new projects.

In 1978-79 there were 3 Chief Engineers working in this wing and they were in charge of the projects as given below:—

*Chief Engineer, Project (I)*

- (1) Pamba, (2) Pazhassi, (3) Kuttiadi, (4) Kanhirapuzha, (5) Chitturpuzha, (6) Kakadavu, (7) Beyyurpuzha, (8) Banasura Sagar, (9) Kuriarkutty-Karapara, (10) Meenachil, (11) Vamanapuram.

*Chief Engineer Project (II)*

- (12) Periyar Valley, (13) Muvattupuzha, (14) Attappady, (15) Karapuzha, (16) Chimini, (17) Edamalayar.

*Chief Engineer Project (III)*

- (18) Kallada

Nine Superintending Engineers were entrusted with the works relating to the above 18 Projects and the projects which have been already completed. The list of circles and the projects included in each circle is furnished below:

<i>Name of Circle</i>	<i>Projects</i>
1. Irrigation South Circle, Trivandrum	1. Neyyar
2. Kallada Irrigation Project Circle, Kottarakkara	1. Kallada
3. Kallada Irrigation Project, (Investigation) Circle, Kottarakkara	1. Kallada 2. Vamanapuram
4. Pamba Irrigation Project Circle, Pathanamthitta	1. Pamba 2. Meenachil
5. Muvattupuzha valley Irrigation Project Circle, Muvattupuzha	1. Periyar Valley 2. Muvattupuzha
6. Irrigation Central Circle, Trichur	1. Chalakudy 2. Peechi 3. Vazhani 4. Cheerakkuzhy 5. Chimoni
7. Sirrivani Project Circle, Palghat	1. Malampuzha 2. Mangalam 3. Gayathri 4. Walayar 5. Pothundi

Name of Circle	Projects
8. Project Circle Calicut	6. Chitturpuzha
	7. Kanhirapuzha
	8. Attappady
	9. Edamalayar.
	1. Kuttiadi
9. Project Circle, Cannanore	2. Karapuzha
	3. Kuriarkutty
	Karappara-
	4. Banasura Sagar
	5. Bepurpuzha
	1. Pazhassi
	2. Kakkadavu

The Irrigation wing attends to the following categories of work:—

1. Minor Irrigation Works.
2. Lift Irrigation Works.
3. Flood Control Works.
4. Anti-sea Erosion Works.
5. Inland Water Transport Navigation, Embankment and Drainage Works.
6. Land Improvement Works.
7. Yela Programmes and
8. Deepening of Wells and Tanks.

The activities of the National Highway wing relates to the National Highways in the State which consists of N. H.-47 and N. H.-17. The N. H.-47, enters Kerala State at Walayar on the northern border and passes through Palghat, Trichur, Ernakulam, Alleppey, Quilon and Trivandrum to Kanyakumari in Tamilnadu. The N. H.-17 connects Thalapady near Mangalore and Trichur via Kuttippuram, Edappally, Puduponnani, Chowghat, Cranganur and Parur. The present length of National Highways in the State is as furnished below.

N. H.-47 .....	416.8 kms.
N.H.-17 .....	422.0 kms.
<b>Total</b>	<b>838.8 kms.</b>

The activities of the wing mainly relates to the widening and strengthening of single lane section to two lane section of the different reaches of the National Highways in the State, construction of bypasses in congested areas, reconstruction of bridges, construction of new bridges, reconstruction of old culverts, construction of new culverts, maintenance of State Highways within the Municipal limits, and works relating to Roads of Economic or Inter-State Importance and Roads constructed/maintained out of allocation received from central road fund.

The plan proposal of each wing are discussed briefly in the following paragraphs.

### Buildings & Road Wing

The sectoral allocation provided in the draft plan under items VI-Transport and Communication—6.1—Roads is Rs. 90 crores. The scheme-wise outlay is given in Table 2.1.

### Project Wing

The main objective of schemes to be implemented by this wing during 1978-83 plan is to increase the net area irrigated through major and medium irrigation to 2.5 lakhs hectares (net) equivalent to gross area of 5.2 lakh hectares. The strategy adopted in this plan is (i) The completion of the following on-going scheme (i) Pamba, (ii) Periyar Valley, (iii) Chitturpuzha, (iv) Kanhirapuzha, (v) Kuttiadi, (vi) Chumont, (vii) Attappady and (viii) Karappuzha, (ix) Kallada, (x) Muvattupuzha and (xi) Pazhassi.

2. To start the undermentioned seven new projects which will satisfy the irrigation water requirements of backward areas:

1. Idamalayar,
2. Meenachil,
3. Vamanapuram,
4. Beporepuzha,
5. Kuriarkutty—Karapara,
6. Kakkadavu, and
7. Banasura Sagar.

Plan outlays and physical targets of the above major and medium irrigation schemes is furnished in Table 2.2.

**Table 2.1**  
ROADS AND BRIDGES—SCHEME-WISE OUTLAY

Sl. No.	Scheme	1978-83 outlay proposed (Rupees in lakhs)
1	Strategic Roads	3.00
2	State Highways	1950.00
3	District and other roads	1400.00
4	Machinery and equipments	50.00
5	Rural roads	4038.00
6	Planning, Research, Survey and Investigation	207.00
7	Railway safety works	50.00
8	Hill Highways	300.00
9	Improvement of roads in the 3 cities of Trivandrum, Cochin & Calicut	300.00
10	Improvement of Town roads	100.00
11	Improvement of roads of Industrial Importance	22.00
12	Improvement and opening of new roads in Tribal Areas and Tribal and scheduled caste settlements	400.000
13	Rubberisation of Roads	30.00
14	Providing access to islands	100.00
15	Improvements of accident-prone spots to roads and highways	50.00
	<b>Total</b>	<b>9000.00</b>

Table 2.2

PLAN OUTLAYS AND PHYSICAL TARGETS—MAJOR AND MEDIUM IRRIGATION SCHEMES (1978-83 PLAN)

Sl. No.	Name of scheme	Plan outlay (Rs. crores)	Target Gross hectares
(1)	(2)	(3)	(4)
<b>A Continuing schemes</b>			
1	Periyar Valley	8.92	41,568
2	Pamba	14.08	27,061
3	Kallada	49.00	30,000
4	Kuttiadi	7.62	21,868
5	Chitturpuzha	3.48	8,269
6	Kanhirapuzha	10.73	12,114
7	Pazhassi	20.00	20,000
8	Karapuzha	6.99	9,300
9	Attappady	7.98	6,200
10	Muvattupuzha	12.00	12,000
11	Chimony	10.87	26,200
Total		151.67	214,580

### Irrigation Wing.

**A. Flood Control.**—Occurance of floods in rivers and resultant damages to crops and valuables in the river basin are serious problems that exist in the state. Generally during South West Monsoon floods occur almost simultaеously in all the regions of the state accompanied by landslides on the hills, flooding in the plains and erosion and tidal over-flow along the sea coast. The method adopted till the end of the fifth plan was to take up small protection works along the river margins with the very meagre plan outlays. This being quite insufficient to solve the problem the strategy to tackle the problem is revised. It has been programmed to solve the problem through (a) long term plan aimed at controlling the factors which cause floods and reduce damages and (b) a short term plan to meet the immediate requirements. The short term plan includes the completion of works in hand and protection of river basins which are subjected to serious and frequent floods, widening and deepening of leading channels to Thottappally, spill way to releave the flood problems of Kuttanad area, providing better drainage facilities to low lying cities like parts of Cochin, Calicut etc., and deepening of the river mouths of lower reaches of certain rivers and backwaters for quick discharge of flood waters.

The 1978-83 plan envisages implementations of the proposals under the short range plan and also carrying out necessary investigation for the long range plan. A provision of Rs. 10 crores is made for flood control programmes. Schemes included in plan 1978-83 are furnished below.

Table 2.3

PLAN OUTLAY ON FLOOD CONTROL 1978-83 PLAN

Sl. No.	Item of work	Plan outlay (Rs. in crores)
1.	Spill over works	2.00
2.	Identifide works on zonal basis	2.95
3.	New works including preparation of a master plan for flood control works and maintenance of completed works	5.05
Total		10.00

**B. Anti Sea erosion.**—The State has a coastline of 562 km. which is subjected to severe erosion at several places during the monsoons when the sea becomes rough. In several areas the sea has been continuously devouring away valuable lands, and buildings, rendering thousands of people homeless. Besides, due to high tidal waves, the coastline as well as adjoining low lying lands are submerged in many places destroying dwelling houses, paddy fields etc., pollutes the inland fresh water sources and rendering them useless for cultivation and domestic use. Shore protection works are necessitated on the coast of Kerala to combat a sea-erosion and eliminate damages resulting from tidal overflow.

Out of 562 km. of coastline, the coast requiring protection is estimated to be 320 km. of this the length of coastline requiring immediate protection is 246 km. The estimated cost of protection and Stabilisation of 320 km. of coast is Rs. 78.7 crores and that for 246 km. is Rs. 313 crores.

By 1978 March, the total coastline protected in the State was nearby 189 km. through various types of coastal protection works, also work was in progress over a length of 40 km.

The outlay proposed for 1978-83 for anti sea-erosion works in the state sector is Rs. 15 crores, and the central sector is Rs. 30 crores.

The details of outlay on anti sea-erosion works for 1978-83 is furnished in the following tables.

Table 2.4

PLAN OUTLAY ON ANTI SEA EROSION WORKS 1978-83 PLAN

Sl. No.	Items of works	(*) Plan outlay Rs. in crores
1.	Spill over works	11.45
2.	Coast requiring new rubble sea wall protection	13.65
3.	Coast where sea wall requires reformation and repairs	14.00
4.	Coast requiring new temporary protection	0.20
5.	Coast to be nourished on top priority	0.70
6.	Stabilisation of inlets and protection coast adjuscent to inlets	1.00
7.	Protection of head land bay formation by off shore break waters	1.00
Total		45.00

(\*) The outlay include central sector scheme for Rs. 300 crores also:



## Minor Irrigation

The Minor Irrigation Circle, Trivandrum with Divisions at Trivandrum, Quilon, Chengannur, Kottayam, Ernakulam and Trichur and the Minor Irrigation Division at Cannanore, Calicut, Malappuram and Palghat which are included in the Irrigation Circle, Calicut attends to the following categories of works.

1. Construction and renovation of irrigation tanks
2. Construction and diversion works from natural resources
3. Salt exclusion works
4. Reclamation of Kayals (Backwaters)
5. Improvements and protection works in streams and channels serving irrigation, drainage
6. Lift irrigation works

The investigation works relating to minor irrigation is undertaken by the various Investigation sub-divisions attached to Minor Irrigation Division and Minor Irrigation Investigation Division, Ernakulam.

The minor irrigation works are generally divided into three categories.

1. Minor Irrigation Class I Works.
2. Minor Irrigation Class II Works and
3. Land Improvement Works.

Works costing 2 lakhs and above up to 25 lakhs are classified as class I works. The upper limit is raised to Rs. 30 lakhs in hilly areas.

Works other than petty works, costing upto Rs. 2 lakhs are brought under class II works.

Schemes for the construction of bunds, reclamation of land etc. are included in land improvement works.

Considering the enormous potential for the exploitation of both surface and ground water through minor irrigation class II works, a collective effort has been launched in the State with the participation of beneficiary farmers. Fifty per cent of cost of each project would be met by the Government, while another 25% would be provided by CARE in the form of wheat, the remaining 25% being the contribution of the beneficiaries. This has been recently modified to 75%, 15%, and 10% respectively. The Collectors and Block Development Officers have been given overall responsibility for organising beneficiary committees to take up these works and the Public Works Department is rendering necessary help in the matter.

Up to the end of 1978 March 1,07,390 hectares (net)/1,25,172 hectares gross have been benefited by Minor Irrigation Works. It is proposed to provide 6 lakhs hectares with minor irrigation facilities during 1978-83. The objective for 1978-83 plan is to bring an additional 73,750 hectares under minor irrigation for food crop and cash crop cultivation. The details of plan outlay and targets for minor irrigation is furnished in Table 2.5.

Table 2.5

PLAN OUTLAY AND TARGETS FOR (1978-83 PLAN)  
• MINOR IRRIGATION

Type of scheme	Financial outlay (Rs. in crores)	Physical targets in hectares	
		Net	Gross
1. Minor Irrigation Class I	7.50	11,200	16,800
2. Lift Irrigation	8.60	12,900	19,350
3. Minor Irrigation Class II (P.W.D.)	0.35	1,600	1,600
4. Minor Irrigation Class II People's participation	4.00	10,000	10,000
5. I.P.D. Yela	4.00	8,000	8,000
6. Deepening of wells and Tanks	0.05	..	..
7. Investigation and Development of ground water schemes	2.00	..	..
8. Restoration of Damaged Minor Irrigation works	2.50	18,000	18,000
9. Investigation	1.00	..	..
Total	30.00	61700	73,750

The details of Engineering staff working in the Department as on 1-4-1978 is furnished in Table 2.6 (The details of certain intermediate categories are not included). The age profile of the Engineering personnel whose details are furnished in Table 2.6 is furnished in Table 2.7.

The details of total annual requirement of Engineering personnel during each year of the period 1978-83 is furnished in Table 2.8.

The details of total annual requirement of Engineering personnel - Intermediate categories is furnished in Table 2.9.

The data on additional requirement of Engineers etc. according to Educational status is furnished in Table 2.10.

Table 2.6

PUBLIC WORKS DEPARTMENT, KERALA  
DETAILS OF ENGINEERING PERSONNEL AS ON 1-4-1978

Sl. No.	Designation	Scale of pay as on 1-4-1978	Scale of pay from 1-7-1978	No. of post sanctioned	No. in position
(1)	(2)	(3)	(4)	(5)	(6)
1.	Chief Engineer	1400-1900	1800-2250	6	6
2.	Arbitrator	do.	do.	1	1
3.	Deputy Chief Engineer/Senior Mechanical Engineer	1150-1650	1450-2050	5	5
4.	Senior Architect	do.	do.	1	1
5.	Superintending Engineer	do.	do.	14	14
6.	Executive Engineers	850-1450	1125-1725	114	114
7.	Assistant Executive Engineers	560-1100	750-1450	464	464
8.	Assistant Engineer/Head Draftsman	465- 770	600-1100	1395	1393
9.	Draftsman I Grade	330- 575	450- 785	973	942
10.	Draftsman II Grade	255- 495	370- 600	1038	955
11.	Overseer III Grade	230- 385	330- 515	578	430
12.	Work Superintendent Grade I	280- 540	420- 700	1650	1650
13.	Work Superintendent Grade II	230- 385	330- 515		
14.	Tracer	230- 385	330- 515	205	205
15.	Blue Printer	210- 340	300- 450	80	80
Total		..	..	6524	6260

Note:—1. This table does not contain the details of certain intermedia to categories like Radio Mechanic etc.

Table 2.7

PUBLIC WORKS DEPARTMENT, KERALA  
DETAILS OF ENGINEERING PERSONNEL AS ON 1-4-1978 AGE PROFILE

Sl. No.	Designation	Total	Age Profile				
			Less than 25	25-34	35-44	45-49	50-55
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Chief Engineer	6	..	..	..	..	6
2	Arbitrator	1	..	..	..	..	1
3	Deputy Chief Engineer/Senior Mechanical Engineer	5	..	..	..	..	5
4	Senior Architect	1	..	..	1	..	..
5	Superintending Engineer	14	..	..	..	..	14
6	Executive Engineer	114	..	..	19	52	43
7	Assistant Executive Engineer	464	..	22	254	139	49
8	Assistant Engineer	1393	2	437	581	293	80
9	Draftsman I Grade	942	..	190	531	187	34
10	Draftsman II Grade	955	49	352	397	123	34
11	Overseer III Grade	430	118	233	63	16	..
12	Work Superintendent I	1650	..	32	632	703	283
13	Work Superintendent II						
14	Tracer	205	1	95	86	22	1
15	Blue Printers	80	..	8	50	21	1
Total		6260	170	1369	2614	1556	551

Note:—This table furnishes the Age profile of persons mentioned in Table 2.6.

Table 2.8

P.W.D. KERALA, DETAILS OF TOTAL ANNUAL REQUIREMENTS OF ENGINEERING PERSONNEL DURING 1978-83

## A. Engineers

Sl. No.	Category	Total Annual Requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
1	Chief Engineer	6	6	7	7	8
2	Arbitrator	1	1	1	1	1
3	Deputy Chief Engineer/Senior Mechanical Engineer	5	5	5	5	6
4	Senior Architect	1	1	1	1	1
5	Superintending Engineer	15	22	23	24	26
6	Executive Engineer	123	128	138	142	148
7	Assistant Executive Engineer	512	528	556	568	586
8	Assistant Engineer	1485	1493	1593	1620	1675
	Total	2148	2184	2324	2368	2451

Table 2.9

P.W.D. KERALA—DETAILS OF TOTAL ANNUAL REQUIREMENTS OF ENGINEERING PERSONNEL DURING 1978-83

## B. Engineering Personnel—Intermediate category

Sl. No.	Category	No. in position as on 1-4-1978	Total requirement for				
			1978-79	1979-80	1980-81	1981-82	1982-83
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Draftsman Grade I	973	1025	1150	1200	1230	1260
2	Draftsman Grade II	1030	1240	1320	1370	1400	1430
3	Overseer Grade III	980	990	1004	1150	1240	1330
4	Work Superintendent	1650	1380	1380	1300	1260	1210
5	Tracer	242	248	252	257	257	258
6	Blue Printer	80	84	84	84	85	85
7	Radio Mechanic	30	32	32	33	34	35
8	Plumber	11	11	12	14	15	15
9	Lineman/Assistant lineman	112	112	112	115	120	120
10	Line helpers	71	74	75	80	85	85
11	Mechanical operator/Mechanics	125	125	126	130	135	135
12	Lift Mechanic	..	1	1	1	1	1
13	Foreman/Assistant Foreman	13	13	6	6	6	6
14	Electrician	4	4	6	8	8	8
15	Welder	3	3	12	14	15	15
16	Turner	6	9	9	10	10	10
17	Carpenter	2	2	2	2	2	2
18	Blacksmith	6	6	11	12	12	12
19	Wipeman	10	10	10	12	12	12
	Total	5348	5369	5604	5798	5927	6029

Table 2.10

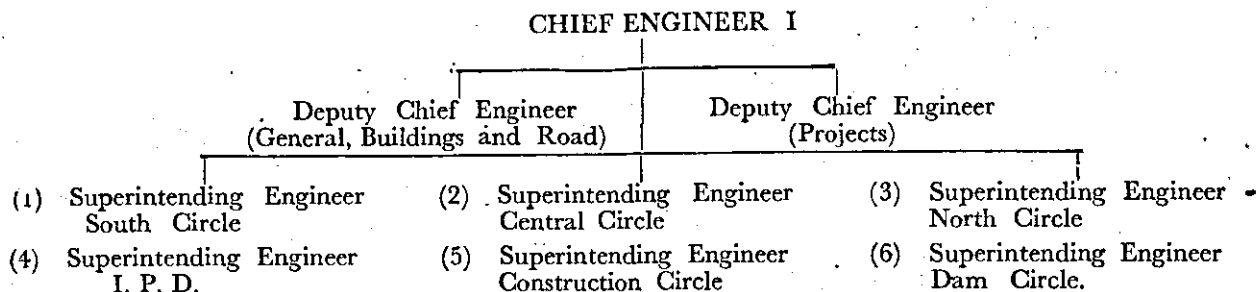
P.W.D. KERALA—DATA ON ADDITIONAL REQUIREMENT OF ENGINEERING PERSONNEL ACCORDING TO EDUCATIONAL STATUS

Sl. No.	Category	Additional requirement during				
		1978-79	1979-80	1980-81	1981-82	1982-83
1	Diploma Holders in Civil (Mechanical Engineering)	25	60	170	80	130
2	Do. (Architecture)	..	..	..	2	..
3	Do. (Electrical)	..	..	1	..	..
4	Diploma holders in Civil/Mechanical Engineering	275	245	120	100	100
5	Diploma Holders in Electrical Engineering	..	..	..	..	1
6	Do. Radio Engineering	..	..	..	..	1
7	Certificate holders in Civil/Mechanical Engineering	375	80	80	90	90
8	Certificate holders-Electrical	..	2	2	..	..
9	I.T.I. Certificate holder—Welder	..	9	2	1	..
10	Do. Turner	3	..	..	1	..
11	Do. Blacksmith	..	5	1	..	..
12	Do. Wireman	..	..	2	..	..
Total		678	401	378	274	322

## CHAPTER 3

## REQUIREMENT OF ENGINEERING PERSONNEL IN THE PUBLIC HEALTH ENGINEERING DEPARTMENT, KERALA

The Kerala Public Health Engineering Department is entrusted with the work relating to water supply schemes and sewerage schemes in the state headed by a Chief Engineer. This work is attended to by 6 superintending engineers. The Administrative set up of the Department is as follows:



The Investigation, Planning and Design Circle, with headquarters at Alwaye is attending to the Investigation, Design and estimation of various urban and rural water supply schemes and drainage schemes in the State. The Public Health Construction Circle, with headquarters at Ernakulam is attending to the work relating to water supply scheme and sewerage scheme for Greater Cochin Development Area. The Peppara Dam Circle formed in July, 1976, with headquarters at Vithura is attending to the work relating to augmentation of Trivandrum water supply. There were 26 divisions, 76 sub divisions and 175 sections under the above 6 circles, attending to various item of work pertaining to water supply and sewerage in 1978 in the Department.

The State Government utilising institutional finance by way of loan assistance from L. I. C. of India and financial assistance from the Government of India for 'Minimum Needs Programme' and 'Accelerated Rural Water Supply Programme' had implemented several rural water supply schemes and urban water supply schemes and sewerage schemes upto end of the fifth five year plan. Even then much remains to be done. Only the cities of Trivandrum and Cochin have been provided with sewerage schemes, and that too only partially. The Guruvayoor Township Sewerage scheme was in progress in 1978. The percentage of urban population in the state which has water supply facilities is approximately 65. The percentage of rural population covered is approximately 26.

Table 3.1, furnishes the scheme-wise outlay of schemes to be implemented during 1978-83.

Table 3.2, furnishes the category-wise number of Engineering personnel and intermediate categories working in Public Health Engineering Department during 1978-83.

**Table 3.1**

**WATER SUPPLY AND DRAINAGE (SCHEME-WISE OUTLAY)**

Sl.No.	Scheme	1978-83 outlay proposed (Rs. in lakhs)
1.	Research and employment	25.00
2.	Training programme	25.00
3.	Investigation, planning and Design units	150.00
4.	Inventory control	4.00
<b>Total</b>		<b>204.00</b>

**DRAINAGE SCHEMES**

5 (a) *New Schemes*

(i) Alleppey drainage scheme	375.00
(ii) Cochin drainage Scheme	480.00
(iii) Kottayam drainage Scheme	250.00

(b) *Augmentation Schemes*

6. Trivandrum drainage scheme	495.00
7. Quilon drainage scheme	498.00
8. Calicut drainage scheme	497.00
9. Guruvayoor drainage scheme	25.00
10. E. S. P. latrines	100.00

Sub total 2720.00

**URBAN WATER SUPPLY SCHEME.**

11. Kottayam water supply schemes	258.00	
12. Water supply to newly formed Municipalities such as Nedumangad, Cranganore, Chengannur, Ponnani, etc.	450.00	
13. Water supply to non municipal towns	950.00	
14. Improvement to existing schemes	200.00	
15. Greater Cochin water supply scheme	60.00	
16. Vaikom water supply scheme	35.00	
17. Palghat water supply scheme	110.00	
18. Trichur water supply scheme	195.00	
19. Punalur water supply scheme	6.00	
20. Chalakudy water supply scheme	15.00	
21. Tirur water supply scheme	15.00	
22. Malappuram water supply scheme	51.00	
23. Construction of a storage dam for augmentation of Trivandrum water supply scheme	575.00	
24. Kayamkulam water supply scheme	30.00	
25. Shertallai water supply scheme	21.00	
26. Completion of partially commissioned		
(i) Rural water supply schemes	250.00	
(ii) Comprehensive rural water supply schemes for Nattika, Anjengo, Vakkom, Ayilur, Nemmara, etc.	1200.00	
(iii) New rural water supply scheme	1875.00	
(iv) Water supply schemes for the benefit of the weaker sections of the community	300.00	
(v) Open draw wells	200.00	
<b>Total</b>		<b>10,000.00</b>

Table 3.2

CATEGORY-WISE TOTAL STRENGTH OF ENGINEERING PERSONNEL IN THE P. H. E. D. 1978-79

Sl.No.	Category	Number in position
1.	Chief Engineer	1
2.	Deputy Chief Engineers	2
3.	Superintending Engineers	6
4.	Executive Engineers	27
5.	Assistant Executive Engineers	92
6.	Assistant Engineers	214
7.	Draftsman I	204
8.	Do. II	230
9.	Tracers	52
10.	Blue printers	25
11.	Work superintendent	336
12.	Chief Mechanical Foreman	1
13.	Mechanical superintendent	1
14.	Electrical overseer	3
15.	Mechanics	4
16.	Fitters	41
17.	Plumbers	21
18.	Surveyors	50
19.	Welder	1
Total		1311

The details of the Engineering personnel working in the Department as on 1-4-1978 according to their educational status is furnished in Table 3.3.

Table 3.3

DETAILS OF ENGINEERING PERSONNEL WORKING IN P.H.E.D AS ON 1-4-1978 ACCORDING TO EDUCATIONAL STATUS

Sl. No.	Civil	Mechanical	Electrical	Others	Total
1.	41	..	..	..	41
2.	133	10	..	2	150
3.	326	8	..	..	334
4.	212	11	..	4	227
5.	..	..	..	69	69
Total		717	29	75	821

Note:—Only the details of Engineers, draftsman, Tracer and Blue printers are furnished in this table.

The age profile of the Engineering personnel working in the Department as on 1-4-1978 is furnished in table 3.4.

With the assistance of the World Bank the Department intends its schemes to be implemented quickly. Table 3.5 furnishes the estimated number of Engineering personnel require for the speedy implementation of schemes.

Table 3.6 furnishes the details of additional requirements of Engineering personnel in P. H. E. D. for each year of the period 1978-83.

Table 3.4

P.H. E. D., KERALA DETAILS OF ENGINEERING PERSONNEL AGE PROFILE AS ON 1-4- 1978

Age group	Post graduate	graduates	Diploma holders	Total	
1. 23 or below	..	..	..	..	
2. 24—28	..	25	38	63	
3. 29—33	..	60	125	185	
4. 34—38	10	4	62	76	
5. 39—43	11	26	62	99	
6. 44—48	15	33	35	83	
7. 49—53	5	2	10	17	
8. 54— and above	..	..	2	2	
Total		41	150	334	525

Table 3.5

P.H.E.D., KERALA ESTIMATED NUMBER OF TOTAL REQUIREMENT OF ENGINEERING PERSONNEL FOR EACH YEAR OF THE PERIOD 1978-83

Category	Total estimated requirement					
	1978-79	1979-80	1980-81	1981-82	1982-83	
Civil Engineering Graduates	200	250	340	480	620	
Civil Engineering Diploma holders	400	450	510	700	900	
Civil Engineering Certificate holders	400	550	750	900	1100	
I.T.I. Certificate holders	4	4	5	7	10	
„ Plumbers	25	30	40	45	60	
„ Fitters	50	80	150	155	190	
Certificate holder—Survey	60	120	200	300	350	
Total		1139	1484	1995	2587	3230

Table 3.6

P.H.E.D., KERALA, ESTIMATED NUMBER OF ADDITIONAL REQUIREMENT OF ENGINEERING PERSONNEL FOR EACH YEAR OF THE PERIOD 1978-83

Sl. No. Category	Additional Estimated requirement					
	1978-79	1979-80	1980-81	1981-82	1982-83	
1. Civil Engineering graduates	10	50	90	140	140	
2. Civil Engineering Diploma holders	65	50	60	190	200	
3. Civil Engineering Certificate holders	150	150	200	150	200	
4. I. T. I. Certificate Holders Mechanics	..	..	1	2	3	
5. Do. Plumbers	4	5	10	5	15	
Do. Fitters	9	10	70	5	35	
6. Certificate holders—Survey	10	60	80	100	50	
Total		248	325	511	592	643

## REQUIREMENT OF ENGINEERING PERSONNEL IN THE TOWN PLANNING DEPARTMENT DURING THE PERIOD 1978-1983

The Department of Town Planning which was formed in 1957 was converted into the Department of Town Planning and Architecture in 1962. In 1970 the Architectural wing was separated from it and was attached to the P.W.D.

The main functions of the Department are the following:

1. Statutory function under the various Acts and Rules-viz.
  - (i) The Travancore Town Planning Act, 1108 (ME);
  - (ii) Madras Town Planning Act, 1920 and Rules, and
  - (iii) Travancore Town and Country Planning Act, 1120 (ME)
2. Rendering advice to Government on the planned growth of Urban and Rural area.
3. Preparation of Development Plans for Cities, Towns and Regions.
4. Scrutiny, approval and preparation of schemes and layouts for the Local Bodies, Town Planning Trusts, and Development Authorities.
5. Scrutiny of proposals for the constitution of Townships, Industrial Areas, Development Authorities etc.
6. Approval of Location of Factories.
7. Scrutiny and disposal of applications for exemption from building rules.
8. Rendering advice to Government departments, development Agencies, local bodies, etc., in the matter of development schemes taken up by them on the basis of development plans for the respective areas.

The set up of the Department as on 1-4-1978 was as follows:

1. Office of the Chief Town Planner, Trivandrum
2. Regional Office at Trivandrum
3. Regional Office at Ernakulam
4. Regional Office at Calicut
5. Office of the Town Planner, Idukki
6. Office of the Town Planner, Malappuram
7. Office of the Town Planner, Quilon
8. Office of the Jr. Town Planner, Kottayam
9. Office of the Jr. Town Planner, Palghat

The details of Engineering personnel working in the Department as on 1-4-1978 is furnished in Table 4.1.

Table 4.2 furnishes the details of Engineering personnel working in the Department according to educational status.

Table 4.3 furnishes the age profile of Engineering personnel working in the Department as on 1-4-1978.

The schemes to be implemented by the Department for the period includes the following new schemes also:

1. Strengthening the District Planning Unit at Idukki
2. Preparation of Detailed Development Plan for Velloor-Mulakkulam Development Authority
3. Preparation of Master Plan for Punalur
4. Preparation of Master Plan for Shertallai
5. Preparation of Master Plan for Palai
6. Preparation of Spatial Development Plan for Kerala State.
7. Formation of District Planning Unit, Kottayam
8. Preparation of a Master Plan for Kodungalloor
9. Formation of District Planning Unit Cannanore.
10. Creation of an Evaluation and Monitoring cell in the head quarters Office.
11. Preparation of Master Plan for Angamali
12. District Planning Unit, Alleppey.

Table 4.4 furnishes the additional requirements of Engineering personnel in the Department for the period 1978-83. The requirement of engineering personnel during the period 1978-83 according to qualification is furnished in Table 4.5.

**Table 4.1**

DETAILS OF ENGINEERING PERSONNEL WORKING IN THE DEPARTMENT  
OF TOWN PLANNING AS ON 1-4-1978

Sl. No.	Category	Scale of pay	Number in position
1.	Chief Town Planner	1625—2175	1
2.	Senior Town Planner	1125—1725+ special pay 75	3
3.	Town Planner	1125—1725	6
4.	Junior Town Planner	750—1450	13
5.	Assistant Town Planner	600—1100	20
6.	Assistant Engineer	do.	1
7.	Architectural Head Draftsman	do.	3
8.	Town Planning Head Draftsman	do.	3
9.	Draftsman Grade I	450—785	12
10.	Do. Grade II	370—600	19
11.	Town Planning Surveyor	450—785	11
12.	Do. Grade II	370—600	28
13.	Tracer	330—515	13
14.	Blue Printer	310—450	6
<b>Total</b>			<b>139</b>

Table 4.2

DETAILS OF ENGINEERING PERSONNEL WORKING IN TOWN PLANNING DEPARTMENT AS ON 1-4-1978 ACCORDING TO EDUCATIONAL STATUS

Category	Civil	Mechanical	Electrical	Others	Total
Post graduates	15	..	..	..	15
Graduates	6	..	..	5	11
Diploma holders	29	..	..	..	29
Certificate holders	65	..	..	..	65
Others	..	..	..	19	19
Total	115	..	..	24	139

Table 4.3

AGE PROFILE OF ENGINEERING PERSONNEL WORKING IN THE TOWN PLANNING DEPARTMENT AS ON 1-4-1978

Age group	Post graduates	Graduates	Diploma holders	Total
25 or below	..	..	3	3
26-30	..	1	12	13
31-35	..	5	3	8
36-40	9	5	10	24
41-45	4	..	1	5
46-49	2	..	..	2
50 and above	..	..	..	..
Total	15	11	29	55

Note: Details of certificate holders and others are not furnished in this table.

Table 4.4

DATA ON ADDITIONAL REQUIREMENT OF ENGINEERING PERSONNEL IN THE TOWN PLANNING DEPARTMENT DURING 1978-83

Sl. No.	Category	Additional requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
1.	Senior Town Planner	..	..	1	..	..
2.	Town Planner	1	..	2	1	1
3.	Junior Town Planner	3	1	5	3	2
4.	Assistant Town Planner	2	1	6	1	1
5.	Draftsman I grade	2	..	3	2	2
6.	Do. II	..	..	3	..	..
7.	Surveyors Grade II	4	..	7	5	5
8.	Tracer	..	..	1	..	..
9.	Surveyors	..	..	..	7	..
Total		12	2	28	19	11

Table 4.5

DATA ON ADDITIONAL REQUIREMENT OF ENGINEERING PERSONNEL IN THE TOWN PLANNING DEPARTMENT DURING 1978-1983 ACCORDING TO QUALIFICATION

Qualification	Additional Requirement				
	1978-79	1979-80	1980-81	1981-82	1982-83
<i>Degree holders</i>					
(Civil /Architecture)	3	1	7	3	2
<i>Diploma holders</i>					
(Civil)	1	..	2	1	1
<i>Certificate holders</i>					
(Civil)	..	..	..	4	..
Total	4	1	9	8	3

Note: Only details of persons to be recruited from outside are furnished in this table.



## REQUIREMENT OF ENGINEERING PERSONNEL IN THE LOCAL BODIES— CORPORATIONS, MUNICIPALITIES AND PANCHAYATS

As on 1-4-1978 there were 3 Corporations, 42 Municipalities & Townships and 997 Panchayats in the State.

The details of Engineering Personnel who were working in the 3 Corporations as on 1-4-1978 are furnished in Table 5.1 and their distribution according to their educational status is given in Table 5.2.

**Table 5.1**

DETAILS OF ENGINEERING PERSONNEL WORKING IN THE 3  
CORPORATION IN THE STATE AS ON 1-4-1978

Sl. No.	Category	Trivandrum	Cochin	Calicut	Total
1.	Corporation Engineer/ Executive Engineer	1	1	1	3
2.	Town Planning Officer	1	1	1	3
3.	Assistant Engineer	2	3	2	7
	Total	4	5	4	13

Sl. No.	Category	Trivandrum	Cochin	Calicut	Total
4.	Assistant Town Planning Officer	2	2	1	5
5.	Junior Engineer	6	8	9	23
6.	Head Draftsman	..	1	1	2
7.	Draftsman I	2	2	4	8
8.	Draftsman II	..	2	..	2
9.	Building Inspectors I	4	4	6	14
10.	Do. II	..	4	..	4
11.	Public Works Overseer I	..	3	..	3
12.	do II	..	12	..	12
13.	Water Works Inspector II	..	2	..	2
	Total	14	40	21	75

**Table 5.2**

DETAILS OF ENGINEERING PERSONNEL WORKING IN THE CORPORATIONS ACCORDING TO THEIR EDUCATIONAL STATUS

Sl. No.	Name of Corporation	Mechanical Engineering				Civil Engineering				Total
		Post graduate	Graduate	Diploma holder	Certificate holder	Post graduate	Graduate	Diploma holder	Certificate holder	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	Trivandrum	..	3	1	..	..	3	8	3	18
2.	Cochin	..	..	..	..	..	8	10	27	45
3.	Calicut	..	..	..	..	..	1	20	4	25
	Total	..	3	1	..	..	12	38	34	88

In the Municipalities in the State Engineering personnel are working in Public Health, Town Planning and Water Supply. Table 5.3 furnishes the details of these Engineering personnel as on 1-4-1978.

Table 5.4 furnishes the distribution of Engineering personnel working in the various Municipalities as on 1-4-1978 according to their Educational Status.

Table 5.5 furnishes age group-wise distribution of Engineering personnel working in the various Municipalities in the State as on 1-4-1978.

During the period 1978-83 the various Municipalities in the State propose to implement several extension schemes with their own funds and institutional finance. The following note gives briefly the various schemes proposed to be implemented during 1978-83.

**Pathanamthitta Municipality.**—Construction of shopping centre, town hall, office building-cum-library, drains etc., and development of 2 markets and roads.

**Kayamkulam Municipality.**—Construction of bus stand, lorry stand, library, reading rooms, comfort station etc.

**Alwaye Municipality.**—Construction of shopping centre, rest house, modern comfort station, staff quarters and development of market.

**Nedumangad Municipality.**—Improvement of municipal market.

**Cannanore Municipality.**—Construction of stadium, shop-cum-lodging house, office buildings, slaughter house, bus stand, town hall and comfort station.

**Ponnani Municipality.**—Construction of office-cum shopping centre.

**Tirur Municipality.**—Construction of shop-cum-office building, bus stand complex, slaughter house, town hall, cart stand and shopping centre-cum-lodges.

**Quilon Municipality.**—Construction of women's hostel, Chinnakkada A & C Blocks bus stand, rest house, development of markets etc.

**Muvattupuzha Municipality.**—Construction of office building, town hall, stadium, bus stand-cum-shopping centre, Municipal Sathram.

**Attingal Municipality.**—Construction of shopping centre-cum-office building, bus stand, town hall, godown-cum-library.

**Punalur Municipality.**—Construction of rest house, market, stadium, shopping complex and parallel roads.

**Shoranur Municipality.**—Implementation of water supply scheme and town planning scheme.

**Thiruvalla Municipality.**—Construction of shopping centre, women's hostel, rest house, library, theatre, auditorium, lodges, stadium, bridges and new roads.

**Thodupuzha Municipality.**—Construction of vegetable market, shopping centre, godown, slaughter house and rest house.

**Tellicherry Municipality.**—Construction of commercial complex, multi-storied building and lodging house.

**Changanacherry Municipality.**—Construction of bus stand, taxi stand, shopping centre, rest house and women's hostel.

**Malappuram Municipality.**—Construction of roads, slaughter house, shopping centre, stadium, town hall, and library.

The additional requirement of engineering personnel in the various Municipalities and Corporations in the State during 1978-83 is furnished in Table 5.6.

**Table 5.3**

DETAILS OF ENGINEERING PERSONNEL WORKING IN THE VARIOUS MUNICIPALITIES IN KERALA AS ON 1-4-1978

Sl. No.	Category	Number in position
<b>A. Public Health</b>		
1.	Assistant Executive Engineers	9
2.	Assistant Engineers	17
3.	Draftsman I grade	13
4.	Do. II grade	19
5.	Work Superintendents/Overseer/Others	32
<b>B. Town Planning</b>		
1.	Assistant Engineers	9
2.	Draftsman I grade	18
3.	Do. II grade	4
4.	Surveyors/Others	12
<b>C. Water Works</b>		
1.	Assistant Executive Engineers	4
2.	Assistant Engineers	4
3.	Draftsman I grade	6
4.	Draftsman II grade	2
5.	Overseers/others	30
<b>Total</b>		<b>179</b>

**Table 5.4**

DETAILS OF ENGINEERING PERSONNEL WORKING IN THE VARIOUS MUNICIPALITIES IN THE STATE AS ON 1-4-1978 ACCORDING TO THEIR EDUCATIONAL STATUS

Educational Status	Civil	Mechanical	Electrical	Others	Total
Post-graduates	..	..	..	..	..
Graduates	7	2	..	..	9
Diploma holders	66	4	..	..	70
Certificate holders	88	4	..	18	110
<b>Total</b>	<b>161</b>	<b>10</b>	<b>..</b>	<b>18</b>	<b>189</b>

**Table 5.5**

DETAILS OF ENGINEERING PERSONNEL WORKING IN THE VARIOUS MUNICIPALITIES IN THE STATE AS ON 1-4-1978

*Age-Profile*

Age group	Post-graduates	Graduates	Diploma holders	Total
23 or below	..	..	1	1
24-28	..	1	5	6
29-33	..	2	33	35
34-38	..	5	19	24
39-43	..	..	3	3
44-48	..	1	7	8
49-53	..	..	2	2
54 or above	..	..	..	..
<b>Total</b>	<b>..</b>	<b>9</b>	<b>70</b>	<b>79</b>

Note: The age details of certificate holders were not available.

**Table 5.6**

ADDITIONAL REQUIREMENT OF ENGINEERING PERSONNEL IN THE VARIOUS MUNICIPALITIES AND CORPORATION IN THE STATE

Category	Additional requirement				
	1978-79	1979-80	1980-81	1981-82	1982-83
<b>Degree holders</b>					
1. Civil	45	18	36	30	30
2. Mechanical	..	..	..	..	..
<b>Diploma holders</b>					
1. Civil	40	10	40	20	20
2. Mechanical	4	2	3	2	2
3. Electrical	..	..	..	..	..
<b>Certificate holders</b>					
1. Civil	50	10	15	20	20
2. Mechanical	2	..	2	2	2
3. Electrician	1	..	1	1	..
4. Mechanics	3	..	5	3	2
<b>Total</b>	<b>145</b>	<b>40</b>	<b>102</b>	<b>78</b>	<b>76</b>

## CHAPTER 6

## REQUIREMENT OF ENGINEERING PERSONNEL IN OTHER DEPARTMENTS OF THE STATE GOVERNMENT

### 1. Port Department

The following Engineering personnel were working in the department during 1978-79:

Superintending Engineer	2
Executive Engineer	4
Asst. Executive Engineer	10
Asst. Engineer	29
Draftsman I	19
Draftsman II	22
<b>Total</b>	<b>86</b>

The requirement during the period 1978-83 is furnished in Table 6.1.

### 2. Agriculture Department

Details of existing Engineering personnel working in the Agriculture Department and additional requirement during 1978-83 are given in Table 6.2.

### 3. Factories and Boilers Department

The present stock position and the requirement of Engineering personnel in this department during 1978-83 are furnished in Table 6.3.

The details of engineering personnel working in other departments like Forest, Industries Department etc., are not available.

**Table 6.1**

DATA ON ADDITIONAL REQUIREMENT OF ENGINEERING PERSONNEL DURING 1978-83 IN FOREST DEPARTMENT

Category	Additional requirement				
	1978-79	1979-80	1980-81	1981-82	1982-83
<i>Post-graduate and Degree holders</i>					
Civil	..	..	13	..	..
<i>Diploma holders</i>					
Civil	..	..	16	..	..
<i>Certificate holders</i>					
Civil	..	..	6	..	..
<b>Total</b>	..	..	35	..	..

**Table 6.2**

#### AGRICULTURE DEPARTMENT

DETAILS OF ENGINEERING PERSONNEL WORKING IN THE DEPARTMENT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENTS FOR 1978-83

Category	No. in position as on 1-4-1978	Additional requirements for				
		1978-89	1979-80	1980-81	1981-82	1982-83
<i>Post graduates and Degree Holders</i>						
Civil	..	..	..	1	..	..
Mechanical	8	..	..	..	1	..
Agricultural Engineering	4	..	..	15	..	..
Diploma Holders	..	..	..	..	..	..
Certificate holders	..	..	..	..	..	..
<b>Total</b>	12	..	..	16	1	..

*Note:*—A new scheme for expansion of Engineering service has been forwarded to Government. The staff noted above for 1980-81 is for the new scheme.

**Table 6.3**

DEPARTMENT OF FACTORIES AND BOILERS—DATA ON ENGINEERING PERSONNEL WORKING IN THE DIRECTORATE AS ON 1-4-1978

Category	No. in position as on 1-4-1978
<i>Graduates</i>	
Civil	1
Mechanical	8
<i>Diploma Holders</i>	
Mechanical	6
<i>Others</i>	
Licence in Mechanical Engineering	4
<b>Total</b>	<b>19</b>

## REQUIREMENT OF ENGINEERING PERSONNEL IN KERALA STATE ELECTRICITY BOARD

The Kerala State Electricity Board was formed in 1958 with a view to improve the generation and distribution of power in the State.

The power system in Kerala is entirely hydro based. Table 7.1 furnish the growth of power system in Kerala,

**Table 7.1**  
GROWTH OF POWER SYSTEM IN KERALA AT A GLANCE

Sl. No.	Particulars	Beginning of the first plan as on 1-4-1951	End of the first plan as on 31-3-1956	End of the second plan as on 31-3-1961	End of third plan as on 31-3-1966	End of the annual plan as on 1-4-1969	End of fourth plan as on 31-3-1974	Fifth plan as on 31-3-1978
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Installed capacity—MW	36.0	85.5	132.5	192.5	546.5	621.5	1011.5
2	Maximum Demand „							
	(a) System	24.4	62.9	116.3	173.7	352.7	500.2	802.2
	(b) Internal	24.4	62.9	116.3	173.7	277.7	434.4	551.8
3	Generation per Annum—MU	151.0	350.0	591.0	841.9	1623.0	2510.0	4470.6
4	Import per Annum „	16.9	1.5	56.8	116.0	19.0	1.2	2.53
5	Export per Annum „	..	..	11.6	..	28.2	317.88	1625.0
6	Energy sales per Annum „	140.00	274.0	517.2	749.7	1366.2	2105.0	3986.56
7	Energy losses as a percentage of energy available for sale	14.3	19.7	17.9	20.2	15.9	12.4	10.4
8	Per capita consumption—KWH	13.0	18.5	30.0	40.0	66.0	79.0	88.4
9	220 KV lines—CI-KM	..	..	..	..	316.4	316.4	853.77
10	110 KV lines—CI-KM	..	..	527.	617.0	1068.0	1350.0	1403.45
11	66 KV lines—CI-KM	910.7	1070.0	1373.00	1717.5	1601.0	1711.0	1840.89
12	11 KV lines—CI-KM	1067.0	2802.0	5209.0	6327.0	7046.0	9447.0	12176.0
13	L.T. lines—CI-KM	992.0	2785.0	8899.0	14189.0	16952.0	20968.0	37190.6
14	Step-up transformer capacity—MVA	40.0	103.0	161.0	233.0	632.0	717.5	1149.6
15	No. of EHT sub stations	12	15	22	38	41	59	75
16	Stepdown transfer capacity—MVA	57.5	85.0	241.0	425.0	834.0	1269.0	1753.5
17	Distribution transformers:							
	(a) Numbers	324	845	2893	3980	4907	8285	9877
	(b) Capacity KVA	9950	50700	173906	261826	355972	566260	890959
18	Number of consumers	28119	78775	174994	325053	439681	777030	1072123
19	Connected load MW	68.4	142.3	331.5	509.9	805.4	1231.5	1530.5
20	Number of Irrigation pumpsets	191	893	4615	7007	13909	37611	58922
21	Number of Street lights	7905	25489	82645	106996	144902	173587	284483
22	Total Revenue per Annum (Rs. lakhs)	58.4	140.7	311.6	706.8	1165.0	2379.0	3710.0*

\* The figure relates to the year 1976-77.

The salient details of generation, distribution and utilisation of power in Kerala at the beginning of the Sixth Plan period is furnished in Table 7.2.

Table 7-2

## SALIENT DETAILS OF KERALA POWER SYSTEM AT A GLANCE AS ON 1-4-1978

Sl.No.	Item	Quantity
1	Installed Capacity MW:	1011.5
2	Maximum demand MW:	
	(a) System	802.2
	(b) Internal	551.8
3	Generation per annum MU	4470.6
4	Import per annum MU	2.53
5	Export per annum MU	1625.0
6	Energy losses as percentage energy available for sale	10.41
7	Energy per annum MU (Including export)	3986.6
8	Per capita consumption KWH	88.4
9	220 KV lines-C1 Km	853.77
10	110 KV lines-C1-Km	1403.45
11	66 KV lines C1-Km	1840.89
12	11 KV lines-C1-Km	12176.06
13	L. T. lines-C1-Km	37190.59
14	Step-up transformer capacity MVA	1149.5
15	Number of E.H.T. Sub Stations	75
16	Step-down Transformer capacity—MVA	1753.5
17	Distribution of Transformers A. Number	9877
	B. Capacity KVA	890959
18	Number of Villages electrified	1224
19	Number of consumers	1072125
20	Connected load MW	1530.5
21	Number of street lights	284483
22	Number of irrigation pumpsets	58,922

Table 7.3 furnish an abstract of offices under the Board at the beginning of the period 1978-83.

The power potential of Kerala is assessed as 3000 MW 60% LF. With the completion of the successive Five Year Plans, the generation capacity of Kerala power system has reached 1011.5 MW by the end of the Fifth Plan. Though the generation capacity in the State is being satisfactorily built up, much more remains to be done especially in the optimum utilisation within the State.

### Objectives and Policies of 1978-83 Plan

The basic objectives are:

(i) a ten per cent annual growth rate in the power supply at the required voltage with maximum capacity utilisation and minimum losses; and

(ii) stabilisation of the power systems in the State.

The policies to achieve these objectives are:

(i) building up power generation capacity for internal requirements;

(ii) balancing load generation to reduce line losses in transmission;

(iii) Rationalising transmission and distribution system to minimise voltage fluctuations and strains on the system and meeting the document demands; and

(iv) setting up of a thermal station with Central assistance to meet the long term power demand of the State and to stabilise the hydro system. The financial targets for the Plan for 1978-83 is furnished in Table 7.4.

**Table 7.4**  
THE FINANCIAL TARGETS FOR THE PLAN FOR 1978-83

Schemes	Rs. in crores
<b>I. Generation</b>	
1. Idamalayar	23.20
2. Idukki III stage	5.70
3. Sabarigiri Augmentation	1.40
4. Sabarigiri VI unit replacement	2.70
5. Silent Valley	26.10
6. Kakkad	16.30
7. Idukki II stage	20.54
8. Others—Lower Periyar, Kuriarkutty-Karappara, Perinjankutty etc.	27.46
Sub Total	123.40
II. Transmission	97.00
III. Distribution and R.E.C.	115.00
IV. Survey and investigation	4.60
Total I to IV	340.00

The resources for the plan outlay is estimated to be raised through public loan, loan from U.I.C., R.E.C. loan, Government loans, besides internal resources of the Board. The year-wise break up of the resources is furnished in Table 7.5.

The physical targets to be achieved during the period 1978-83 is furnished in Table 7.6.

**Table 7.5**  
RESOURCES FOR THE 1978-83 PLAN—K.S.E.B YEAR-WISE DETAILS

Sl. No.	Item	1978-79	1979-80	1980-81	1981-82	1982-83
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Government loan	11.70	20.52	28.97	35.52	30.06
2	L.I.C.	51.30	6.00	7.00	8.00	9.00
3	Public Loan	10.45	17.05	21.45	26.95	33.55
4	R.E.C.	1.00	5.00	5.00	5.00	5.00
5	Internal resources	10.33	10.04	10.77	8.47	7.87
	Total Plan	84.78	58.61	73.19	83.94	85.48

**Table 7.6**  
K.S.E.B. PHYSICAL TARGETS TO BE ACHIEVED DURING 1978-83 PLAN

	Additions During the plan period	Remarks
<b>I. Generation</b>		
1. Installed capacity (MW)	75	Idamalayar Commissioned
2. Generation capacity per annum (M. Units)	821	Idamalayar Idukki stage III and Sabarigiri Augmentation completed.
<b>II. Transmission</b>		
1. 220 K.V. lines	505 at KW	Including spill over from V Plan
2. 110 K.V. lines	1089 KW	
3. 66 K.V. lines	1508 at KW	
4. 220/110 K.V. Transformers	1280 MVA	
5. 110/66 KV Transformers	1167 MVA	
6. 66/11 KV Transformers	699.8 MVA	
<b>III. Distribution and Rural Electricity</b>		
1. 11 K.V. lines	5200 km	
2. L.T. lines	26000 km	
3. Service connections	6 lakhs	
4. Street lights	2 lakhs	
5. Irrigation pumpsets	76100 nos.	
6. Villages electrified	414 nos.	

The 1978-83 Plan schemes of the Board can be summarised as follows:

### I. Generation

The following on-going schemes will be given the first priority.

1. *Idamalayar*.—It will be partially commissioned in 1981-82 and fully commissioned in 1982-83. The addition to the installed capacity will be 75 MW.

2. *Idukki III stage*.—No addition to the plant capacity. Firm power of present Idukki stage I will be increased by 43 MW. Additional energy added is 376 MW.

3. *Sabarigiri Augmentation scheme*.—No addition of plant capacity. Firm power of present Sabarigiri H. E. scheme will be increased by 14.5 MW. Additional energy added is 125 MW.

4. *Sabarigiri VI Unit replacement*.—No addition of plant capacity. Only replacement of damaged unit of 50 MW.

5. *Silent Valley Scheme*.—Will be commissioned in 1984-85. The addition to the installed capacity expected is 120 MW.

### New Schemes

The following new schemes will be taken up during the Plan period.

1. Kakkad H. E. scheme
2. Idukki II stage
3. Kuriarkutty-Karappara
4. Lower Periyar
5. Perinjankutty
6. Puyamkutty
7. Others

Of these the first two will be commissioned in 1983-84. The work relating to others are only in the early stages. It is expected that by implementing these new schemes 2780 M.W. can be added to the installed capacity.

### II. Transmission and Distribution

In the past Plans, transmissions and distribution sectors had very little investment. As a result, when Kerala had no dearth of power, it was paradoxically strange that the public of Kerala had to wait for getting connections. Also there are many areas with low voltage and unsatisfactory supply conditions. Even now the above situation continue, to prevail. The present interval systems loss of Kerala is about 17.1% and substantial improvement in the transmission and distribution systems have to be effected to reduce this loss. In the Plan period 1978-83 an outlay of Rs. 212 crores has been proposed with a view to meet the increased demand for power and to improve the supply conditions to satisfactory levels. The physical targets to be achieved is furnished in Table

Table 7-7 gives the organisati of the Board as on 1-4-1978.

Table 7.8 furnishes the details of Engineering personnel working in the Board as on 1-4-1978.

The details of Engineering personnel according to education status are furnished in Table 7.9.

The age group-wise distribution of Engineering personnel possessing Diploma/Degree/Post graduate qualifications are furnished in Table 7.10.

**Table 7.7**

**KERALA STATE ELECTRICITY BOARD—ABSTRACT OF OFFICES AS ON 1-4-1978**

Board Secretariat	1
Office of the Financial Adviser and Chief Accounts Officer	1
Personnel Officer	1
Regional Personnel Officers	5
Offices of CES (Electricity)	2
<i>Offices under the Chief Engineer (Electricity)</i>	
Divisions under the direct control of the C.E.	4
Meter testing units	2
Transformer Repair workshop	1
<i>Load despatch</i>	
Load despatch circle	1
Units under the L.D. circle	10
<i>Rural Electrification</i>	
Sub divisions	15
Sections	33
<i>Distribution</i>	
Circles	6
Electrical Divisions	26
Electrical sub divisions	101
Electrical sub sections	376
Electrical constructions sections	13
Regional stores	2
Treatment yard sections	4
Meter Inspection sections	3
Transformer Inspection section	1
Civil section	1
Electrical Billing Unit	36
<i>Generation and Transmission</i>	
Generation circles	2
Generation and Transmission circles	3
Transmission circle	1
220 KV circle	1
Generation Divisions	6
Transmission Divisions	8
Transmission Construction Divisions	4
220 KV TC Divisions	3
Mechanical Maintenance Division	1
Electrical Maintenance Division	1
Civil maintenance divisions	3
Civil maintenance sub divisions	5
Sub divisions (including 220 KV TC sub divisions)	54
<b>Total</b>	<b>737</b>

**Table 7.8**

**DETAILS OF ENGINEERING PERSONNEL WORKING IN K.S.E.B. AS ON 1-4-1978**

Sl. No.	Designation	Scale of pay	Number in position
1	Chief Engineer Planning	2200 fixed	1
2	Do. Electrical	do.	3
3	Do. Civil	do.	2
4	Deputy Chief Engineer Electrical	1425-1875	1
5	Do. Civil	do.	1
6	Superintending Engineer Electrical	do.	21
7	Do. Civil	do.	9
8	Executive Engineer—Electrical	1100-1600	82
9	Do. Civil	do.	35
10	Engineer—Thermal plant	800-1250	1
11	Assistant Executive Engineer—Electrical	do.	297
12	Do. Civil	do.	244
13	Chief Foreman	do.	1
14	General Foreman	do.	6
15	Assistant Engineer Electrical	600-975	918
16	Do. Civil	do.	255
17	Chemical Engineer	do.	1
	<b>Sub Total I</b>		<b>1878</b>
	<i>Executive Establishment</i>		
1	Foreman I	425-625	2
2	Senior Overseer—Civil	do.	3
3	First Grade Overseer—Electrical	275-385	1907
4	Do. Civil	do.	537
5	Workshop chargehand	do.	11
6	Meter Mechanic I	do.	1
7	Meter Tester	do.	3
8	Cable jointer-I	275-385	6
9	Foreman	do.	3
10	Foreman Penstock wing	do.	1
11	Foreman Mechanical	do.	1
12	Mechanic-I	do.	9
13	Work Superintendent—U.D.	235-445	7
14	Telephone Mechanic	200-350	2
15	Teleprinter Mechanic	170-290	2
16	Overseer III—Electrical		2186
17	Do. Civil		193
18	Welder	210-360	3
19	Lineman	135-275	1375
20	Instrument Mechanic	do.	5
21	Assistant Mechanic	do.	1
22	Fitter	do.	19
	<b>Sub Total</b>		<b>6277</b>

**Table 7.9**

**KERALA STATE ELECTRICITY BOARD—DETAILS OF ENGINEERING PERSONNEL ACCORDING TO EDUCATIONAL STATUS AS ON 1-4-1978**

Sl. No.	Category	Civil	Mechanical	Electrical	Others	Total
1	Post graduates	9	1	19	1	30
2	Graduates	206	13	878	1	1098
3	Diploma holders	379	35	1649	13	2076
4	Certificate holders	..	..	..	..	2689
5	Others	..	..	..	..	387
	<b>Total</b>	<b>594</b>	<b>69</b>	<b>2546</b>	<b>15</b>	<b>6280</b>

Note:—Details of certain intermediate categories and skilled workers are not included in this table.

Table 7.10

K.S.E.B. AGE GROUPWISE—DISTRIBUTION OF ENGINEERING PERSONNEL AS ON 1-4-1978

Age group	Post graduates	Graduates	Diploma holders	Total
23 or below	..	..	13	13
24-28	4	198	472	674
29-33	4	419	806	1229
34-38	5	265	443	713
39-43	9	104	184	297
44-48	7	76	112	195
49-53	1	26	38	65
54 and above	..	10	8	18
Total	30	1098	2076	3204

Note:—Only the age profile of Diploma holders/Graduates/post graduates mentioned in Table 7-9 are furnished here.

Requirement of Engineering personnel for the implementation of schemes during the plan period 1978-83, as furnished by the Board is given in Table 7-11 A and Table 7-11 B. Designation-wise and Educational status-wise figures are not available. As such the requirement of Engineering personnel in the Board for 1978-83 is estimated taking into consideration the following:

1. The actual fresh appointments in the Board during 1976-77, and 1977-78.
2. Major schemes like Silent Valley have not been implemented.

The details of estimated requirements is furnished in Table 7-12.

Table 7.11 A

K. S. E. B. MANPOWER REQUIREMENT DURING CONSTRUCTION STAGE OF THE VARIOUS SCHEMES DURING 1978-83

Scheme	Number required				
	1978-79	1979-80	1980-81	1981-82	1982-83
(1)	(2)	(3)	(4)	(5)	(6)
1. Idukki III stage. Managerial/supervisory/Technical Skilled—Technical	126	22	..	..	..
	480	130	..	..	..
2. Idamalayar H.E. Scheme Managerial/Supervisory/Technical Skilled—Technical	160	100	70	45	22
	830	520	320	300	50
3. Sabarigiri Augmentation scheme Managerial/Supervisory/Technical Skilled—Technical	93	1	..	..	..
	190	60	..	..	..
4. Silent Valley Managerial/Supervisory/Technical Skilled—Technical	99	189	108	108	..
	280	600	360	560	..
5. Kakkad Hydro Electric Scheme Managerial/Supervisory/Technical Skilled—Technical	90	117	85	117	90
	36	550	430	710	320
6. Transmission Managerial/Supervisory/Technical Skilled—Technical	410	520	485	565	575
	2400	3060	2940	3350	3300
7. Power Distribution Managerial/Supervisory/Technical Skilled—Technical	373	414	491	608	746
	2065	2295	2725	3370	4135
Total	7632	8578	8014	9733	9238

Note: The figures include contraction labour also.



Table 7.11 B

K.S.E.B. MANPOWER REQUIREMENT DURING OPERATION AND MAINTENANCE PHASE OF THE VARIOUS SCHEMES DURING 1978-83

Scheme	Number required				
	1978-79	1979-80	1980-81	1981-82	1982-83
(1)	(2)	(3)	(4)	(5)	(6)
1. Idukki III Stage Managerial/Supervisory/Technical Skilled—Technical	..	..	..	..	..
2. Edamalayar Hydro Electric Scheme Managerial/Supervisory/Technical Skilled—Technical	..	..	..	6 50	9 7
3. Sabarigiri Augmentation Scheme Managerial/Supervisory/Technical Skilled—Technical	..	..	..	..	..
4. Silent Valley Managerial/Supervisory/Technical Skilled—Technical	..	..	..	..	..
5. Kakkad Hydro Electric Scheme Managerial/Supervisory/Technical Skilled—Technical	..	..	..	..	..
6. Transmission Managerial/Supervisory/Technical Skilled—Technical	40 530	120 450	20 80	5 20	10 30
7. Power Distribution Managerial/Supervisory/Technical Skilled—Technical	45 430	50 480	60 570	74 710	91 870
Total	1145	1100	730	865	1085

Note: The figures do not represent cumulative requirement.

Table 7.12

ESTIMATED ADDITIONAL REQUIREMENT OF ENGINEERING PERSONNEL IN K. S. E. B.

Scheme	1976-77 (Actual)					1977-78 (Actual)					1978-79					1979-80				
	C	M	E	O	T	C	M	E	O	T	C	M	E	O	T	C	M	E	O	T
Post graduates	..	..	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..
Graduates	..	..	40	..	40	..	2107	..	109	..	1	80	..	81	..	1	75	..	76	..
Diploma holders	..	..	94	..	94	..	259	..	259	..	200	..	200	..	..	150	..	150	..	..
Certificate holders	..	..	67	..	67	..	30	..	30	..	50	..	50	..	..	60	..	60	..	..
Others	..	..	..	..	..	..	17	..	17	..	20	..	20	..	..	20	..	20	..	..
Total	..	..	201	..	201	..	2414	..	416	..	1350	..	351	..	..	1305	..	306	..	..

	1980-81					1981-82					1982-83				
	C	M	E	O	T	C	M	E	O	T	C	M	E	O	T
Postgraduates	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Graduates	..	..	80	..	80	..	..	50	..	50	..	..	50	..	50
Diploma holders	..	..	120	..	120	..	..	100	..	100	..	..	100	..	100
Certificate holders	..	..	40	..	40	..	..	40	..	40	..	..	50	..	50
Others	..	..	20	..	20	..	..	20	..	20	..	..	20	..	20
Total	..	..	260	..	260	..	..	240	..	210	..	..	120	..	120

## REQUIREMENT OF ENGINEERING PERSONNEL IN THE KERALA STATE ROAD TRANSPORT CORPORATION DURING THE PERIOD 1978-'83

The main form of transport in Kerala is Road Transport which is largely in the private sector. The Kerala State Road Transport Corporation is an autonomous body set up under R. T. C. Act, 1950 and K.S.R. T. C. Rules 1965. It is a joint venture of the State Government and the Southern Railway on behalf of the Government of India and it was formed on 15-3-1965.

The capital expenditure of the Corporation is met from the contribution of the State and central Governments. The contribution ratio of the participating governments is 2:1.

The capital investment of the Corporation at the beginning of the period as on 1-4-1978 was Rs. 3028.10 lakhs of which the contribution of the state Government was Rs. 1496.04 lakhs and that of Railways 604.87 lakhs. The balance amount is met from internal resources, and loan from Banks etc.

The K. S. R. T. Corporation possessed fleet strength of 2,622 buses as at the close of the fifth plan period and operated services in 3,340 routes covering a route distance of 1,45,434 kms. The corporation was operating 2,305 schedules and had a scheduled distance of 6.6 lakhs km. at the beginning of the period 1978-83. The average daily collection was nearly Rs. 11.84 lakhs and average daily effective distance operated was 5.64 lakhs kms. On average 15.22 lakhs passengers made use of the corporation buses daily during the period.

### Proposals for 1978-1983

The expansion of passenger transport services to meet the requirements of the travelling public is a social need and the public sector undertaking engaged in the industry cannot disown its responsibility to expand its services to meet the requirement of the public. The K. S. R. T. C. services have spread extensively in the state and in a large number of routes there is severe competition between the corporation and the private sector. As a result of competition it is likely that both the corporation and the private sector will suffer financial losses. Hence one of the main proposals for the plan period is the complete nationalisation of services in the Trivandrum District Trichur, Palghat Route via Alathur, Trichur, Kozhikode route via N. H. 17, and Bus routes in some compact area in Quilon District, according to a phased programme. Another important programme proposed to be implemented during the period is the modernisation of the fleet of buses by the replacement of 1615 buses. Moreover there are proposals to put on road new additional buses to improve the operation of existing schedules and to start new schedules.

The period 1978-83 is expected to be a period of development for the corporation. The corporation proposes to invest Rs. 58.10 crores for the developmental activities during this period. The shares of the partici-

pating governments in the proposed outlay is given below.

	<i>Rs in crores</i>
State Government	25.00
Central Government	12.50
Other resources	20.60

It is proposed to put on road 2,772 buses during 1978-'83 of which 1615 will be used for replacement of old vehicles and the remaining will be used for augmentation in existing routes to meet the increase in traffic and for nationalisation.

At the close of the period 1978-'83 the corporation is expected to operate 3,287 schedules. Thus during the plan period, there will be an increase of 982 schedule of which 551 schedules will be for expansion of services in the existing routes and 431 schedules will be for nationalisation of routes mentioned already.

The average daily collection, effective kilometers and number of passengers travelled is expected to show substantial increase during this period. A comparative statement showing these details is given below.

	<i>Actual on</i>	<i>Expected on</i>
	31-3-1978	31-3-1983
Average daily collection Rs.	11,84,852	19,00,000
Average daily effective km	5,64,384	8,40,548
Number of schedules under operation	2,305	3,287

### Requirement of Engineering Personnel

(i) *Civil Engineering Branch.*—This branch is concerned with construction of station buildings, garrages, internal loads, etc., maintenance and repairs to the buildings etc. of the corporation, supplying and maintaining sanitary installations and electrification, deciding the cost of damages to the structures due to accidents and valuation of buildings in the land to be acquired by the corporation etc. The civil engineering branch of the corporation is under the direct control of the Civil Engineer, who is in the rank of an Executive Engineer in the Public Works Department of the Government. There are two Assistant Engineers to control 7 sections situated at Trivandrum, Quilon, Alleppey, Kottayam, Alwaye, Kozhikode and Edappal each under the immediate control of an Assistant Engineer.

The details of future requirement is furnished in Table 8.1. Since the vacancies are to be filled up by deputation there will be no direct recruitment.

Table 5.1

KERALA STATE ROAD TRANSPORT CORPORATION DETAILS OF REQUIREMENT OF ENGINEERING PERSONNEL  
DURING THE PERIOD 1978-83 IN THE CIVIL BRANCH

Sl. No.	Designation	No. of persons as on 31-3-1978	Additional requirement				
			1978-79	1979-80	1980-81	1981-82	1982-83
1.	Superintending Engineer	..	..	..	1	..	..
2.	Executive Engineer	1	..	..	..	..	..
3.	Assistant Executive Engineer	4	2	..	1	..	1
4.	Assistant Engineer	8	2	..	2	..	..
5.	Assistant Executive Engineer (Electrical)	..	1	..	..	..	..
Sub Total I		13	5	..	4	..	1
<i>Intermediate Personnel</i>							
6.	Draughtsman I Grade	6	8	..	1	5	..
7.	Draughtsman II Grade	5	10	..	3	5	..
8.	Work Superintendent	27	5	..	4	3	2
9.	Blue Printer	1	..	..	..	..	..
10.	Electrical Foreman	1	..	..	3	1	..
11.	Electrical Chargeman	1	..	..	1	..	..
12.	Electrical Assistant Chargeman	2	..	..	1	..	..
13.	Plumber	1	..	..	..	..	..
14.	Draughtsman Architecture	..	1	..	..	..	..
Sub Total-II		44	24	..	13	14	2
Total		57	29	..	17	14	3

Table 8.2

KERALA STATE ROAD TRANSPORT CORPORATION—DETAILS OF REQUIREMENTS OF ENGINEERING PERSONNEL  
DURING THE PERIOD 1978-83, MECHANICAL BRANCH

Sl. No.	Designation	No. of persons as on 31-3-1978	Additional Requirement				
			1978-79	1979-80	1980-81	1981-82	1982-83
1.	Mechanical Engineer	2	..	..	..	..	..
2.	Controller of Purchase & Stores	1	..	..	..	..	..
3.	Assistant Mechanical Engineer	1	..	..	..	..	..
4.	Assistant General Manager	2	..	..	..	..	..
5.	Works Manager	4	..	1*	..	..	..
6.	Assistant Works Manager	17	1	1	..	..	..
7.	Water Transport Officer	1	..	..	..	..	..
	Sub Total (I)	28	1	2	..	..	..
<i>intermediate personnel</i>							
1.	Foreman	35	3	3	3	3	3
2.	Chargeman	100	10	10	10	10	10
3.	Assistant Chargeman	367	47	47	47	47	47
4.	Tyre Inspector	21	6	6	6	6	6
5.	Assistant Tyre Inspector	64	7	7	7	7	7
6.	Electrician	97	15	15	15	15	15
7.	Assistant Electrician	256	24	24	24	24	24
8.	Mechanic	807	46	46	46	46	46
9.	Junior Mechanic	623	87	87	87	87	87
10.	Work Assistant	1328	295	295	295	295	295
11.	Blacksmith	904	262	262	262	262	262
12.	Coach Builder	343	87	97	87	87	87
13.	Tinker	70	4	4	4	4	4
14.	Welder	92	25	25	25	25	25
15.	Machinist	102	9	8	8	8	8
16.	Koalder	10	..	..	2	..	..
17.	Machanicman	8	..	..	2	..	..
18.	Instrument Mechanic	3	..	..	1	..	..
	Sub Total-II	5230	927	936	931	926	926
	Total	5258	928	938	931	926	926

Note:—The additional requirements—Intermediate personnel is worked out expecting the increase in each category on the basis of a schedule increase of 200 per year.

\* Retirement vacancy to be filled up by promotion.

## REQUIREMENT OF ENGINEERING PERSONNEL IN THE KERALA STATE CONSTRUCTION CORPORATION

Construction works form the pivot on which the entire development activity revolves in a growing economy. Due to the unstable prices and unsettled labour conditions prevailing in the country, it was found difficult to obtain reasonably priced tenders from contractors, for construction works. It has become difficult to implement plan schemes within the target dates. Establishment of a reliable agency like a construction corporation in the public sector, where the Government alone is the shareholder became a prime necessity and of vital importance. The Ministry of Labour, Government of India, conducted a detailed study on the subject and recommended setting up of a construction company by the State Government, after examining all aspects of the question decided to set up a Construction Corporation in Kerala. Accordingly Kerala State Construction Corporation was incorporated at a private limited company on 25-3-1975. The authorised capital of the company is Rs. one crore.

The Government of Kerala permitted the corporation to take subcontracts for works abroad from public sector undertaking of the Government of India. Accordingly negotiation was conducted with organisations like the National Building Construction Corporation, International Airport Authority of India, K.T.D.C. Rail India, etc., for participation and association with them in the execution of foreign contracts secured by them. Subsequently the corporation was entrusted with the construction of 235 houses at Beniwalid in Libya by the N. B. C. C. The estimated cost of the work is 8.25 crores and the work was started in November 1977. The corporation has taken up a number of major works for execution from state Government; Universities, local bodies and the public sector undertakings. The list given below furnished the details of major works undertaken by the corporation in the beginning of 1978.

Sl. No.	Name of scheme	Cost Rs. in lakhs	Patron
1.	2 Bridges in Cochin Bye-pass N.H. 47 (Kumbalam-Aroor Bridge and Kumbalam Panangad Bridge)	190.00	C.E. National Highways
2.	3 Bridges in Alleppey—Changanacherry Road	207.60	C.E., B & R
3.	Muvattupuzha Bridge in M.C. Road	15.46	do.
4.	Baliapattom Bridge in N.H.17	59.19	C.E., N.H.
5.	N.H. 47, Palghat—Walayar Road—works on 4 reaches	51.80	do.
6.	Construction of Municipal Bus Stand Building, Cannanore	38.19	Cannanore Municipality
7.	Vikas Bhavan, Trivandrum	36.55	C.E., B & R.
Total		598.79	..

For smooth working of the construction activities of the corporation, the entire state is divided into 4 regions and work in these regions are controlled by a Senior Engineer in the rank of a Superintending Engineer. For major works Regional Engineers in the rank of Executive Engineers are posted to assist the Senior Engineer. Project Engineers (in the rank of Assistant Executive Engineers) and Assistant Project Engineers (in the rank of Assistant Engineers) are posted to be in direct charge of works:—

On 1-4-1978, the following were the staff pattern of Engineering personnel in the Corporation:—

Senior Engineer	1
Regional Engineer	4
Project Engineer	16
Assistant Project Engineer	38
Assistant Architect	1
Assistant Design Engineer	1
Junior Engineer	1
Draughtsman, I Grade	1
Work Superintendent	1
Total	64

Out of these 64 officers one Regional Engineer and one Project Engineer and seven Asst. Project Engineers were working in Libya.

During 1978-79, 5 Officers left the corporation to join duty in the parent department and 16 officers newly joined duty. They consisted of one Managing Director (Chief Engineer on deputation), two Project Engineers and 13 Assistant Project Engineers.

Details of the Engineering personnel according their Educational status is furnished below:

Table 9.1

KERALA STATE CONSTRUCTION CORPORATION—DISTRIBUTION OF  
ENGINEERING PERSONNEL ACCORDING TO EDUCATIONAL  
STATUS AS ON 1-4-1978

Qualification	Civil	Mechanical	Electrical	Others	Total
Postgraduates	3	..	..	1	4
Graduates	49	..	..	3	52
Diploma Holders	8	..	..	..	8
Total	60	..	..	4	64

The age profile of the Engineering personnel working in corporation as on 1-4-1978 is furnished below:

Table 9.2

KERALA STATE CONSTRUCTION CORPORATION—DETAILS OF  
ENGINEERING PERSONNEL—AGE PROFILE AS ON 1-4-1978

Age group	Post graduates	Graduates	Diploma holders	Total
23 or below	..	10	..	10
24-28	..	15	..	15
29-33	..	17	3	20
34-38	1	8	1	10
39-43	2	1	3	6
44-48	1	1	1	3
49-53	..	..	..	..
54 and above	..	..	..	..
Total	4	52	8	64

All the Engineers working in the Corporation have been taken on deputation from the State Government. Since the volume of work depends on contracts, future requirement of Engineering personnel could not be assessed. Moreover there is no direct recruitment. The recruitment on the basis of deputation shall be considered when the requirement of the Public Works Department is assessed.

## REQUIREMENT OF ENGINEERING PERSONNEL IN THE KERALA STATE HOUSING BOARD DURING 1978-83

The housing activities in the state are carried out by different agencies viz., the Kerala State Housing Board, Development Corporation for Scheduled Castes and Tribes, the Greater Cochin Development Authority, and the Government through the Revenue Department and Rural Housing Cell etc. The major agency in this field is the KSHB, which was established in 1971.

KSHB has jurisdiction over the whole state of Kerala. The schemes of the Board are implemented through the three Regional offices located at Trivandrum, Cochin and Calicut.

A brief note on the activities of the Board is furnished below and this would help to assess the requirement of engineering personnel in the Board.

### A. Activities in the Urban Areas

1. *Public Housing Schemes.*—The Housing Board has public housing schemes in almost all the districts. Under the schemes, lands are acquired and developed by providing roads and open areas. It is divided into plots and offered to economically weaker section, Low Income Group, and Middle Income Group, with proposals for constructing buildings. 20% of the total cost of land and building is realised in advance and the balance cost is realised in 12 years for M.I.G. and 15 years for L.I.G. In the case of E.W.S. the initial deposit is 10% and the repayment period is 20 years. The interest charged is 5% for E.W.S., 7% for L.I.G. and 9.5% to 10.5% for M.I.G. In the beginning of 1978, construction works were in progress under 20 schemes. By the end of May 1979, construction of 1602 buildings were completed for different categories, of persons and construction of 1293 houses were in progress.

2. *HUDCO's Assistance to Housing Schemes.*—Housing and Urban Development Corporation, New Delhi has sanctioned loan amounting to Rs. 9.90 crores to the Board till June 1979. The Board took effective steps in 1978 to popularise HUDCO'S schemes among the public. 7000 applications from persons who do not possess their own land and who do not have a house of their own have been received and steps are being taken to indentify and acquire land for them.

### B. Rural Housing Activities

1. *Aided self help co-operative housing schemes for economically weaker sections in the rural areas.*—This scheme, formulated jointly by the State Government and the Board, envisages the construction of one lakh houses in a period of two years. Under this scheme financial assistance will be given to E.W.S. for construction of a house costing Rs. 3,600. This is proposed to be implemented under the joint auspices of the Government of Kerala, the KSHB, the Kerala State Co-operative Bank, the District Co-operative Bank, and the primary co-operative societies at the panchayat level. The quantum of assistance is as follows:

	Rs.
1. Loan from HUDCO	1800
2. Loan from Co-operative Bank	800
3. Grant from Government	500
4. Beneficiaries share	500
	3,600

Under this scheme, till end of June 1979, 10,000 houses have been completed and the construction of about 15,000 houses is in various stages of progress.

2. *Bank Loan Scheme.*—In pursuance to the guidelines issued by the Reserve Bank of India, in June 1976, the Board formulated a housing loan scheme to be implemented jointly by the Government of Kerala, the Banks and the Board. The scheme is to make available, bank-loan for construction of houses to the people belonging to the economically weaker sections, and the low income group whose annual income does not exceed Rs. 7,200 and who own and possess plot and who do not have houses of their own. 12 Banks have agreed to participate in the scheme and have sanctioned loan of Rs. 214 lakhs. Besides the State Bank of India is giving housing loans to allottees of house sites and surplus land and ex-kudikidappukars. A sum of Rs. 2.6 crores has been sanctioned for this purpose. The total amount thus promised by Banks is Rs. 4.74 crores. Till May 1979, various banks have distributed loans to the extend of Rs. 147 lakhs.

### C. Direct loan schemes of the Board

The Housing Board is implementing the following schemes by giving financial assistance to E.W.S. of the society.

1. Housing loan scheme for economically weaker sections.
2. Housing loan to M.I.G., L.I.G., and E.W.S.
3. Housing loan scheme for E.W.S. Out of the allocation of general Insurance Corporation loan to the State Government
4. Housing scheme for Flood Victims.
5. Loan scheme to private school teachers.

### D. Other schemes

1. *Housing Scheme for working journalists.*—This scheme is being implemented with the financial assistance from HUDCO and the State Government.

2. *Housing Scheme at Chengalchoola.*—The Board is implementing a scheme of Rs. 1.25 crores for the rehabilitation of the slum-dwellers in Chengalchoola of Trivandrum city. The work started in December 1977 and 168 houses were completed by October 1978. Construction of 176 houses are in progress. The construction of balance houses has been entrusted with the Kerala State Construction Corporation.

3. *Satellite Townships*.—In order to reduce the housing shortage in major cities in Kerala, the Government have decided to construct townships to major cities. The first one has been started in Thrikkakkara, Cochin. The scheme provides for 1000 houses with shopping centres, schools, cinema theatre, bus shelter, dispensary, etc. The total cost is Rs. 460 lakhs and construction work started. The Kerala State Construction Corporation is in charge of construction.

4. *Office-cum-shopping complex*.—The Housing Board proposes to construct an office-cum-shopping complex at Trivandrum at a cost of Rs. 75 lakhs.

The above note shows that the Housing Board functions mainly as an agency to help the weaker sections to get financial assistance to build houses of their own. When they are entrusted with scheme involving construction activities they seek the assistance of Kerala State Construction Corporation. However the Board is involved in the construction of houses as per the public housing schemes which it has taken up. The construction of houses as per these schemes has not been showing satisfactory progress due to lack of co-operation

from the contractor's. The cost also could not be controlled under the contract systems. The Board therefore has decided to execute the works directly, thus eliminating the inter-mediate agency the contractor. Consequently a Direct Execution Unit has been formed under the control of a Project Engineer. The establishment of this unit has shown good results.

The details of Engineering staff required by the Board for the period 1978-83 is furnished in Table 10.1.

The appointments and promotions of Engineering personnel in the board are as per the Kerala State Housing Board Establishment Regulations, 1977. The regulation provides for filling up of the vacancy either by transfer from the corresponding category in the Government service or by promotion from lower categories working in the Board or by direct recruitment. However vacancies are mostly filled by deputation from P.W.D.

The additional requirements of personnel for the period 1978-83 is estimated and furnished in Table 10.2.

Table 10.1

## ENGINEERING STAFF REQUIRED BY THE BOARD

Sl. No.	Category	Total Requirement for				
		1978-79	1979-80	1980-81	1981-82	1982-83
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1.	Superintending Engineer	..	..	1	1	1
2.	Executive Engineer	3	3	9	9	9
3.	Assistant Executive Engineer	12	21	38	38	33
4.	Assistant Engineer	52	52	80	80	80
5.	Draftsman Ist grade	47	47	64	64	64
6.	Draftsman IInd Grade	43	43	69	69	69
7.	Tracer	5	5	12	12	12
8.	Blue printer	3	3	8	8	8
	Total	165	174	281	281	281

Note:—In col. 2. for the sake of comparison, the corresponding name of category in P.W.D. is furnished. For example Regional Engineers/Project Engineers are considered as Executive Engineers.

Table 10.2

## KERALA STATE HOUSING BOARD—REQUIREMENT OF ENGINEERING PERSONNEL FOR 1978-83

	1978-79			1979-80			1980-81			1981-82			1982-83		
	C	M	E	C	M	E	C	M	E	C	M	E	C	M	E
Graduates	..	..	..	..	..	..	42	..	3	..	..	..	..	..	..
Diploma holders	..	..	..	..	..	..	30	..	..	..	..	..	..	..	..
Certificate holders	..	..	..	..	..	..	20	..	..	..	..	..	..	..	..
Total	..	..	..	..	..	..	92	..	3	..	..	..	..	..	..

C—Civil, M—Mechanical, E—Electrical



## CHAPTER 11

## REQUIREMENT OF ENGINEERING PERSONNEL IN THE DEPARTMENT OF TECHNICAL EDUCATION

The Department of Technical Education was formed in Kerala in 1957, on the recommendations of the special committee appointed by the Central Government for proposing measures for the co-ordination of Technical Education, especially in matters of standard, syllabi, and examinations. With the formation of the Department, Technical Institutions, viz. Maharaja's Technological Institute, Trichur, Government Polytechnic, Kalamasseri, Institute of Textile Technology, School of Arts, and the Institute for Diploma course in shorthand and typewriting, which were under the University of Kerala, were brought under this Department. The Kerala Government Polytechnic at Kozhikode was also transferred to this Department from the Department of Industries and Commerce. The Engineering College, Trivandrum was brought under the administrative control of the Department from December 1958. Thereafter, several Technical Institutions both under government and private management were started.

The Regional Engineering College at Calicut, and the Food Craft Institute at Kalamasseri were started during 1961 and 1967 respectively as Registered Societies under the Article XXI of Societies Registration Act of 1860. These Institutions are governed by the respective Board of Governors and come under the purview of the grant-in-aid code. The Director of Technical Education is the Ex-officio member of the Board of Governors. The Engineering College at Trichur was transferred to the Cochin University in 1977. In addition to this there are a number of industrial and commercial schools recognised by this Department and over which the Department exercises academic control. The Department co-ordinates and controls the activities of the various technical institutions both under private and public sectors and also assists the commissioner for Government examinations in the conduct of Technical Examination.

During the beginning of the sixth plan there were 6 Engineering Colleges, 18 Polytechnics and 21 Junior Technical Schools in the State to impart technical education. The details of these institutions are furnished in Tables 11.1 and 11.2. Table 11.3 gives details of 39 other technical institutions under the control of the Technical Education Department.

### Functions of the Department

This Department exercises administrative and technological control of technical education in the State both under Government and private sectors.

The section and allotment of students to the Engineering Colleges and Polytechnics are being done at the Directorate as per the rules in force.

The Directorate is also controlling 127 private engineering and industrial institutions.

**Table 11.1**  
Distribution of Engineering Colleges in Kerala  
as on 1-4-1978

Sl. No.	District	Type of management			Total
		Government	Regional Engineering College	Private	
(1)	(2)	(3)	(4)	(5)	(6)
1	Trivandrum	1	..	..	1
2	Quilon	..	..	1	1
3	Alleppey	..	..	..	..
4	Kottayam	..	..	..	..
5	Idukki	..	..	..	..
6	Ernakulam	..	..	1	1
7	Trichur	—	1	..	1
8	Palghat	..	..	1	1
9	Malappuram	..	..	..	..
10	Kozhikode	..	1	..	1
11	Cannanore	..	..	..	..
Total		1	2	3	6

Note:—As on 1978 the Engineering College, Trichur was under Cochin University. Later it was brought under Government.

**Table 11.2**  
DISTRIBUTION OF POLYTECHNICS AND JUNIOR TECHNICAL SCHOOLS IN KERALA 1-4-1978

Sl. No.	District	Government Polytechnics	Women's Polytechnics	Polytechnics private (3+4+6)	Polytechnics Total	Junior Technical school (Government)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Trivandrum	1	1	..	2	2
2	Quilon	..	..	1	1	2
3	Alleppey	..	..	2	2	2
4	Kottayam	1	..	..	1	2
5	Idukki	..	..	..	..	..
6	Ernakulam	1	..	..	1	1
7	Trichur	2	1	1	4	4
8	Palghat	2*	..	..	2*	2
9	Malappuram	..	..	1	1	1
10	Kozhikode	1	1	..	2	2
11	Cannanore	1	..	1	2	3
Total		9	3	6	18	21

\*Includes in institute for Printing Technology.

Table 11.3

## DISTRICT-WISE DISTRIBUTION OF OTHER INSTITUTIONS FOR TECHNICAL EDUCATION 1977

Sl. No.	District	Tailoring Training centres	Rattan training	Weaving	Compos- ing & printing	Book Binding	Govern- ment Industrial schools	Prevo- cational Training centres	Commer- cial Insti- tutions	Arts in- stitutions	College of fine Arts	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1	Trivandrum	7	1	1	1	2	..	1	2	1	1	17
2	Quilon	1	..	..	..	..	..	..	..	1	..	3
3	Alleppey	2	..	..	..	..	..	..	..	..	..	1
4	Kottayam	1	..	..	..	..	..	..	..	..	..	1
5	Idukki	1	..	..	..	..	..	..	1	..	..	3
6	Ernakulam	2	..	..	..	..	2	1	..	1	..	5
7	Trichur	1	..	..	..	..	..	..	..	..	..	1
8	Palghat	1	..	..	..	..	..	1	1	..	..	3
9	Malappuram	1	..	..	..	..	..	..	..	..	..	1
10	Kozhikode	1	..	..	..	..	..	1	..	..	..	3
11	Cannanore	2	..	..	..	..	..	..	1	..	..	3
	Total	20	1	1	1	2	2	4	4	3	1	39

Table 11.4

## DATA RELATING TO THE STRENGTH OF STAFF (ENGINEERING PERSONNEL) UNDER THE DIRECTORATE OF TECHNICAL EDUCATION ACCORDING TO QUALIFICATION DURING 1978

	Doctorate				Post graduates				Graduates				Diploma				Certificate holders				Others					
	C.	M.	E.	O.	T.	C.	M.	E.	O.	T.	C.	M.	E.	O.	T.	C.	M.	E.	O.	T.	C.	M.	E.	O.	T.	
1. Engineering Colleges	18	10	8	2	38	111	82	71	15	279	42	57	30	12	141	..	9	8	..	17	14	27	27	..	68	72
2. Polytechnics	..	..	..	..	..	6	4	..	..	10	44	49	37	11	141	111	121	63	45	340	45	98	33	39	215	101
3. Junior T.S. & staff under work experience programme	..	..	..	..	..	..	..	..	..	..	..	16	10	..	26	1	..	216	43	..	260	..	82	122	204	51
4. Other Institutions staff under the D.T.E.	11	..	1	..	2	1	1	..	..	3	2	2	..	..	4	..	2	3	5	..	..	..	..	83	8	6
Total	19	10	9	2	40	118	87	72	15	292	88	124	77	23	312	112	348	114	48	622	59	207	182	122	570	230

[C. Civil, M. Mechanical, E. Electrical, O. Others, Including Electronics and Communication, Chemical Engineering, Architecture, Textile Technology, Automobile Engineering and Printing Technology.]

Data on Engineering personnel working in the Regional Engineering College, Calicut during 1979-80 is furnished in Table 11.6.

Table 11.7 furnishes the details of annual additional requirement of Engineering Personnel in the Department of Technical Education during the period 1978-83.

Table 11.5

DATA ON ENGINEERING PERSONNEL IN THE DEPARTMENT OF TECHNICAL EDUCATION AND INSTITUTIONS UNDER ITS CONTROL IN 1978-79

Sl. No.	Designation	Scale of pay	Sanctioned strength	Actual number in position
<b>A. Engineering Colleges (5)</b>				
		1450-2050	5	4
1	Principal	1300-1900	28	27
2	Professor-Engineering	1125-1725	86	85
3	Assistant Professor-Engineering	1125-1725	5	3
4	Workshop Superintendent	750-1450	273	248
5	Lecturer in Engineering	do.	16	15
6	Workshop Instructor Grade I	420-720	40	31
7	Workshop Instructor Grade II	do.	51	50
8	Skilled Assistant Grade I	370-600	3	2
9	Draftsman	do.	21	18
10	Instrument Mechanic	do.	1	..
11	Boiler Mechanic	350-580	144	142
12	Skilled Assistant Grade I	330-515	1	1
13	Boiler Assistant	310-490	141	125
14	Workshop Attenders		815	751
Sub Total A				
<b>B. Polytechnics (18)</b>				
		1125-1725	17	16
1	Principal	750-1450	49	48
2	Head of sections	do.	89	89
3	Lecturer	do.	13	11
4	Workshop Superintendent	700-1270	1	1
5	Analyst	600-1100	161	155
6	Assistant Lecturer/Instructor	do.	3	3
7	Draftsman	do.	2	2
8	Foreman Automobile	420-720	45	44
9	Demonstrator	390-685	1	1
10	Instrument Mechanic	330-515	5	5
11	Boiler Assistant	310-490	135	124
12	Workshop Assistant		521	499
Sub Total B				
<b>C. Junior Technical Schools (21) and Attached P.V.T.C.</b>				
		750-1450	21	20
1	Superintendent	600-1100	21	20
2	Instructor	do.	21	20
3	Draftsman I	do.	21	20
4	Workshop Foreman	450-775	21	19
5	Draftsman II	do.	105	97
6	Workshop Instructor	420-720	42	41
7	Skilled Assistant I	350-580	145	139
8	Skilled Assistant II	310-490	115	101
9	Workshop Attenders		512	477
Sub Total C				
<b>D. Directorate of Technical Education</b>				
		1800-2250	1	1
1	Director	1450-2050	1	1
2	Joint Director	1300-1900	1	1
3	Professor, Placement and Training	1125-1725	4	4
4	Deputy Director	750-1450	3	3
5	Technical Assistant	do.	2	2
6	Training Officers		12	12
Sub Total D				
<b>Grand Total</b>			<b>1860</b>	<b>1739</b>

Table 11.6

DATA ON ENGINEERING PERSONNEL IN THE REGIONAL ENGINEERING COLLEGE, CALICUT 1979-80

Sl. No.	Designation	Education status basic	Scale of pay	Sanctioned strength	Actual number of position
1	Principal	PG.	1800-2250	1	1
2	Professor (Engineering) P. G. Course	do.	1100-1600	1	1
3	Professor (Engineering) U. D. Course.	do.	do.	6	5
4	Professor of Placement and Training	G.	do.	1	1
5	Assistant Professor (Engineering)	P.G.	1125-1725	14	14
6	Workshop Superintendent	G. (Mech Engg)	do.	1	1
7	Lecturer Engineering	P. G.	750-1450	75	75
8	Workshop Foreman	Diploma (Mechanical)	700-1270	2	2
9	Assistant Engineer	G.	750-1450	1	1
10	Junior Engineer	G.	600-1100	3	3
11	Supervisors	Diploma	650-1150	2	2
12	Instructor	do.	600-1100	4	3
13	Draftsman I	do.	do.	2	2
14	Senior Instrument Mechanic	do.	350-900(UR)	1	..
15	Instrument Mechanic	C	285-530 (U.R.)	1	..
16	Refregeration Mechanic	D	350-900(U.R.)	1	..
17	Overseer Grade I	D	450-875	2	1
18	Skilled Assistant I	D	420-720	17	17
19	Draftsman II	D	370-600	1	..
20	Tracer	C	350-580	2	..
21	Lineman	..	do.	4	4
22	Plumber	..	do.	4	2
23	Electrician	..	350-580	1	1
24	Work Superintendent	C	330-515	2	2
Total				149	138

Table 11.7

DATA ON ANNUAL ADDITIONAL REQUIREMENT OF ENGINEERING PERSONNEL IN THE DEPARTMENT OF TECHNICAL EDUCATION

Sl. No.	Category	1978-79	1979-80	1980-81	1981-82	1982-83
<i>Postgraduates and graduates</i>						
1	Civil	2	2	2	27	1
2	Mechanical	1	2	7	37	10
3	Electrical	1	..	1	28	1
4	Electronics	..	..	2	12	2
5	Chemical Engineering	..	..	2	7	3
6	Production Engineering	..	..	2	3	1
7	Instrument Technology	..	..	1	1	..
8	Instrument Control	..	..	..	2	..
Sub Total		4	4	17	117	18
<i>Diploma Holders</i>						
9	Civil	..	..	4	10	..
10	Mechanical	2	2	24	37	11
11	Electrical	..	..	..	6	..
12	Electronics	1	..	..	8	..
13	Industrial Technology	..	..	..	1	..
14	Chemical Engineering	..	..	1	2	1
15	Instrument Control	..	..	..	2	..
16	Automobile Engineering	..	..	..	1	..
Sub Total		3	2	28	67	12
<i>Certificate Holders</i>						
17	Civil	..	1	2	2	..
18	Mechanical	4	3	18	26	11
19	Industrial Technology	..	..	..	1	..
20	Chemical Engineering	..	..	1	2	1
21	Instrumentation	..	..	..	2	..
22	Others	..	..	2	2	2
23	Electrical	..	..	..	10	..
24	Electronics	..	..	..	12	..
Sub Total		4	4	23	57	14
Grand Total		11	10	68	241	44

## CHAPTER 12

## REQUIREMENT OF ENGINEERING PERSONNEL IN OTHER AUTONOMOUS INSTITUTIONS IN THE STATE

### 1. Kerala Agricultural University, Vellanikkara Trichur

During 1978-79 the following Engineering personnel were working in the Agricultural University.

1. Director of Physical Plant (Equivalent to Chief Engineer Grade)	1
2. Executive Engineer	1
3. Assistant Executive Engineer	6
4. Architect	1
5. Junior Architect	1
6. Assistant Engineer	16
7. Draftsman I grade	24
<b>Total</b>	<b>50</b>

All the posts in the Engineering wing of the University except the following 8 posts are being filled up by deputation from P.W.D./P.H.E.D. etc.

1. Assistant Executive Engineer	1
2. Assistant Engineer	3
3. Draftsman	4
<b>Total</b>	<b>8</b>

The above 8 posts are filled up by direct recruitment.

The details of additional requirements for 1978-83 are furnished in Table 12.1.

The data on Engineering personnel as on 1-4-1978 and the additional requirement for 1978-83 relating to the University of Cochin & Grater Cochin Development Authority are given in the Table 12.2 and 12.3 respectively.

**Table 12.1**

KERALA AGRICULTURAL UNIVERSITY, VELLANIKKARA DATA ON ADDITIONAL REQUIREMENT OF ENGINEERING PERSONNEL 1978-83

Category	Additional requirement				
	1978-79	1979-80	1980-81	1981-82	1982-83
<i>Post graduates and Degree Holders</i>					
Civil	..	6	..	..	..
Mechanical	..	1	..	..	..
<i>Diploma Holders</i>					
Civil	..	4	..	..	..

**Table 12.2**

UNIVERSITY OF COCHIN, COCHIN PALACE P. O., THRIPPUNITHURA

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIVERSITY AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-1983

Category	Number in position as on 1-4-1978	Additional requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
<i>Graduates</i>						
Civil	2	..	..	..	..	..
Electrical	1	..	..	..	..	..
Architecture	1	..	..	..	..	..
<i>Diploma Holders</i>						
Civil	2	..	1	..	..	..
Automobile	..	..	..	..	1	..
<i>Certificate Holders</i>						
Civil	2	2	..	..	2	..
Wireman	1	..	..	..	..	..
<b>Total</b>	<b>9</b>	<b>2</b>	<b>1</b>	<b>..</b>	<b>3</b>	<b>..</b>

**Table 12.3**  
**GREATER COCHIN DEVELOPMENT AUTHORITY, COCHIN**  
**DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978**

<i>Category</i>	<i>Number in position 1-4-1978</i>
<i>Post graduates and Degree Holders</i>	
Civil	18
Electrical	1
Architecture	6
<i>Diploma Holders</i>	
Civil	37
<i>Certificate Holders</i>	
Civil	8
Electrical	1
<b>Total</b>	<b>71</b>

*Note:* The additional requirement for 1978-83 cannot be specifically stated.

## REQUIREMENT OF ENGINEERING PERSONNEL IN OTHER STATE GOVERNMENT AGENCIES/ UNDERTAKINGS

The requirement of Engineering personnel in a few important State Government undertakings have been dealt with in detail in chapters 7, 8, 9 and 10.

Efforts have been made to collect the information from a large number of other Government/undertakings. But only the following few institutions above responded and the available details (relating to number in position as on 1-4-78) are given in Table 13.1, to 13.14.

1. Overseas Development and Employment promotion consultants, Trivandrum (Table 13.1)
2. Plantation Corporation of Kerala Ltd., Kottayam (Table 13.2)
3. The State Institute of Languages, Kerala—Trivandrum (Table 13.3)
4. Transformers and Electricals, Kerala, Angamally (Table 13.4)
5. Travancore Titanium Products, Trivandrum (Table 13.5-1 and 13-5-2)
6. The Kerala Agro Industries Corporation, Trivandrum (Table 13.6)
7. Meat Products of India Ltd., Koothattukulam, (Table 13-7)
8. Kerala Forest Development Corporation, Kottayam (Table 13-8)
9. Kerala Land Development Corporation, Trivandrum (Table 13-9)
10. (i) Keltron Component Complex Ltd., Cannanore (Table 13-10-1)  
(ii) Keltron power divices Ltd., Trichur (Table 13-10-2)  
(iii) Keltron Crystal Ltd., Kalliassery (Table 13-10-3)  
(iv) Keltron Magnetics Ltd., Kalliasserry (Table 13-10-4)  
(v) Keltron counters Ltd., Trivandrum 13-10-5)
11. Kerala Warehousing Corporation, Cochin-16 (Table 13-11)
12. (i) Kerala Electrical and Allied Engineering Company Ltd., Kundara (Table 13-12-1)  
(ii) Do. Palghat (Table 13-12-2)
13. Kerala State Board for Prevention and Control of Water Pollution, Trivandrum (Table 13-13)
14. Kerala Urban Development Finance Corporation Ltd., Calicut (Table 13-14).

**Table 13.1**

### OVERSEAS DEVELOPMENT AND EMPLOYMENT PROMOTION CONSULTANTS LTD.

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENTS FOR 1978-83

Category	No. in position as on		Additional Requirement			
	1-4-1978	1978-79	1979-80	1980-81	1981-82	1982-83
Graduates	..	1	R. N. F	..	..	..
Civil	..	..	..	..	..	..
Diploma Holders	..	..	..	..	..	..
Certificate Holders	Nil.	..	..	..	..	..
<b>Total</b>		<b>1</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>..</b>

R. N. F. (Requirement not furnished)



**Table 13.2**  
**PLANTATION CORPORATION OF KERALA LTD.**  
**DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978**

	No. of position as on 1-4-1978
<i>Post graduates and Degree holders</i>	
Civil	2
Mechanical	1
<i>Diploma Holders</i>	
Civil	12
Mechanical	5
Electrical	1
<i>Certificate Holders</i>	
I. T. I. Electrical	1
I. T. I. Civil	2
<b>Total</b>	<b>24</b>

(R. N. F.)

**Table 13.3**  
**THE STATE INSTITUTE OF LANGUAGES, KERALA,**  
**DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978**

Category	Number in position 1-4-1978
<i>Post graduates and Degree Holders</i>	
Civil	1
Mechanical	1
Electrical	1
Chemical	1
*Diploma holders	
†Certificate holders	
<b>Total</b>	<b>4</b>

\* (1) One Diploma holder in Printing Technology is working in the Vignana Mudranam Press.

† (2) 64 certificate holders in Composing etc., are working in the press.

(R. N. F.)

**Table 13.4**  
**TRANSFORMERS AND ELECTRICALS, KERALA,**  
**DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978**  
**ADDITIONAL REQUIREMENTS FOR 1978-83**

Category	Number in position 1-4-1978	Additional requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
<i>Post graduates and graduates</i>						
Mechanical	20	2	2	4	2	..
Electrical	49	5	5	6	3	..
<i>Diploma holders</i>						
Civil	2	..	..	..	..	..
Mechanical	29	..	4	2	..	..
Electrical	54	..	6	3	..	..
<i>Certificate holders</i>						
I.T.I. Total	410	20	30	30	10	..
K.G.T.E. Total	232	30	30	30	15	..
<b>Total</b>	<b>796</b>	<b>57</b>	<b>77</b>	<b>75</b>	<b>30</b>	<b>..</b>

Table 13 (5-1)

## TRAVANCORE TITANIUM PRODUCTS LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT  
AS ON 1-4-1978

Sl. No.	Category	Number in position
(1)	(2)	(3)
<i>Post Graduates and Degree Holder</i>		
1	Civil	2
2	Mechanical	22
3	Electrical	10
4	Chemical	3
5	Electronics and Communication	2
6	A. M. I. I.	3
<i>Diploma Holders</i>		
1	Civil	7
2	Mechanical	9
3	Electrical	6
4	Chemical Technology	10
5	Chemical Engineering	5
6	Craftsman ship	3
Sub total		84
<i>Certificate Holders</i>		
1	I.T.I. Fitter	81
	Electrician	26
	Wireman	2
	Carpenter	10
	Mechanist	8
	Sheet Metal Worker	4
	Lineman and Wireman	2
	Turner	5
	Blacksmith	5
	Refrigeration and Air conditioning	3
	Welder	12
	Moulder	2
	Surveyor	2
	Instrument Machanic	9
	Electroplater	1
	Plumber	2
	Draftsman	3
	Mechanic—Automobile	4

(1)	(2)	(3)
2	J.T.S.L.C.	1
3	Polytechnic Certificate	1
4	Painting	1
5	Mechanic—Engines	1
6	Do. Maintenance of Chemical Plants	1
7	Pre profession Science	1
8	K.G.T.E.—Electrical	1
9	K.G.T.E.—Mechanical	1
10	Carpentry	1
11	N.A.C. Plastic beining	1
12	Certificate Examination—Mechanic Engineering	1
13	Electrical Engineering (C & G)	1
14	L.M.E. Automobile	1
15	Noval Certificate in Engineering Mechanic	1
16	L.M.E.	1
17	L.C.E.	1
Sub total		197
Grand total		281

Table 13 (5-2)

## TRAVANCORE TITANIUM PRODUCTS LIMITED

DATA ON ADDITIONAL REQUIREMENT OF ENGINEERING  
PERSONNEL FOR THE PERIOD 1978-1983

Sl.No. Category	Additional Requirement				
	1978-79	1979-80	1980-81	1981-82	1982-83
1 I.T.I. Certificate Holders— Instrument Mechanic	10	..	..	..	..
2 Certificate— Boiler Attendant	..	..	1	..	..
3 Electrical Engineering (C & G)	..	..	..	1	..
Total	10	..	1	1	..

Table 13.6

## THE KERALA AGRO INDUSTRIES CORPORATION LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position 1-4-1978
<i>Post graduates and Degree Holders</i>	
Mechanical	20
<i>Diploma holders</i>	
Mechanical	14
<i>Certificate holders</i>	
Mechanical—I T I	20
J.T.S.L.C.	1
Others	47
Others with training in agricultural, Mechanical	47
Total	102

Table 13. 7

## MEAT PRODUCTS OF INDIA LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
<i>Degree holders</i>	
Mechanical	1
<i>Diploma holders</i>	
Electrical	1
<i>Certificate holders</i>	
Refrigeration and airconditioning	2
Fitter	2
Boiler Operator	1
<b>Total</b>	<b>7</b>

Note:— Future Requirement not yet assessed

Table 13. 8

## KERALA FOREST DEVELOPMENT CORPORATION

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position 1-4-1978
<i>Graduates</i>	
Civil	1
<i>Diploma holders</i>	
Civil	1
<b>Total</b>	<b>2</b>

Note:—The Engineering Personnel are working on Deputation from P.W.D.  
(R. N. F.)

Table 13. 9

## THE KERALA LAND DEVELOPMENT CORPORATION LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

AND ADDITIONAL REQUIREMENT FOR 1978-83

Category	Number in position as on 1-4-1978	Additional requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
<i>Post-graduates and Degree holders</i>						
Civil	37	5	2	7	3	3
<i>Diploma holders</i>						
Civil	52	7	3	10	4	5
<b>Total</b>	<b>89</b>	<b>12</b>	<b>5</b>	<b>17</b>	<b>7</b>	<b>8</b>

Note:— Majority of the posts are filled in by deputation from Government service.

Table 13. 10(1)

## KELTRON COMPONENTS COMPLEX LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
<i>Post-graduates and Degree holders</i>	
Mechanical	5
Electrical	2
Chemical	1
Electronics and Communication	4
M.Sc., M. Tech.	1
<i>Diploma holders</i>	
Civil	1
Mechanical	4
Electrical	2
<i>Certificate holders</i>	20
Total	40

(R. N. F.)

Table 13. 10(2)

## KELTRON POWER DEVICES LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-1983

Category	Number in position as on 1-4-1978	Additional requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
<i>Post-Graduates and Degree Holders</i>						
Civil	1	1	..	..	..	..
Mechanical	..	..	..	1	1	1
Electrical	1	1	..	..	..	..
Electronics	3	..	..	3	2	4
Chemical Engineering	..	..	..	1	..	..
<i>Diploma Holders</i>						
Mechanical	3	..	..	1	..	2
Electrical	2	..	..	..	1	..
Electronics	2	1	..	2	3	..
Chemical Engineering	..	..	..	4	4	5
<i>Certificate holders</i>						
I. T. I.	4	4	6	6	8	8
K. G. T. E. etc.	6	8	8	8	10	10
Total	22	15	14	28	29	30

Table 13. 10(3)

## KELTRON CRYSTALS LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

<i>Category</i>	<i>Number in position as on 1-4-1978</i>
<i>Post-graduate and Degree Holders</i>	
1. Mechanical	1
2. Electronics and Communications	2
<i>Diploma Holders</i>	
1. Mechanical	1
2. Electronics	1
3. Electrical	1
<i>Certificate Holders</i>	
1. Radio & Telecommunication	11
Total	17

(R. N. F.)

Table 13. 10(4)

## KELTRON MAGNETICS LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978.

<i>Category</i>	<i>Number in position as on 1-4-1978</i>
<i>Graduates</i>	
Electronics and Communication	2
<i>Diploma holders</i>	
<i>Certificate holders</i>	
Electrical	1
Total	3

(R. N. F.)

Table 13.10(5)

## KELTRON COUNTERS LIMITED

DETAILS OF ENGINEERING PERSONNEL WORKING IN THE UNIT FOR THE YEARS 1978-79, 1979-80 AND 1980-81

Category	Number in position 1978-79	1979-80		1980-81	
<i>Post Graduates and Degree Holders</i>					
Mechanical	11	11		17	
Electrical	4	4		4	
Electronics & Communication	..	1		2	
<i>Diploma Holders</i>					
Mechanical	9	14		15	
Electrical	3	3		3	
<i>Certificate Holders</i>					
Mechanical Draftsman	20	24		24	
Draftsman Civil	20	21		21	
Electrician	13	13		14	
Moulder	5	5		7	
Turner	5	5		7	
Carpentry	3	3		3	
Welder	4	4		6	
Fitter	37	32		41	
Mechanist	19	15		23	
Diemaker	2	2		..	
Steelmetalist	56	61		66	
Instrument Mechanic	..	..		1	
Mechanic, Radio & T. V.	2	4		2	
Others	25	25		26	
<b>Total</b>	<b>231</b>	<b>247</b>		<b>288</b>	

Table 13.11

## KERALA WAREHOUSING CORPORATION

DATA ON ENGINEERING PERSONNEL WORKING AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-83

Sl. No.	Category	Number in position 1-4-1978	Additional requirement				
			1978-79	1979-80	1980-81	1981-82	1982-83
1.	Graduate Civil	1	..	..	..	..	The corporation has no construction wing of permanent nature. Hence vacancies cannot be anticipated.
2.	Diploma Holders Civil	2	..	..	..	..	
<b>Total</b>		<b>3</b>					

Table 13. 12(1)

KERALA ELECTRICALS AND ALLIED ENGINEERING COMPANY LIMITED  
 DATA ON ENGINEERING PERSONNEL WORKING IN THE UNITS AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-1983

Category	Number in position as on 1-4-1978	Additional Requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
<i>Graduates</i>						
Mechanical	2	..	1	..	..	1
Electrical	4	..	1	..	1	..
<i>Diploma Holders</i>						
Mechanical	6	..	..	2	..	2
Electrical	8	..	..	..	..	2
<i>Certificate Holders</i>						
I.T.I. Welder	2	..	..	..	2	..
Fitter	6	..	..	2	..	..
Turner	3	..	..	5	..	2
Electrician	3	..	..	4	..	2
Electronic	..	..	2	2	..	1
<b>Total</b>	<b>34</b>	<b>..</b>	<b>4</b>	<b>15</b>	<b>3</b>	<b>10</b>

Table 13. 12(2)

KERALA ELECTRICAL AND ALLIED ENGINEERING COMPANY LIMITED  
 DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
<i>Graduates</i>	
1. Mechanical	1
2. Electrical	4
<i>Diploma Holders</i>	
1. Mechanical	3
2. Electrical	6
<i>Certificate Holders</i>	
1. I. T. I. etc.	14
<b>Total</b>	<b>28</b>

Table 13.13

## KERALA STATE BOARD FOR PREVENTION AND CONTROL OF WATER POLLUTION

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-1983

Category	Number in position as on 1-4-1978	Additional Requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
<i>Post Graduates and Degree Holders</i>						
Civil	10	5	1	2	1	2
Chemical	..	1	..	3	1	..
<i>Diploma Holders</i>						
Civil	2	11	4	3	2	..
<b>Total</b>	<b>12</b>	<b>17</b>	<b>5</b>	<b>8</b>	<b>4</b>	<b>2</b>

Table 13.14

## KERALA URBAN DEVELOPMENT FINANCE

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-83

Category	Number in position as on 1-4-1978	Additional Requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
<i>Post Graduates and Degree Holders</i>						
Civil	..	..	..	18	..	..
<i>Diploma Holders</i>						
Civil	..	..	..	..	10	..
<i>Certificate Holders</i>						
Civil	..	..	..	..	3	..
<b>Total</b>	<b>..</b>	<b>..</b>	<b>..</b>	<b>18</b>	<b>13</b>	<b>..</b>



## CHAPTER. 14

## REQUIREMENT OF ENGINEERING PERSONNEL IN SOME LEADING PRIVATE SECTOR INDUSTRIES IN KERALA DURING 1978-83

As already mentioned in the limitations of the study furnished in Chapter—1, the requirement of Engineering personnel in the private sector industries have not been incorporated in this report fully. However efforts have been made to collect the data on Engineering personnel working in some leading private sector industries and their requirement for 1978-83. The data relating to the following industrial units are furnished.

1. The Travancore Rayons Limited—Perumbavoor (Table 14.1)
2. Indian Telephone Industries Limited, Kanjikkode West, Palghat (Table 14.2)
3. Periyar Chemicals Ltd. Cochin-1 (Table 14.3)
4. The Mannom Sugar Mills Co-operative Limited, Pandalam (Table 14.4)
5. The Co-operative Sugars Ltd., Chittur and chicops distillery, Menonpara P.O., Palghat (Table 14.5)
6. The Tata Oil Mills Company, Cochin-14 (Table 14.6)
7. McDowell and Co. Ltd., Shertallai (Table 14.7)
8. Poysha Industrial Company Ltd., Edappally (Table 14.8)
9. Kerala Gears, Umayanalloor, Quilon (Table 14.9)
10. The Western India Plywoods Ltd., Balia-pattom, (Table 14.10)
11. The Aluminium Industries, Switch gear Division, Mannar (Table 14.11)
12. Instrumentation Ltd., Kanjikkode West (Table 14.12)
13. The Travancore Cement, Nattakom (Table 14.13)
14. The Chalakudy Potteries Ltd., Chalakudy (Table 14.14)
15. The Travancore Electro-Chemical Industries, Chingavanam (Table 14.15)
16. Premier Tyres Ltd., Kalamasserry (Table 14.16)
17. Kerala Spinners Ltd., Aryad North (Table 14.17)
18. West India Steel Company Ltd., Cheruvannoor. (Table 14.18)

Table 14.1

### THE TRAVANCORE RAYONS LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-83

Category	Number in position as on 1-4-1978	Additional Requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Post-graduates and Degree holders</i>						
1. Civil	1	..	..	..	..	..
2. Mechanical	7	..	..	..	..	..
3. Electrical	2	..	..	1	1	..
4. Chemical	5	2	..	2	1	1
<i>Diploma holders</i>						
1. Civil	2	..	..	..	..	..
2. Mechanical	12	..	..	..	..	..
3. Electrical	9	..	..	..	..	..
4. Chemical Technology	1	..	..	..	..	..
5. Automobile	1	..	..	..	..	..
6. Chemical Engineering	2	..	..	..	..	..
7. Others	2	..	..	..	..	..
<b>Total</b>	<b>44</b>	<b>2</b>	<b>..</b>	<b>3</b>	<b>2</b>	<b>1</b>

Table 14.2,

## INDIAN TELEPHONE INDUSTRIES LIMITED,

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-83

Category	Number in position as on 1-4-1978	Additional requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Post-graduates and Degree holders</i>						
1. Civil	1	..	..	..	..	..
2. Mechanical	1	..	..	..	..	..
3. Electronics and communication	6	2	3	1	1	1
<i>Diploma holders</i>						
1. Civil	1	..	..	..	..	..
2. Mechanical	3	..	..	..	..	..
3. Electrical	1	..	..	..	..	..
4. Electronics	28	22	35	24	24	24
<i>Certificate holders</i>						
1. Radio and Television	19	4	40	8	8	8
2. Mechanics	1	2	5	..	..	..
3. Electrical	2	..	..	..	..	..
Total	63	30	83	33	33	33

Table 14.3

## PERIYAR CHEMICALS LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
(1)	(2)
<i>Post-graduates and Degree holders</i>	
1. Mechanical	1
2. Electrical	1
3. Chemical	4
<i>Diploma holders</i>	
1. Mechanical	9
2. Electrical	9
3. Chemical Technology	5
4. Chemical Engineering	1
5. Refrigeration and Airconditioning	2
<i>Certificate holders:</i>	
1. I.T.I. Refrigeration and Airconditioning	1
2. Do. Machinists	1
3. Do. Industrial Mechanical	1
4. Do. Fitter	10
5. Do. Electrical	7
6. Do. Mechanic	2
7. Do. Moulder	2
8. A.I.T.T. Machinist	1
9. N.C.T.V.T. Machinist	1
10. C.&G—Electrical	1
Total	59

(R. N. F.)

Table 14.4

THE MANNAM SUGAR MILLS CO-OPERATIVE LIMITED  
DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
(1)	(2)
<i>Degree holders</i>	
1. Chemical	1
<i>Diploma holders</i>	
1. Mechanical	1
2. Electrical	2
3. Chemical Technology	1
<i>Certificate holders</i>	
1. Fitter	1
2. Electrical	2
3. Industrial Trade Unit	4
(R. N. F.)	Total
	12

Table 14.5

THE CO-OPERATIVE SUGARS LIMITED CHITTUR AND CHICOPS DISTILLERY  
DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
(1)	(2)
<i>Post-graduates and Degree holders</i>	
1. Civil	1
2. Mechanical	1
3. Chemical	2
<i>Diploma holders</i>	
1. Civil	2
2. Mechanical	6
3. Electrical	3
4. Automobiles	1
<i>Certificate holders</i>	
I.T.I. Fitters	4
(R. N. F.)	Total
	20

Table 14.6

THE TATA OIL MILLS COMPANY LIMITED  
DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
(1)	(2)
<i>Post-graduates and Degree holders</i>	
1. Mechanical	5
2. Electrical	1
3. Chemical	5
4. Chemist	11
<i>Diploma holders</i>	
1. Civil	1
2. Mechanical	6
3. Electrical	1
4. Printing Technology	1
<i>Certificate holders</i>	
1. Turnur	3
2. Fitters	6
3. Machinist	6
4. Mechanic	7
5. Airconditioning and Refrigeration	2
Total	55

(R. N. F.)

Table 14.7

MG DOWELL AND COMPANY LIMITED, DISTILLERY DIVISION,  
DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
(1)	(2)
<i>Post-graduate and Degree holders</i>	
1. Mechanical	2
2. Electrical	1
3. Chemical	2
<i>Diploma holders</i>	
1. Mechanical	5
2. Electrical	1
<i>Certificate Holders</i>	
1. Mechanical I. T. I.	7
2. Electrical do.	1
3. J. T. S. L.C.	1
Total	20

(R. N. F.)

Table 14.8

POYSHA INDUSTRIAL COMPANY LIMITED  
DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
(1)	(2)
<i>Post-graduates and Degree holders</i>	
Mechanical	1
<i>Diploma holders</i>	
Mechanical	1
Electrical	1
<i>Certificate holders</i>	
I. T. I. Welding	1
L. M. E. Mechanical	1
Total	5

*Note:* This unit manufactures open top sanitary cans lithographed and palmtin containers.  
(R. N. F.)

Table 14-9

KERALA GEARS INDUSTRIAL ESTATE,

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
(1)	(2)
<i>Post-graduate and Degree holders</i>	
Mechanical	1
<i>Diploma holders</i>	
Mechanical	2
<i>Certificate holders</i>	
Total	3

(R. N. F.)

Table 14.10

THE WESTERN INDIA PLYWOODS LIMITED  
DATA ON ENGINEERING PERSONNEAL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
(1)	(2)
<i>Post-graduates and Degree holders</i>	
1. Mechanical	8
2. Electrical	8
<i>Diploma holders</i>	
1. Mechanical	4
2. Electrical	13
3. Chemical Engineering	1
<i>Certificate holders</i>	
1. Welders	9
2. Turners	5
3. Fitters	17
4. Electrician	7
5. Blacksmith	2
6. Wireman	1
7. Machinist	2
8. Carpentry	6
Total	81

(R. N. F.)

Table 14-11

THE ALUMINIUM INDUSTRIES LIMITED SWITCH GEAR DIVISION  
DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
<i>Post-graduates and Degree holders</i>	
1. Mechanical	9
2. Electrical	12
3. Electronics and Communication	2
<i>Diploma holders</i>	
1. Civil	2
2. Electrical	13
3. Mechanical	15
<i>Certificate holders</i>	
1. I. T. I. Fitter	54
2. Do. Electrician	16
3. Do. Machinist	36
4. Do. Sheet Metal Worker	18
5. Do. Turner	43
6. Do. Welder	21
7. Do. Painter	2
8. Do. Heat Treatment operator	2
9. Do. Electroplator	1
10. Do. Draughtsman	7
Total	253

(R. N. F.)

Table 14.12

## INSTRUMENTATION LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-79

Category	Number in position as on 1-4-1978	Additional requirement
		1978-79
<i>Post-graduates and Degree holders</i>		
1. Civil	1	..
2. Mechanical	28	..
3. Electrical	1	..
4. Instrument Designs Manufacture	1	..
5. Metallurgy	1	..
<i>Diploma holder</i>		
1. Civil	2	2
2. Mechanical	27	1
3. Electrical	1	..
<i>Certificate holder</i>		
1. I.T.I. Fitter	6	4
2. Do. Draughtsman	6	1
3. Do. Electrician	2	1
4. Do. Instrument Mechanic	1	1
5. Do. Turner	5	5
6. Do. Welder	1	1
7. Do. Machinist	12	..
8. M.G.T.E. Civil Engineer	1	1
9. Mill wright mechanic	1	..
10. Trade Test Fitter	3	..
11. N.C.T.E. Turner	1	..
12. Do. Machinist	2	..
13. N.T.C. Fitter	1	..
Total	94	17

Table 14.13

## THE TRAVANCORE CEMENTS LIMITED,

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
(1)	(2)
<i>Post-Graduates and Degree Holders</i>	
1. Mechanical	3
2. Electrical	1
3. Chemical	1
<i>Diploma Holders</i>	
Electrical	1
Total	6

Table-14.14

## THE CHALAKUDY POTTERIES LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-79.

Category	Number in position as on 1-4-1978	Additional requirement 1978-79
(1)	(2)	(3)
<i>Post Graduates and Degree Holders</i>	Nil	..
<i>Diploma Holders</i>		
1. Mechanical	2	2
2. Electrical	1	1
<i>Certificate Holders</i>		
1. I. T. I.—Machinist	..	3
2. Carpenter	..	3
3. do. —Pattern maker	..	3
4. do —Electrician	2	2
5. do. —Fitter	5	2
6. do. —Moulder	2	..
Total	12	16

Table-14.15

## THE TRAVANCORE ELECTRO-CHEMICAL INDUSTRIES LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-79.

Category	Number in position as on 1-4-1978	Additional requirement 1978-79
(1)	(2)	(3)
<i>Post graduates and Graduates</i>		
1. Mechanical	3	..
2. Electrical	2	..
<i>Diploma Holders</i>		
1. Civil	3	..
2. Mechanical	2	..
3. Electrical	4	..
<i>Certificate Holders</i>		
1. Electrical	15	..
2. Sheet metal	4	..
3. Fitter	3	2
4. Welder	2	5
5. Turner	2	1
6. Blacksmith	..	1
Total	40	9



Table 14 16

## PREMIER TYRES LIMITED

## DETAILS OF ENGINEERING PERSONNEL—ADDITIONAL REQUIREMENT FOR 1980-81

Category	Additional requirement	
	(1)	1980-81 (2)
<i>Post Graduates and Degree Holders</i>		
1. Mechanical		24
2. Electrical		9
3. Electronics and Communication		2
<i>Diploma holders</i>		
1. Civil		1
2. Mechanical		19
3. Electrical		10
4. Chemical Technology		1
<i>Certificate Holders</i>		
1. I.T.I., K.G.T.E. etc. Total		136
	Total	202

The data furnished in the column for 1980-81 furnishes the actual position as on 1-5-1981.

Table 14 17

## KERALA SPINNERS LIMITED

## DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENTS FOR 1978-83

Category	Number in position as on 1-4-1978	Additional requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Post Graduates and Degree Holders</i>						
1. Electrical	1	..	..	..	..	..
2. Textile Technology	1	..	..	..	..	..
<i>Diploma Holders</i>						
1. Electrical	1	..	..	..	..	..
2. Textile Technology	18	..	2	..	1	2
<i>Certificate Holders</i>						
I.T.I. Total	3	..	..	..	..	..
	Total	24	..	2	1	2

Table 14.18

WEST INDIA STEEL COMPANY LTD.

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-83

Category	Number in position as on 1-4-1978	Additional requirement				
		1978-79	1979-80	1980-81	1981-82	1982-83
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Post Graduates and Degree Holders</i>						
1. Mechanical	2	..	..	..	2	..
2. Electrical	1	..	..	..	..	..
3. Chemical	1	..	..	..	..	..
<i>Diploma Holders</i>						
1. Mechanical	2	..	..	..	2	..
2. Electrical	1	..	..	..	2	..
<i>Certificate Holders</i>						
1. Draftsman	1	..	..	2	3	1
2. I.T.I. Mechanic	..	..	..	..	..	..
	8			2	9	1

## REQUIREMENT OF ENGINEERING PERSONNEL IN GOVERNMENT OF INDIA, PUBLIC UNDERTAKINGS IN KERALA DURING 1978-83

The data on Engineering personnel working in the various Government of India undertakings in Kerala and their additional requirement for 1978-83 are furnished in the Tables mentioned below.

1. Modern Bakeries, Edappally (Table 15.1)
2. Indian Rare Earth Limited, Udyogamandal (Table 15.2)
3. Cochin Shipyard limited (Table 15.3)
4. The Fertilisers and Chemicals, Cochin Division Ambalamedu (Table 15.4)
5. Hindustan Insecticides Udyogamandal (Table 15.5)
6. Kerala News Print Project, Meavalloor (Table 15.6)
7. Hindustan Machine tools, Kalamasserry (Table 15.7)
8. The Rubber Board Kottayam (Table 15.8)
9. The Fertilisers and Chemicals-Travancore Udyogamandal (Table 15.9)
10. Hindustan Latex Limited, Trivandrum-5 (Table 15.10)
11. All India Radio, Trivandrum (Table 15.11)

**Table 15.1**

**MODERN BAKERIES INDIA LIMITED,**

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
<i>Post Graduates and Degree Holders</i>	
1. Mechanical	1
2. Electrical	1
<i>Diploma Holders</i>	
1. Mechanical	1
2. Electrical	2
3. Automobile	1
<i>Certificate Holders</i>	
1. Air-Conditioning	1
2. Electrical	2
3. Fitter	2
4. Blacksmithy	2
<b>Total</b>	<b>13</b>

(R. N. F.)

Table 15.2

## INDIAN RARE EARTHS LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNDERTAKING AS ON 1-4-1978

Category	Number in position as on 1-4-1978
(1)	(2)
<b>Post Graduates and Degree Holders</b>	
Mechanical	1
Chemical	4
<b>Diploma Holders</b>	
Civil	3
Mechanical	4
Electrical	3
Chemical Engineering	3
<b>Certificate Holders</b>	
I.T.I. Fitter	3
I.T.I. Electrical	4
I.T.I. Welder	1
I.T.I. Plumber	1
K.G.T.E. etc. Civil	2
Electrical Wiremans licence	3
<b>Total</b>	<b>32</b>

Table 15.3

## COCHIN SHIPYARD LIMITED

DATA ON ADDITIONAL REQUIREMENT OF ENGINEERING PERSONNEL DURING 1978-80

Category	Additional requirement	
	1978-79	1979-80
(1)	(2)	(3)
Diploma Holders in Mechanical Engineering	12	14
Diploma Holders in Electrical Engineering	2	..

Note:—Anticipated requirement for 1980-81, 1981-82 and 1982-83 has not been finalised. The persons engaged in 1978-79, and 1979-80 have to undergo two years training prior to their absorption into the company.

Table 15.4

## THE FERTILISERS AND CHEMICALS TRAVANCORE LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Sl. No.	Category	Number in position as on 1-4-1978
(1)	(2)	(3)
<b>Diploma Holders</b>		
1.	Civil	53
2.	Mechanical	69
3.	Electrical	48
4.	Chemical Technology	7
5.	Chemical Engineering	10
6.	Diesel Engineering	1
7.	Telecommunication	1
8.	Chemical Operators	2

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(1)	(2)	(3)
<b>Certificate Holders</b>		
1.	I.T.I. Wireman	2
2.	Do. Electrician	25
3.	Do. Fitter	25
4.	Do. Turner	1
5.	Do. Mechanist	9
6.	Do. Welder	1
7.	Do. Carpentry	1
8.	Do. Blacksmith	2
9.	Do. Plumber	1
10.	Do. Instrumentation	13
11.	J.T.S.L.C. General Electrical	1
12.	K.G.T.E.etc. Mechanical	1
13.	Do. Civil	2
14.	Do. Wiremen	2
15.	Do. Electrical	1
16.	Others N.T.C. Civil	1
17.	N.A.C. Mechanical	2
18.	N.A.C. Electrical	5
19.	N.A.C. (Wireman)	2
20.	N.T.C. Wireman	3
21.	N.G.T.V.T. Electrical	4
22.	N.A.C. Fitter	4
23.	N.T.C. Fitter	1
24.	N.C.U.T. Fitter	6
25.	A.I.T.T. Fitter	1
26.	N.T.C. Mechanist	1
27.	A.I.T.T. Mechanist	1
28.	N.T.C. Welder	1
29.	N.A.C. Instrumentation	11
30.	N.C.V.T. do.	4
<b>Total</b>		<b>325</b>

Table 15-5

HINDUSTAN INSECTICIDES LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENTS FOR 1978-80

Sl. No.	Category	Total number in position 1-4-1978	Additional requirement	
			1978-79	1979-80
<i>Post Graduates and Degree Holders</i>				
1.	Civil	1	..	..
2.	Mechanical	6	1	1
3.	Electrical	1	1	1
4.	Chemical	7	1	1
<i>Diploma Holders</i>				
1.	Mechanical	2	..	..
2.	Electrical	1	..	..
3.	Chemical Engineering*	10	..	..
<i>Certificate Holders</i>				
1.	L. T. I. Instrumentation	1	..	..
	Fitter	1	..	..
	Turner	1	..	..
	Welder	1	..	..
	Electrician	1	..	..
<b>Total</b>		<b>33</b>	<b>3</b>	<b>3</b>

\*In this category the additional requirement for the period 1978-83 will be 10 approximately.

Table 15-6

## HINDUSTAN PAPER CORPORATION, LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-80

Sl. No.	Category	Number in position 1-4-1978	Additional requirement	
<i>Post Graduates and Degree Holders</i>				
1.	Civil	20	6	..
2.	Mechanical	19	4	..
3.	Electrical	15	..	..
4.	Chemical	11	4	..
5.	Electronics & Communication	1	1	1
6.	Instrumentation	..	1	1
Sub Total		66	16	2
<i>Diploma Holder.</i>				
1.	Civil	18	..	..
2.	Mechanical	7	19	16
3.	Electrical	2	5	..
4.	Chemical Technology	..	4	..
5.	Instrument Technology	..	4	1
6.	Automobile	1	..	..
7.	Pulp and Paper Technology	..	12	12
Sub Total		28	44	28
<i>Certificate Holders</i>				
1.	I. T. I. Pulp and Paper Technology	4	48	..
2.	Fitter	19	50	37
3.	Welder	2	7	2
4.	Turner	2	6	4
5.	Machinist	1	4	1
6.	Blacksmith	1	2	..
7.	Grinder	..	3	2
8.	Moulder	..	..	1
9.	Pattene maker (Carpentry)	6	..	..
10.	Mason	4	..	..
11.	Painter	..	1	..
12.	Electrician/Gable Jointer/Auto Electrician	18	56	21
13.	Mechanic	4	..	..
14.	Motor winder	..	2	1
15.	Instrument Mechanic	3	8	..
Sub Total		64	187	69
Total		158	247	99

\*Note:— Among the Post Graduates/Degree Holders working in the unit 13 Engineers are on deputation from State P.V.D and KSEB.

Table 15-7

## HINDUSTAN MACHINE TOOLS LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 30-6-1978

Category	Number in position as on 1-4-1978
<i>Post Graduates and Degree Holders</i>	
1. Civil	6
2. Mechanical	73
3. Electrical	6
4. Metallurgy	1
5. Automobile (DMIT)	1
6. Airconditioning	1
<i>Diploma Holders</i>	
1. Civil	6
2. Mechanical	168
3. Electrical	6
4. Automobile	3
5. Printing Technology	2
<i>Certificate Holders</i>	
I. T. I./NAC	848
<b>Total</b>	<b>1121</b>

\*Note:—Details on future requirements not available.

Table 15-8

## THE RUBBER BOARD,

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-82

Category	Number in position as on 1-4-1978	Additional requirement			
		1978-79	1979-80	1980-81	1981-82
<i>Post-Graduates and Degree Holders</i>					
1. Mechanical	1	..	1	1	1
2. Electrical	1	..	1	1	1
3. Chemical	2	..	1	1	2
4. Electronics and Communication	1	..	1	1	..
<i>Diploma Holders</i>					
1. Mechanical	1	..	3	3	4
Cartography	..	..	..	..	1
<i>Certificate Holders</i>					
1. I.T.I. Electrical	2	..	..	..	..
2. Do. Fitter	..	..	3	3	4
3. Do. Wire man	..	..	3	3	4
4. Do. Welder	..	..	3	3	4
5. Do. Reprography	..	..	..	..	1
6. Do. Instrumentation	..	..	..	..	1
7. Do. Machine Operator	..	..	1	..	..
8. Do. Glass Blowing	..	..	1	..	..
9. K.G.T.E. Civil	1	..	..	..	..
Do. Electrical	1	..	..	..	..
Do. Mechanical	..	..	1	..	..
I.T.I. Lab Milling	..	..	1	..	..
Total	10		20	16	23

Table 15-9

## THE FERTILISERS AND CHEMICALS TRAVANCORE, LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978 AND ADDITIONAL REQUIREMENT FOR 1978-83

Category	Number in position as on 1-4-1978	Additional requirement for -				
		1978-79	1979-80	1980-81	1981-82	1982-83
<i>Post-Graduates and Degree Holders</i>						
1. Civil	76	..	..	..	1	..
2. Mechanical	175	..	..	3	2	..
3. Electrical	42	1	..	1	..	..
4. Chemical	290	1	4	1	7	4
5. Instrumentation	30	..	..	..	..	..
6. Architecture	2	..	..	..	..	..
<i>Diploma Holders</i>						
1. Civil	12	..	..	..	..	..
2. Mechanical	43	..	..	..	..	..
3. Electrical	20	..	..	..	..	..
4. Chemical Engineering	9	..	..	..	..	..
Total	699	2	4	5	10	4

Note:—Details of other Engineering personnel are furnished in the statement relating to FACT, Cochin Division, etc.



Table 15-10

## HINDUSTAN LATEX LIMITED

DATA ON ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 1-4-1978

Category	Number in position as on 1-4-1978
<i>Post-Graduates and Degree Holders</i>	
1. Civil	6
2. Electrical	4
3. Chemical	6
<i>Diploma Holders</i>	
1. Mechanical	30
2. Electrical	8
3. Chemical Technology	1
4. Automobiles	1
5. Chemical Engineering	3
6. Textile Technology	1
<i>Certificate Holders</i>	
I.T.I., K.G.T. E. Civil Etc. Total	198
(R. N. F.) Total	258

Table 15-11

## ALL INDIA RADIO, TRIVANDRUM

DETAILS OF ENGINEERING PERSONNEL WORKING IN THE UNIT AS ON 31-3-1981

Category	Number in position as on 31-3-1981
<i>Graduates</i>	
Electrical	7
Electronics and Communication	2
Others	1
<i>Diploma Holders</i>	
Electrical	8
<i>Certificate Holders</i>	
I. T. I.	6
Total	24

Note:—The data furnishes the details of staff as on 31-3-1981.  
Other details not available

## SUPPLY OF ENGINEERING PERSONNEL IN THE STATE DURING 1978-83

### Facilities for Study and Training

When we consider the supply of Engineering personnel in the State, it will be interesting to have an idea on the development of technical education in the State upto the beginning of the period 1978-83.

In the pre-independence period, there were only a few technical institutions in the State which catered to the limited demand for technical manpower. The implementation of the Five Year Plan Schemes, especially several irrigation and power projects, led to an increase in demand for technical manpower. This situation necessitated the expansion and development of technical education at all levels.

At the beginning of the First Five Year Plan there were only one engineering college and 2 polytechnics under the Government sector, in the State. During the First Five Year Plan polytechnic under the government sector was started. During 2nd Five Year Plan, 2 engineering colleges, 4 polytechnics under public sector, and 2 engineering colleges and 4 polytechnics under private sector were started. 9 Junior Technical Schools were also started during the period. During the Third Plan Period 4 polytechnics and 11 junior technical schools were started by Government and one engineering college and one polytechnic were started under the private sector.

#### Engineering Colleges

1. *College of Engineering, Trivandrum.*—This college was started in 1939, with an initial intake of 21 students each for the Degree and Diploma course in Engineering under the erstwhile University of Travancore. At the beginning of the Sixth Plan Period the intake capacity for degree course was 180. The college is affiliated to the University of Kerala. The details of courses of study, duration of course, etc., relating to this college in 1978 are furnished in Table 16.1.

2. *Engineering College, Trichur.*—This college was started in 1958 with an initial intake of 120 for 1st year engineering and 100 students for pre-professional Engineering. The details of courses of study, duration of course, etc., are furnished in Table 16.1. Since 1977, this college is functioning under Cochin University.

#### Private Engineering Colleges

There are 3 Engineering Colleges under private sector, covered by grant-in-aid scheme.

1. *T.K.M. College of Engineering, Quilon.*—This is the first Engineering College started under the private sector in 1958 under the management T. K. M. College Trust and with the aid of Central and State Governments. The annual intake capacity in the beginning was 120 and the same was increased to 180. B.Sc. Engineering Degree Course in Electronics and Communication with an intake capacity of 30 was started in 1977-78. The College is affiliated to the Kerala University.

2. *N. S. S. College of Engineering, Palghat.*—The college was started in 1960 and is affiliated to the Calicut University. The sanctioned intake capacity of the college is 120. The details of the courses of study etc., are furnished in Table 16.1.

3. *M.A. Colleges of Engineering, Kothamangalam.*—This college was started in 1961 with an intake capacity of 120. This college is affiliated to the Kerala University. The other details are furnished in Table 16.1.

#### Regional Engineering College, Chathamangalam

This college is a joint enterprise of the Government of India and the Government of Kerala and is administered by a Society registered under Societies Registration Act XXI of 1860. The administration of the college is vested with the Board of Governors which consists of the representatives of the Government of India, Government of Kerala, University Grants Commission, Indian Institute of Technology, University of Calicut, All India Council for Technical Education, and the industrial establishments in the Region. This college, which is affiliated to the Calicut University was established with a view to promote national outlook among the students of different states in India, and on such 50% of the seats are reserved for students from other states. The details on courses of study, duration of each course, etc., is furnished in Table 16.1

#### Polytechnics

Implementation of five year plans necessitated starting of new polytechnics in the State to train technicians and Engineering personnel of intermediate categories. In 1978 there were 18 polytechnics in Kerala out of which 16 polytechnics are under private sector. Three polytechnics are exclusively for women. The details of these institutions, courses of study offered duration of courses, etc., are furnished in Table 16.2.

#### Junior Technical Schools

The second five year plan envisaged the establishment of junior technical schools which would enable the students to get training at senior skilled workers. A student after passing J.T.S.L.C. gains the advantages of skills of a specific kind in addition to general studies which qualifies him to pursue higher studies in arts college or polytechnics. In 1978 there were 21 junior technical schools in the state. The details of these schools are furnished in Table 16.2.

#### Industrial Training Institute

The department of Industrial Training imparts training to skilled shop-floor workers to meet the demand of the industrial sector. While the Engineering Colleges and polytechnics in the State turnout post-graduates, degree holders and diploma holders with high supervisory skills and more technical competence by way of know-how, ITI's produce the

rank and file of skilled workers who actually run the machines and are engaged in the processes of production on the shop-floor.

There were 12 ITI's in the government sector and 29 ITI's in the private sector during 1974-75. Important courses offered in the ITI's in the State include blacksmithy, carpentry, mechanic, fitter, plumber, turner, welder, electrician, draftsman, and surveyor.

The intake-capacity of the various ITIs in the state in the various courses offered during 1974-75 both public and private are given in Tables 16.3 and 16.4 respectively.

Details of minimum qualification prescribed and duration of courses for each trade in the ITI's are furnished in Table 16.5.

Details of courses offered and sanctioned seat strength in the various ITI's (Government) for the years 1977-78, 1978-79 and 1979-80 are furnished in Tables 16.6, 16.7, and 16.8.

Besides the above mentioned ITIs there were several institutions in the State which were affiliated to N.C.T.V.T and were imparting training to trainees to appear for several trade tests. A list of such institutions which were functioning in 1978-79 is furnished on Appendix II.

Details of changes effected in the courses of study offered in the Engineering Colleges in the State during the period 1974-78 is furnished in Table 16.9.

### Other Technical Institutions

There were several other technical institutions in the State in 1978, which imparted training to students to appear for the technical examinations conducted by the Government of Kerala and also for the City and Guilds Examinations (London). District-wise details of these institutions which were functioning in 1980 are given in Table 16.10. These institutions are controlled by the Directorate of Technical Education by way of granting recognition and the payment of grant as the case may be

**Table 16.1**  
DETAILS OF ENGINEERING COLLEGES FUNCTIONING IN THE STATE IN 1974-75

Sl. No.	Name of Institution	Type of Management	Course of study	Duration of Course	Minimum qualification for admission	Annual intake capacity	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1.	College of Engineering, Trivandrum	Government	1. Degree Course B.Sc. Engineering. Civil	4 years	Pre-Degree with Maths, Physics, Chemistry	17	
						60	
			Electrical Telecommunication Mechanical Architecture	45			
				60			
				10			
				Sub Total	192		
			2. Post-graduate course	2 years	B.Sc. Engineering	Civil	20
						Mechanical	15
			Electrical	15			
			Electronics	10			
	Sub Total	60					
3. Part-time Course (Post-graduate)	3 years	B.Sc. Engineering	Civil, Mechanical, Electrical	2			
			2				
	2						
	Sub Total	6					
2.	Engineering College, Trichur	Government	1. Degree Course B.Sc. Engineering Civil	4 years	Pre-Degree with Maths, Physics, Chemistry	9	
						60	
			Mechanical Electrical Chemical Engineering	30			
				45			
				Sub Total	144		
			2. B.Sc. Engineering (Part-time)	3 years	Diploma in Engineering	Civil	30
						Mechanical	30
			Electrical	30			
				Sub Total	90		
			3. M.Sc. Engineering	2 years	B. Sc. Enginee r	Civil	6
						6	
			Mechanical	6			
Electrical	6						
Chemical	6						
	Sub Total	30					

(1)	(2)	(3)	(4)	(5)	(6)	(7)
3.	T. K. M. College of Engineering, Quilon	Private	Degree Course B.Sc. Engineering Civil Mechanical Electrical Electronics and Tele-Communication Engineering	4 years	Pre-degree with Maths., Physics, Chemistry	24 60 60  30
					Sub Total	174
4.	Mar Ahanasius College of Engineering (Kothamangalam)	Private	Degree Course B.Sc. Engineering Civil Mechanical Electrical	do.	do.	16 40 40
					Sub Total	96
5.	N.S.S. College of Engineering, Palghat	Private	Degree Course B.Sc. Engineering Civil Mechanical Electrical	do.	do.	16 40 40
					Sub Total	96
6.	Regional Engineering College, Calicut	Central and State Government	1. Degree Course B.Sc. Engineering Civil Mechanical Electrical	4 years	Pre-degree with Maths, Physics, Chemistry	66 84 90
					Sub Total	240
			2. M.Sc. Engineering Civil Mechanical Electrical	2 years	B.Sc. Engineering	6 6 6
					Sub Total	18
					TOTAL	1146

**Table 16-2**  
**DETAILS OF POLYTECHNICS IN THE STATE IN 1974-1975**

<i>Sl. No.</i>	<i>Name of Institution</i>	<i>Type of management</i>	<i>Course of study</i>	<i>Duration of course</i>	<i>Minimum qualification for admission</i>	<i>Annual Intake capacity</i>			
(1)	(2)	(3)	(4)	(5)	(6)	(7)			
1	Central Polytechnic, Trivandrum	Government	1. Diploma in Engineering Civil Mechanical Electrical	3 years	S.S.L.C	32 32 21			
			2. Part time course in Engineering Civil Mechanical Electrical	4 years	do.	16 16 16			
			3. Diploma in Electronics	3 years	do.	20			
			4. Diploma in Textile Technology	3 years	do.	20			
			5. Certificate in Textile Post diploma in Industrial Electronics	2 years 1 year 3 month	do.	25 10			
					Sub Total	208			
2	Government Polytechnics, Kottayam	do.	Diploma in Engineering Civil Mechanical Electrical Polymer Technology	3 years	do.	32 32 32 20			
						Sub Total	116		
			3	Government Polytechnic Kalamassery, Ernakulam	do.	1. Diploma in Engineering Civil Mechanical Electrical Automobile Engineering Chemical Technology	3 years	do.	44 44 44 30 20
						2. Part-time Diploma Course Civil Mechanical Electrical	4 years	do.	16 16 16 10
3. Post Diploma in Refrigeration and Air conditioning	1 year	S.S.L.C.				10			
					Sub Total	220			
4	Maharaja's Technological Institute, Trichur.	Government	1. Diploma in Engineering Civil Mechanical Electrical		do.	32 32 32			
			2. Part-time Diploma Course Civil Mechanical Electrical	4 years	do.	16 16 16			
					Sub Total	144			
5	Government Polytechnic, Perinthalmanna, Malappuram.	Government	Diploma in Engineering Civil Mechanical Electrical	3 years	S.S.L.C.	32 32 12			
					Sub Total	76			
6	Government Polytechnic, Calicut.	do.	1. Diploma in Engineering Civil Mechanical Electrical Chemical	3 years	do.	56 56 56 30			
			2. Part-time Course Diploma Civil Mechanical Electrical	4 years	do.	16 16 16			
					Sub Total	48			

(1)	(2)	(3)	(4)*	(5)	(6)	(7)
7.	Government Polytechnic, Cannanore	Government	Diploma in Engineering Civil Mechanical Electrical Technology	3 years	S. S. L. C.	36 36 36 30
			Certificate course in Textile Technology	2 years		30
					Sub Total	168
1	Women's Polytechnic, Trivandrum	do.	Diploma in commercial practice/Costume design and Dressmaking	3 years 2 years	S.S.L.C. do.	50 30
					Sub Total	80
2	Women's Polytechnic, Trichur	do.	Diploma in Commercial Practice/Costume design and Dress making	3 years 2 years	do. do.	50 30
			Electronics	3 years	do.	40
					Sub Total	120
3	Women's Polytechnic Calicut	do.	Commercial Practice Costuma design and Dress making	3 years 2 years	do. do.	50 30
					Sub Total	80
	<b>Polytechnics</b>	(Private)				
1	Sree Narayana Polytechnics, Kottiyam, Quilon.	do.	Diploma in Engineering Civil Mechanical Electrical	3 years	do.	48 48 48
					Sub Total	144
2	N. S. S. Polytechnic, Pandalam, Alleppey	do.	Diploma in Engineering Civil Mechanical Electrical	3 years	do.	60 48 36
					Sub Total	144
3	Carmal Polytechnic, Alleppey	do.	Diploma in Engineering Civil Mechanical Electrical	do.	do.	48 64 32
					Sub Total	144
4	Thyagaraja polytechnic, Alagappanagar, Trichur	do	Diploma in Engineering Civil Mechanical Electrical	do.	do.	48 32 64
					Sub Total	144
5	Sriram Polytechnic, Valapad, Trichur	Private	Diplome in Engineering Civil Mechanical Electrical	3 years	do.	48 24 24
					Sub Total	96
6	Seethisabib Memorial Polytechnic, Tirur, Malappuram	do.	Diploma in Engineering Civil Mechanical Electrical	do.	do.	30 30 30
					Sub Total	90
7	Swamy Nithyananda Polytechnic Kanhagad, Cannanore	do.	Diploma in Printing Technology	3 years	do.	30
					Sub Total	30
					TOTAL	2052

(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Junior Technical Schools</b>						
1	J. T. S., Attingal	Government	J.T.S.L.C.	3 years	A pass in 8th Standard	60
2	Do. Nedumnagad	do.	do.	do.	do.	60
3	Do. Ezhukone, Quilon	do.	do.	do.	do.	60
4	Do. Adoor, Quilon	do.	do.	do.	do.	60
5	Do. Krishnapuram, Alleppey	do.	do.	do.	do.	60
6	Do. Shertallay, Alleppey	do.	do.	do.	do.	60
7	Do. Palai, Kottayam	do.	do.	do.	do.	60
8	Do. Pampady, Kottayam	do.	do.	do.	do.	60
9	Do. Perumbavoor	do.	do.	do.	do.	60
10	Do. Cranganore, Trichur	do.	do.	do.	do.	60
11	Do. Koratty, Trichur	do.	do.	do.	do.	60
12	Do. Kunnankulam, Trichur	do.	do.	do.	do.	60
13	Maharaja's Technical Institute (J. T. S. Attached) Trichur	do.	do.	do.	do.	60
14	J. T.S., Chittur, Palghat	do.	do.	do.	do.	60
15	Do. Shoranur, Palghat	do.	do.	do.	do.	60
16	J.T. S. Manjeri, Malappuram	do.	do.	do.	do.	60
17	Kerala Government Polytechnic (J. T. S. Attached) Kozhikode	do.	do.	do.	do.	60
18	J.T.S., Badagara, Kozhikode	do.	do.	do.	do.	60
19	Do. Cheruvattur, Cannanore	do.	do.	do.	do.	60
20	Do. Mattannur	do.	do.	do.	do.	60
21	Government Polytechnic, (J.T.S. Attached), Cannanore	do.	do.	do.	do.	60
					Total	1260
					GRAND TOTAL	3312

Table 16-3

DETAILS OF INDUSTRIAL TRAINING INSTITUTES (GOVERNMENT) FUNCTIONING IN THE STATE IN 1974-75

Sl. No.	Name of Institution	Blacksmith	Carpenter	Mechanic (Diesel)	Mechanic (Motor vehicles)	Mechanic (Tractor)	Moulder	Painter	Plumber	Sheet Metal worker	Welder	Mechanic (Refrigeration)	Draftsman (Civil)	Draftsman (Mechanical)	Electrician	Electronics	Electroplater	Mechanic (Instrument)	Mechanic (Radio & Tele.)	Surveyor	Fitter	Turner	Machinist	Wireman
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	I.T.I., Dhanuvachapuram	32	48	32	32	..	32	..	16	48	72	..	..	32	32	..	..	..	32	..	128	48	72	32
2	I.T.I., Trivandrum	32	48	..	32	..	32	..	16	48	72	32	32	32	64	32	..	32	32	32	96	48	48	32
3	I.T.I., Attingal	16	32	..	32	..	32	..	..	16	48	32	32	32	..	..	..	..	32	..	64	24	..	32
4	I.T.I., Quilon	32	32	16	32	..	32	16	16	16	48	32	..	32	64	..	..	..	..	32	96	48	72	32
5	I.T.I., Chengannur	32	32	..	32	32	32	..	16	16	72	16	..	..	64	..	..	..	32	..	96	72	72	32
6	I.T.I., Ettumanoor	32	32	..	32	..	32	..	16	16	72	..	..	..	64	..	..	32	..	..	96	72	72	64
7	I.T.I., Kalamassery	32	32	..	32	..	32	16	16	32	72	..	..	..	64	..	16	32	..	..	28	72	96	32
8	I.T.I., Chalakudy	16	32	..	32	..	32	..	16	16	72	..	32	32	64	..	..	..	..	32	128	48	72	32
9	I.T.I., Palghat	16	16	..	32	32	16	..	16	16	72	..	..	..	64	..	..	64	..	..	128	72	96	32
10	I.T.I. Malappuram	16	..	..	16	..	..	..	..	..	..	..	32	32	..	..	..	..	..	..	32	..	..	32
11	I.T.I., Calicut	..	32	32	32	..	..	..	16	16	24	..	..	32	32	..	..	..	..	..	64	24	24	48
12	I.T.I., Cannanore	16	32	..	32	..	32	..	16	16	48	16	32	32	32	32	..	..	64	32	96	72	48	32
TOTAL		272	368	80	368	64	304	32	160	256	672	128	160	256	544	64	16	160	192	128	1052	600	672	432



Table 16.4

DETAILS OF INDUSTRIAL TRAINING INSTITUTES (PRIVATE) FUNCTIONING IN THE STATE IN 1974-75

Sl. No.	Name of Trade	Filter	Draftsman (Civil)	Draftsman (Mechanic)	Surveyor	Radio and Tele-communication	Welder	Sheetmetal worker	Blacksmith	Turner	Electrician	Mechanist	Carpenter	Motor Mechanic	Moulder	Pattern Maker
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1	N.I. Institute of Engineering, Amaravila P.O., Neyyattinkara	64	32	32	..	..	..	..	..	..	..	..	..	..	..	..
2	C.S.I. I.T.C., Kodyannurkonam, Nellimoodu, P.O.	64	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3	M.P.I.T.C. Attakulangara, Trivandrum	..	32	32	32	32	..	..	..	..	..	..	..	..	..	..
4	Kerala Institute of Technology, M.G. Road, Trivandrum	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5	Bharathamatha I.T.C. Kottiyam	32	..	..	..	..	24	32	32	24	..	..	..	..	..	..
6	V.I.T.C., Quilon	..	32	32	32	..	..	..	..	..	..	..	..	..	..	..
7	Institute of Electronics and Modern Physics, K.P.13, Karunagappally	..	..	16	..	16	..	..	..	..	..	..	..	..	..	..
8	Mohans I.T.C., Kayamkulam	64	32	32	32	64	..	..	..	..	..	..	..	..	..	..
9	National I.T.C. Chengannur	64	64	32	..	..	..	..	..	..	32	..	..	..	..	..
10	Mar Basellos I.T.C., Mavelikara	64	64	32	..	..	..	..	..	..	32	..	..	..	..	..
11	Institute of Engineering Technology Palace Road, Alleppey	32	..	32	..	..	..	..	..	32	..	..	..	..	..	..
12	Marthoma I.T.C., Kozhancherry	64	32	32	..	..	24	..	..	..	32	..	..	..	..	..
13	The Radio and Electrical Engineering Institute, Kozhancherry	..	..	..	..	32	..	..	..	..	..	..	..	..	..	..
14	Industrial Training Centre, Thiruvalla	32	..	32	..	..	..	..	..	..	..	..	..	..	..	..
15	Piars X, I.T.C., Edathua	32	..	..	..	..	24	..	..	..	32	..	..	..	..	..
16	Welfare Technical Institute, Welfare Centre, Vaikom	32	..	..	..	..	24	..	..	..	..	..	..	..	..	..
17	Industrial Training College, Palai	32	..	..	..	32	..	..	..	..	..	..	..	..	..	..
18	Little Flower Engineering Institute, South Kalamassery	32	..	..	..	..	..	..	..	..	..	..	..	..	32	32
19	Jubilee Memorial Technical Training Institute, Cochin	32	..	..	..	..	..	..	..	24	..	..	..	..	..	..
20	Social Welfare Technical School Association, Alwaye	32	..	..	..	..	32	..	..	..	..	..	..	..	..	..
21	Kanjoor, I.T.C., Kalady	32	..	..	..	..	24	..	..	..	..	..	..	..	..	..
22	Don Bosco Technical Institute, Vaduthala, Ernakulam	32	..	..	..	..	..	..	..	24	..	..	..	..	..	..
23	Amulia I.T.C., Ernakulam	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	Social Welfare Centre, Kalamassery	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	C.S.I. I.T.C., Muttom, Thodupuzha	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..
26	K.K.M.I.T.C. Koonammava, North Parur	..	..	..	..	..	24	..	..	..	..	..	..	32	..	..
27	C.S.I. Industrial School, Nazarath Manjeri	..	..	..	..	..	..	..	..	..	..	..	16	16	..	..
28	St. Mary's Orphanage Vocation Training Centre Trichur	..	..	..	..	..	12	..	..	..	..	24	..	..	..	..
29	C.S.I., I.T.I. Nettor, Tellicherry	32	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	Total	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		896	288	304	96	176	188	32	32	104	128	24	16	48	32	32

Table 16.5

DETAILS OF MINIMUM QUALIFICATION PRESCRIBED AND DURATION OF COURSES FOR EACH TRADE IN THE I.T.Is.

Sl. No.	Name of trade	Duration of training	Minimum qualification
(1)	(2)	(3)	(4)
1	Refrigeration and Air conditioning	One year	S. S. L. C.
2	Electrician	Two years	do.
3	Pattern maker	do.	do.
4	Draftsman (Civil)	do.	do.
5	Draftsman (Mechanic)	do.	do.
6	Surveyor	do.	do.
7	Mechanic (Instrument)	do.	do.
8	Mechanic (Radio & Television)	do.	do.
9	Electroplator	do.	do.
10	Blacksmith	One year	Standard VIII
11	Carpenter	do.	do.
12	Mechanic (Diesel)	do.	do.
13	Mechanic (Motor Vehicle)	do.	do.
14	Mechanic (Tractor)	do.	do.
15	Moulder	do.	do.
16	Painter	do.	do.
17	Plumber	do.	do.
18	Welder	do.	do.
19	Sheet Metal Worker	2 years	do.
20	Fitter	do.	do.
21	Turner	do.	do.
22	Machinist (Miller)	do.	do.
23	Machinist (Grinder)	do.	do.
24	Machinist (S.S. P.)	do.	do.
25	Machinist (Composite)	do.	do.
26	Wireman	do.	do.
27	Building Constructor	do.	do.

Table 16.6

SEAT STRENGTH OF TRAINEES IN I.T.IS. IN KERALA DURING 1977-1978

Name of trade	Dhanwacha- puram	Trivan- drum	Attingal	Quilon	Chengan- nur	Idukki Etti ma- noor serry	Kala mas- noor	Chala- kudy	Pal ghat	Malap- puram	Calicut	Ganna- nore	Total	Total of Units		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1 Blacksmithy	32	32	16	32	32	16	32	32	16	16	16	..	16	288	18	
2 Carpenter	48	48	32	32	32	..	32	32	32	16	..	32	32	368	23	
3 Mechanic (Diesel)	32	16	..	16	..	..	..	..	..	..	..	32	..	96	6	
4 Mechanic (Tractor)	..	..	..	..	32	..	..	..	..	32	..	..	..	64	4	
5 Moulder	32	32	..	32	16	..	16	32	32	16	..	..	16	224	14	
6 Painter	..	..	..	16	..	..	..	16	..	..	..	..	..	32	2	
7 Sheet Metal worker	48	48	32	16	16	..	16	32	16	16	..	16	16	272	17	
8 Plumber	16	16	..	16	32	..	16	16	16	16	..	16	16	160	10	
9 Welder	72	72	48	48	72	12	60	48	60	60	12	24	48	636	53	
10 Stenography	..	..	16	..	16	32	16	16	16	16	16	..	16	160	10	
11 Cutting and Tailoring	..	..	..	..	..	..	16	..	..	..	..	..	..	16	1	
Total	280	264	144	208	248	60	204	224	188	188	44	120	160	2316	158	

## Two Year Course

1 Draftsman—Civil	32	32	32	..	16	..	32	..	32	32	32	32	32	304	19
2 Draftsman—Mechanical	32	32	32	32	..	..	..	..	32	..	32	..	32	224	14
3 Electrician	32	64	..	64	64	16	64	64	64	64	..	48	48	392	37
4 Electronics	16	64	32	32	16	16	32	32	..	32	32	32	48	354	24
5 Electroplator	..	..	..	..	..	..	..	16	..	..	..	..	..	16	1
6 Mechanic (Instrument)	..	32	..	..	..	..	32	32	..	32	..	..	32	160	10
7 Mechanic—Radio and Television	32	64	64	..	48	16	32	..	16	48	..	32	64	416	26
8 Do. Refrigeration and Air conditioning	..	48	48	48	32	..	..	32	..	..	..	32	48	288	18
9 Fitter	96	64	64	96	64	16	96	96	96	96	32	64	96	976	61
10 Surveyor	..	32	..	32	16	..	..	..	32	..	..	..	32	144	9
11 Turner	48	48	24	48	60	12	60	60	48	72	..	24	60	564	47
12 Machinist	72	48	..	72	60	..	60	48	72	72	..	24	48	576	48
13 Mechanic (Motor Vehicle)	32	32	32	32	35	32	32	16	32	32	16	16	32	336	21
14 Wireman	64	64	32	32	64	..	64	64	64	64	32	64	64	672	42
Total	456	624	360	488	475	108	504	460	488	544	176	368	636	5422	377
Grand Total	736	888	504	696	723	168	708	684	676	732	220	488	796	7738	535

Table 16.7

SEAT STRENGTH OF TRAINEES IN THE I.T.Is. IN KERALA DURING 1978-79

Sl. No.	Name of Trade	Dhanuvachapuram	Tri-vandrum	Kazhakkuttom	Attin-gal	Quilon	Chengannur	Idukki	Ettumanoor	Pallikka-thode	Kalamassery	Chalagudy	Palghat	Malappuram	Calicut	Cannanore	Total	No. of Units
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
<i>One Year Course</i>																		
1.	Blacksmith	32	32	..	16	32	32	16	32	..	32	16	16	16	..	16	288	18
2.	Carpenter	48	48	..	32	32	32	..	32	..	32	48	16	..	32	32	384	29
3.	Mechanic (Diesel)	32	16	..	..	32	..	..	..	..	..	..	..	..	32	..	112	7
4.	Mechanic (Tractor)	..	..	..	..	..	32	..	..	..	..	..	32	..	..	..	64	4
5.	Moulder	32	32	..	..	32	16	..	16	..	32	32	16	..	..	16	224	14
6.	Painter	..	..	..	..	16	..	..	..	16	16	..	..	..	..	..	48	3
7.	Sheet metal worker	48	48	..	32	16	16	..	16	..	32	16	16	..	16	16	272	17
8.	Plumber	16	48	..	16	16	32	..	16	16	32	16	..	..	16	16	240	15
9.	Welder	72	72	..	48	48	72	12	72	..	48	60	69	12	24	48	648	54
10.	Stenography (English)	..	..	16	32	..	16	32	16	16	16	32	16	16	..	16	224	14
11.	Secretarial Practice	..	..	16	..	..	..	..	..	..	..	..	..	..	..	..	16	1
12.	Cutting and Tailoring	..	16	..	..	..	..	..	16	..	..	..	..	..	..	..	32	2
13.	Stenography (Hindi)	..	16	..	..	..	..	..	..	..	..	..	..	..	..	..	16	1
Total		280	328	32	176	224	248	60	216	48	240	220	181	44	120	160	2568	179
<i>Two Year Course</i>																		
1.	Draftsman Civil	32	32	16	32	..	32	..	32	16	..	32	32	48	32	32	368	23
2.	Draftsman Mechanical	32	32	..	32	32	..	..	..	..	..	32	..	16	..	32	208	13
3.	Electrician	32	64	..	..	64	64	16	64	..	64	64	80	16	48	48	624	39
4.	Electronics	32	64	16	32	32	32	..	32	..	32	..	32	32	48	64	464	29
5.	Electroplater	..	..	..	..	..	..	..	..	..	16	..	..	..	..	..	16	1
6.	Mechanic Radio & Television	32	64	16	80	..	52	16	32	16	..	16	48	..	32	64	448	28
7.	Mechanic (Instrument)	..	32	..	..	..	..	..	32	..	32	..	32	..	..	32	160	10
8.	Mechanic Refrigeration and Air conditioning	..	64	..	48	49	48	..	..	16	32	..	..	..	48	64	368	23
9.	Surveyor	..	32	..	..	32	..	..	..	..	..	..	32	..	..	32	128	8
10.	Fitter	96	64	..	64	96	64	16	112	..	112	96	96	32	64	96	1008	63
11.	Turner	48	48	..	24	48	60	12	60	..	60	48	72	..	24	60	564	47
12.	Machinist	72	48	..	..	72	60	..	60	..	48	72	72	..	24	48	576	48
13.	Mechanic (Motor vehicle)	32	32	..	32	32	48	..	32	16	32	32	32	16	16	32	384	24
14.	Wireman	70	64	..	32	32	64	..	80	16	64	64	80	32	64	64	736	46
15.	Watch & Clock maker	..	..	16	..	..	..	..	..	..	..	..	..	..	..	..	16	1
Total		438	640	64	376	489	524	60	536	80	492	456	608	192	400	668	6068	403
Grand Total		768	968	96	552	713	772	120	752	128	732	676	789	236	520	828	8636	582

Table 16.8

SEAT STRENGTH OF TRAINEES IN THE I.T.Is. DURING 1979-80

Sl. No.	Name of Trade	Dhanuvachapuram	Tripanthur	Women I.T.I. Kazhakkuttom	Attinagal	Quilon	Chengannur	Idukki	Ettumanoor	Pallickathode	Kalamassery	Chalakkudy	Palghat	Malappuram	Calicut	Cannanore	Total No. of Units	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
<i>One year Course</i>																		
1.	Blacksmith	32	32	..	16	32	32	16	32	..	32	16	16	16	..	16	288	18
2.	Carpenter	48	48	..	32	32	32	..	32	..	32	32	16	..	32	32	368	23
3.	Mechanic (Diesel)	32	16	..	..	32	..	..	..	..	..	..	..	..	32	..	112	7
4.	Mechanic (Tractor)	..	..	..	..	..	32	..	..	..	..	..	32	..	..	..	64	2
5.	Moulder	32	32	..	..	32	16	..	16	..	32	32	16	..	..	16	224	14
6.	Painter	..	..	..	..	16	..	..	..	16	16	..	..	..	..	..	48	3
7.	Plumber	16	48	..	16	16	32	..	16	16	32	32	..	..	16	16	256	16
8.	Sheet metal worker	48	48	..	32	16	16	..	16	..	16	16	32	..	16	16	272	17
9.	Welder	72	72	..	48	48	72	12	72	..	48	60	60	12	24	48	648	54
10.	Secretarial Practice	..	..	16	..	..	..	..	..	..	..	..	..	..	..	..	16	1
11.	Stenography (English)	..	..	16	16	..	16	32	16	16	16	16	16	16	..	16	192	12
12.	Stenography (Hindi)	..	..	16	..	..	..	..	..	..	..	..	..	..	..	..	..	1
13.	Mastry	..	..	..	..	..	..	..	16	..	..	..	..	..	..	..	16	1
Total		280	296	48	160	224	248	60	216	48	224	204	188	44	120	160	2504	169
<i>Two years Course</i>																		
1.	Draughtsman Civil	32	32	32	32	..	32	..	32	16	..	32	32	48	32	32	384	24
2.	Draughtsman Mechanical	32	32	..	32	32	..	..	..	..	..	32	..	16	..	32	208	13
3.	Electrician	32	64	..	..	64	64	16	64	..	64	64	80	16	48	48	624	39
4.	Electronics	32	64	32	32	32	32	16	32	..	32	..	32	32	..	39	480	30
5.	Electroplater	..	..	..	16	..	..	..	..	..	..	..	..	..	..	..	16	1
6.	Mechanic (Radio & Television)	32	64	32	80	..	32	16	32	16	..	16	48	..	32	64	464	29
7.	Mechanic (Instrument)	..	32	..	..	..	..	..	32	..	32	..	32	..	..	32	160	10
8.	Mechanic Refrigeration & Air conditioning	..	64	..	48	48	48	..	..	16	32	..	..	..	48	64	368	23
9.	Surveyor	..	32	..	..	32	..	..	..	..	..	32	..	..	..	32	128	8
10.	Fitter	96	64	..	64	96	64	16	112	..	112	96	96	32	64	96	1008	63
11.	Turner	48	48	..	24	18	60	12	60	..	60	18	72	..	24	60	564	47
12.	Machinist	72	48	..	..	72	60	..	60	..	48	72	72	..	24	48	576	48
13.	Mechanic (Motor Vehicle)	32	32	..	32	32	48	..	32	16	32	32	32	16	16	32	384	24
14.	Wireman	80	64	..	32	32	64	..	80	16	64	64	80	32	64	64	736	46
15.	Watch and Clock maker	..	..	16	..	..	..	..	..	..	..	..	..	..	..	..	16	1
Total		488	640	112	392	458	504	76	536	80	476	458	576	192	352	643	6116	406
Grand Total		768	936	160	552	682	752	136	752	128	700	662	764	236	472	803	8620	575

Table 16.9

DETAILS OF CHANGES EFFECTED IN THE COURSES OF STUDY OFFERED IN THE ENGINEERING COLLEGES IN THE STATE DURING THE PERIOD 1974-78

Name of Institute	Course of study	Duration of the course	Minimum qualification for	Annual intake capacity	Remarks		
(1)	(2)	(3)	(4)	(5)	(6)		
College of Engineering Trivandrum 1974-75	B.Sc. Degree course post graduate courses in Architective	2 years	B.Sc. Engineering	..	The intake capacity in various branch were as follows		
	Part time Degree course in Engineering	4 years	Diploma with 2 years experience	..	Civil 51, Mechanical-41, Electrical-45		
	(a) Civil	..	..	15	Telecommunication 45		
	(b) Mechanical	..	..	15	Architective 15		
	(c) Electrical	..	..	15	Discontinued started		
1975-76	M.Sc. Degree course in Electronics and communication Microwave engineering	2 years	B.Sc. Engineering in electronics and communication	6	Started		
1976-77	B.Sc. Degree course	..	..	..	Sanctioned intake 285		
Engineering College, Trichur 1974-75	(1) 4 years B.Sc. Degree course	(C-37, M-29, E-93, Ch-40) 4 years extending over 8 of 300 hours each.	..	..	Sanctioned intake 139		
	(2) 4 years part time degree course		..	..	Sanctioned intake 45		
	(3) B. Technical course in Architective and ship Building	5 years	Pre-degree with Maths, Physics, Chemistry	15	Started		
	1975-76	(1) B.Sc. Degree course	..	..	..	Sanctioned intake 154	
	1976-77	(1) B.S.c. Degree course	..	..	..	Sanctioned intake 204	
T.K.M. College, Quilon 1974-75	B.Sc. Degree course	..	..	..	Intake capacity in Civil Mechanical and Electrical branches were 52, 44, and 48 respectively		
	1975-76	B.Sc Degree course	..	..	..	Sanctioned intake 144	
	1976-77	B.Sc. Degree course	..	..	..	Sanctioned intake 160	
	M.A. College of Engineering 1974-75	B.Sc. Degree course	..	..	..	The intake capacity were as follows:— Civil 36 Machanical 28 and Electrical 32 Sanctioned intake 96	
1976-76		B.Sc. Degree Course	..	..	..	Sanctioned intake 107	
1976-77		B.Sc. Degree course	..	..	..	The intake capacity during the year was as follows, CMI-8, E32	
N.S.S. College of Engineering, Palghat 1974-75		B.Sc. Degree course	..	..	..	Sanctioned intake 96	
	1975-76	do.	..	..	..	Sanctioned intake 107	
	1976-77	do.	..	..	..	The intake capacity during 1974-75 was as follows C66, Mechanical 94 Electrical 90	
Regional Engineering College, Calicut. 1974-75	Degree Course	..	..	..	..	Sanctioned intake 250	
	1975-76	B.Sc. Degree course	..	..	..	Sanctioned intake 30	
	..	Post-graduate course	..	..	..	..	Sanctioned intake 250
	1976-77	B.Sc. Degree course	..	..	..	..	..

TABLE 16.10

DETAILS OF OTHER TECHNICAL INSTITUTIONS (RECOGNISED) OF ENGINEERING IN KERALA 1980

S' No.	Name of Institution	K.G.C.E. Civil	Mecha- nical	Electrical	Automo- bile	Refri- geration & Air Condition- ing	Radio & Engi- neering Radio & Television	City and Yields			Total
								Electri- cal Engi- neering	Automo- bile Engi- neering	Tele- Communi- cation	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Trivandrum District</i>											
1.	M.V.T. Institute of Civil Engineering Vakkom, Kadakkavoor	45	..	..	..	..	..	..	..	..	45
2.	M. V. Telegraph and Wireless, Institute, Attakulangara, Trivandrum	135	75	150	45	..	..	120	45	75	645
3.	N. I. Institute of Engineering, Neyyattinkara, Amaravila	90	60	..	..	..	..	..	..	..	150
4.	Central Motor School, Thampanoor, Trivandrum	..	..	..	45	..	..	..	..	..	45
5.	The National Institute of Engineering, Karamana, Trivandrum	..	..	30	90	..	..	..	..	..	120
6.	P. T. Institute of Engineering, Kilimanoor	60	45	..	..	..	..	..	..	..	105
7.	Royal Institute of Engineering, Bakery Junction, Palayam, Trivandrum	..	..	..	..	..	45	..	..	45	90
8.	Institute of Engineering, Balaramapuram	15	..	15	..	..	..	..	..	..	30
9.	Institute of Engineering, Palayam, Trivandrum	45	..	45	..	..	..	..	..	..	90
10.	Universal College of Engineering, Press Club Road, Trivandrum	45	..	45	45	..	..	..	..	..	135
11.	Blue Tech. College of Engineering, Press Club, Trivandrum	45	..	45	45	45	45	..	..	..	225
12.	American Institute of Engineering Technology, Chettikulangara, Trivandrum	45	..	60	45	45	45	..	..	..	240
13.	Bharat Engineering Institute, Karamana, Trivandrum	..	..	..	45	..	..	..	..	..	45
<i>Quilon District</i>											
1.	S. R. V. College of Engineering, Paravoor	..	45	..	..	..	..	..	..	..	45
2.	Janatha Institute of Electrical Engineering, Pathanamthitta	..	..	45	..	..	..	45	..	..	90
3.	Telegraph and Wireless Institute, Quilon	150	120	120	165	..	135	..	..	125	825
4.	S. P. College of Engineering, Adcor	45	..	..	..	..	..	..	..	..	45
5.	The Radio and Electrical Engineering Institute, Kozhencherry	40	..	..	..	..	30	30	..	..	100
6.	Blue Ray Instituted Engineering Complex, Quilon	45	..	45	45	45	45	..	..	..	225
7.	Diana Institute of Technology	..	45	45	..	45	..	..	..	..	135
8.	C. K. Institute of Engineering, Near S. N. College Junction, Quilon	45	..	45	45	..	..	..	..	..	135
9.	M. V. M. Institute of Technology, Odanavattom, Kottarakkara	..	..	45	..	..	..	45	..	..	90
10.	Indian Institute of Engineering, Punalur	..	45	45	45	..	..	..	..	..	135
11.	International Engineering Institute, Punalur	..	..	45	..	..	45	45	..	..	45

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
12.	Cardinat College of Technical Education, Adoor	..	..	45	..	..	..	..	..	..	45
13.	Bharath Technical College, Punalur	45	..	45	..	..	45	45	..	..	180
14.	Usha Technical Institute, Konni	45	..	45	..	..	..	..	..	..	90
15.	National Institute of Engineering, Punalur	..	..	45	..	..	..	45	45	..	135
16.	Alex Institute of Engineering, Pathanamthitta	..	45	45	45	..	..	..	..	..	135
17.	Kerala Engineering Institute, Ranni	45	..	45	..	45	45	..	..	..	180
18.	Janatha Institute of Electrical Engineering, Pathanamthitta	45	..	45	..	..	..	..	..	..	90
<i>Alleppey District</i>											
1.	National Engineering Institute, Thiruvalla	60	60	60	60	..	..	60	..	45	345
2.	Mohan Technical Institute, Kayamkulam	90	90	90	60	45	..	..	45	60	480
3.	U.T. College of Engineering, Kumbanad, Thiruvalla	45	..	..	..	..	..	..	..	..	45
4.	National Institute of Technology, Chengamur, Alleppey District	90	90	90	90	..	45	60	45	45	555
5.	Institute of Engineering Technology, Alleppey	..	180	..	60	..	..	75	..	..	315
6.	St. Mary's Technical College, Pandalam	..	..	90	..	..	..	..	..	..	90
7.	M. V. Institute of Civil Engineering, Thiruvella	75	..	..	..	..	..	..	..	..	75
8.	Tronsoni Technical Institute, West Thiruvalla	..	45	60	..	..	..	45	..	..	150
9.	Pioneer Blue Ray Institute of Engineering Technology, Alleppey	45	45	45	45	..	45	45	..	..	270
10.	Suiet Technical Training Centre, Mavelikkara	45	45	45	45	..	..	45	..	45	270
11.	St. Thomas Institute of Engineering, Karimulaical, Kommallur P.O., Charumoodu	..	45	..	..	..	..	..	..	..	45
12.	Zian Industrial Training Centre, Nooranad	16	..	45	..	..	..	..	..	..	90
13.	Beena Institute of Engineering Technology, Haripad	45	..	45	45	45	45	..	..	..	270
14.	General Engineering Institute, Market Road, Tallappally	45	45	45	45	..	..	..	..	..	180
15.	Maudinal Uloom Orphanage, Arattupuzha, P.O., Kuthukulam	45	45	45	45	..	..	..	..	..	180
16.	C.R.E. Institution, Alleppey	45	..	45	45	..	..	45	..	45	270
17.	Engineering Technological Institute, Nangiarkulangara	45	45	45	45	..	..	..	..	..	180
18.	Eastern Technological Institute, Near Park Junction, Mavelikkara	45	..	45	..	..	..	..	..	..	90
19.	Indian Technical Institute, Thiruvalla	45	..	45	..	..	..	..	..	..	90
20.	Philips Industrial Training Centre, Thiruvalla	45	45	45	..	..	..	..	..	..	135
21.	S.B. College of Engineering, Munsif Court Junction, Shertallai	45	45	45	45	45	..	..	..	..	225



(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Kottayam District</i>											
1.	Civil Engineering Institute, Puthupally, Kottayam	90	..	45	45	..	..	45	..	..	225
2.	Ninans Technical College, Kottayam	..	180	..	45	..	..	60	..	..	285
3.	Kerala Institute of Engineering Technology, Kottayam	60	60	75	..	..	..	..	..	..	195
4.	Sreekumar Electrical Institute, Changanacherry	60	60	45	..	..	..	90	..	..	255
5.	Indian College of Technology, Thirunakkara, Kottayam	..	..	..	30	..	..	..	30	..	60
6.	Institute of Engineering, Technology, Vaikom	30	..	..	..	..	..	..	..	..	30
7.	Multipurpose Training School, Chengannur	30	..	..	..	..	..	..	..	..	30
8.	Gemini Electronics and Industrial Training Centre, Chengannur	..	..	45	45	..	..	..	..	..	90
9.	Dr. Zakir Hussain Memorial Civil Engineering Institute, Changanacherry	45	..	..	..	..	..	..	..	..	45
10.	S.T.M. Industrial Training Centre, Chengannur	45	..	45	45	..	..	..	..	..	135
11.	Lcejoy Industrial Training, Centre, Kottayam	..	..	45	45	..	..	..	..	..	90
12.	Institute of Radio and Television, Kottayam	..	45	45	45	..	..	..	..	..	135
13.	St. Mary's Engineering Institute, Palai	..	..	30	..	..	..	..	..	..	30
14.	Techno Engineering Institute, Ettumanoor	..	45	45	45	..	..	..	..	..	135
<i>Idukki District</i>											
1.	Institute on Centre, Thodupuzha	..	..	..	45	..	..	..	..	..	45
<i>Ernakulam District</i>											
1.	St. Christophen Motor School, Ernakulam	..	..	..	45	..	..	..	..	..	45
2.	Nalanda College of Engineering, Thrippunithura	45	..	..	..	..	..	..	..	..	45
3.	Blue Tro Nix College of Engineering Cochin-6	..	..	..	..	..	..	..	..	..	315
4.	Oxford College, Muvattupuzha	45	..	..	..	..	..	..	..	..	45
5.	Arcess Engineering Trainig Centre, Near Caina Theatre, Alwaye	..	..	45	..	..	..	..	..	..	45
6.	Skil Technical Institute of Engineering Complex, Cochin	45	..	45	45	45	45	45	..	45	315
<i>Trichur District</i>											
1.	Good Shippered Technical Institute, Kunnankulam	45	45	45	..	..	..	..	..	..	135
2.	Institute of Engineering Technology, Kunnankulam	45	45	45	..	..	..	50	..	..	185
3.	Phonetic Institute of Engineering, Trichur	45	..	45	..	..	..	60	..	..	150
4.	Ramakrishna Institute of Civil Engineering, Trichur	45	..	45	45	..	..	..	..	..	135
5.	Kerala Technical Institute, Irinjalakuda	30	..	30	..	..	..	45	..	..	105
6.	Victory Institute of Technology, Trichur	..	45	45	45	..	..	..	..	..	135
7.	Guru Institute of Engineering Technology Irinjalakuda	..	45	45	45	..	..	..	..	..	135

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
<i>Palghat District</i>											
1.	Kerala Wireless and Telegraph Institute, College Road, Palghat	..	..	45	..	..	..	..	..	75	120
<i>Kozhikode District</i>											
	Central Technical College, Moonalingal, Calicut	45	..	45	45	45	45	..	..	..	225
<i>Malappuram District</i>											
1.	Nilambur Industrial Training Centre, and College of Engineering, Nilambur	45	..	45	45	..	..	..	..	..	135
<i>Cannanore District</i>											
1.	International College of Engineering Kasargod	45	45	45	..	45	45	..	..	..	225

## CHAPTER 17

SUPPLY OF ENGINEERING PERSONNEL IN THE STATE  
DURING 1978-83 POST GRADUATES AND GRADUATES

The details relating to the supply of Engineering personnel degree holders and post graduates and in the various branches of Engineering are presented in the following tables:—

1. Post Graduate Courses— details of sanctioned intake and actual intake of students during 1976-77. (Table 17-1)

2. Data on sanctioned intake of students for post graduates courses in 1978-79 in the various engineering colleges in the state (Table 17-2)

3. Data on sanctioned intake of students for post graduates courses (Branch-wise) during 1978-79 (Table 17.3.)

4. Data on actual intake of students for post graduate courses in various engineering colleges in the state during 1978-79 (Table 17.4)

5. Data on actual number of students in the various Engineering colleges in the state during 1978-79 post graduates courses (Table 17-5)

6. Data on sanctioned intake of students for post graduate courses in Kerala during 1979-80 and 1980-81 (Table 17.6)

7. Details of sanctioned intake in the various Engineering Colleges in Kerala during 1974-75-Degree level (Table 17.7)

8. Total intake of students in the Government and private Engineering Colleges and Regional Engineering College Calicut for the year 1974-75 (Table- 17.8)

9. Discipline-wise degree level enrolment of students in Engineering Colleges during the years 1972-73 to 1976-77 (Table 17.9)

10. Details of sanctioned intake of students to various degree courses in the Engineering Colleges in Kerala during 1976-77 (Table 17.10)

11. Degree level enrolment of students according to branch of study and management during 1976-77 (Table 17.11)

12. Degree level sanctioned intake during 1977-78 in the various Engineering colleges in Kerala (Table 17.12)

13. Actual intake of students in B.Sc. Engineering course branch-wise 1972-73 to 1976-77 (Table 17.13)

14. Data on sanctioned intake of students in 1978-79 for Degree courses in various Engineering colleges in the state (Table 17.14)

15. Data on actual intake of students for degree courses in the various Engineering Colleges in the state during 1978-79 (Table 17.15)

16. Data on sanctioned intake of students for degree courses (Full time) during 1979-80 and 1980-81 in the various Engineering Colleges in Kerala (Table 17.16)

17. Data on sanctioned intake of students for Degree courses (Part time) during 1979-80 and 1980-81 in the various Engineering Colleges in Kerala (Table 17.17)

18. Data on actual number of students in the various engineering colleges in the state during 1978-79. Degree course branch-wise (Table 17.18)

19. Data on outturn of students Branch-wise 1970-71 to 1978-79 (Table 17.19)

In the case of post graduate students data on outturn of students are not available. Based on the following observations outturn of students for 1978-83 is estimated.

1. In some branches actual intake is less than the sanctioned intake.

2. During the first year of study some students discontinue their studies due to reasons such as marriage (in the case of female students), suitable employment etc.

3. Almost all the seasonal year students get themselves qualified.

The estimated outturn of post graduates is included in (Table 19.12)

In this case of Degree holders data on actual outturn for 1977-78 and 1978-79 are available. Since data relating to number of students appeared and number of students passed for 4 or 5 consecutive examinations are not available statistical methods could not be adopted to estimate the outturn for the period 1979-82. Data relating to number of students appeared and number of students passed during 1977-78 and 1978-79 are furnished in Table 17.20. During the period under discussion those who obtained admission to the various courses were those having high percentage of marks in the pre-degree level. Hence it is assumed that the trend rested in the data mentioned above while continue and the outturn of Degree holders for 1979-1980, 1980-81 and 1981-82 are estimated and the data furnished in (Table 19.2.)

Table 17.1

POST GRADUATE COURSES—DETAILS OF SANCTIONED INTAKE AND ACTUAL INTAKE OF STUDENTS DURING 1976-77

Sl.No.	Name of Institution	Civil			Mechanical			Electrical			Micro-wave			Chemical			Total
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
<i>Sanctioned intake</i>																	
1	Engineering College, Trivandrum	..	..	24	..	..	15	..	..	15	..	..	10	..	..	..	64
2	Engineering College, Trichur	..	..	..	..	..	6	..	..	6	..	..	..	..	..	..	18
3	Regional Engineering College, Calicut	..	..	..	..	..	30	..	..	..	..	..	..	..	..	..	30
<i>Actual intake</i>																	
1	College of Engineering, Trivandrum	19	..	19	8	..	8	17	..	17	5	..	5	..	..	..	49
2	College of Engineering, Trichur	..	..	..	6	..	6	16	..	6	..	..	..	6	..	..	18
3	Regional Engineering College, Calicut	..	..	..	10	..	10	..	..	..	..	..	..	..	..	..	10

Table 17.2

DATA ON SANCTIONED INTAKE OF STUDENTS FOR POST GRADUATE COURSES IN 1978-79 IN VARIOUS ENGINEERING COLLEGES IN THE STATE

Sl.No.	Name of institution	Civil	Mechanical	Electrical	Chemical	Total
1	College of Engineering, Trivandrum	24	12	18	10	64
2	Engineering College, Trichur	..	6	6	..	18
3	Regional Engineering College, Calicut	10	10	10	..	30
Total		34	28	34	10	112

Table 17.3

DATA ON SANCTIONED INTAKE OF STUDENTS FOR POST GRADUATE COURSES DURING 1978-79—BRANCH-WISE

Name of College	Civil			Mechanical			Electrical			Electronics			Chemical		Total				
	Structural Engineering	Hydraulics	Solid Mechanics	Public Health Engineering	Total—Civil	Power Engineers	Machine Design	Production Engineering	Refrigeration and Air-conditioning	Total—Mechanical	Power system	Electrical Machine system	Control system	Total—Electrical		Microwave Engineering	Applied Electronics	Total—Electronics	Chemical Engineering—Total
Engineering College, Trivandrum	6	6	4	6	22	6	6	..	..	12	6	6	6	18	6	4	10	2	64
Engineering College, Trichur	..	..	..	..	..	..	..	6	..	6	..	..	6	6	..	..	..	6	18
Regional Engineering College, Calicut	10	..	..	..	10	..	..	..	10	10	..	..	10	10	..	..	..	..	30
Total	16	6	4	6	32	6	6	6	10	28	6	6	22	34	6	4	10	8	112

Table 17.4

DATA ON ACTUAL INTAKE OF STUDENTS FOR POST GRADUATE COURSES IN VARIOUS ENGINEERING COLLEGES IN THE STATE DURING 1978-79

Engineering Colleges	Civil		Mechanical		Electrical		Micro-wave		Chemical		Total		Grand Total
	M	F	M	F	M	F	M	F	M	F	M	F	
1 College of Engineering Trivandrum	8	3	14	..	18	3	2	..	..	..	42	6	48
2 Engineering College, Trichur	..	..	6	..	6	..	..	..	6	..	18	..	18
3 Regional Engineering College, Calicut	3	3	6	..	9	1	..	..	..	..	18	4	22
Total	11	6	26	..	33	4	2	..	6	..	78	10	88

Table 17.5

DATA ON ACTUAL NUMBER OF STUDENTS IN THE VARIOUS ENGINEERING COLLEGES IN THE STATE DURING 1978-79—POST GRADUATE

Name of Institution	Civil		Mechanical		Electrical		Micro-wave		Chemical		Total		Grand Total
	M	F	M	F	M	F	M	F	M	F	M	F	
<i>First Year</i>													
1 College of Engineering, Trivandrum	8	3	14	..	18	3	2	..	..	..	42	6	48
2 Engineering College, Trichur	..	..	6	..	6	..	..	..	6	..	18	..	18
3 Regional Engineering College, Calicut	3	3	6	..	9	1	..	..	..	..	18	4	22
<i>Second year</i>													
1 College of Engineering, Trivandrum	8	3	11	3	15	2	5	..	..	..	39	8	47
2 Engineering College, Trichur	..	..	8	..	7	1	..	..	5	1	21	2	23
3 Regional Engineering College, Calicut	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	19	9	45	3	55	7	7	..	12	1	138	20	158

Table 17.6

DATA ON SANCTIONED INTAKE OF STUDENTS FOR POST GRADUATE COURSES IN THE VARIOUS ENGINEERING COLLEGES IN KERALA DURING 1979-80 AND 1980-81

Name of College	Civil		Mechanical		Electrical		Electronic		Chemical		Total	
	1980	1981	1980	1981	1980	1981	1980	1981	1980	1981	1980	1981
Engineering College, Trivandrum	24	24	12	12	18	18	10	10	..	..	64	64
Engineering College, Trichur	..	..	6	6	6	6	..	..	6	6	18	18
Regional Engineering College, Calicut	10	10	10	10	10	10	..	..	..	..	30	30
Total	34	34	28	28	34	34	10	10	6	6	112	112

Table 17.7

DETAILS OF SANCTIONED INTAKE IN THE VARIOUS ENGINEERING COLLEGES IN KERALA DURING 1974-75, DEGREE LEVEL

Sl.No.	Name of Institution	District in which situated	Courses—intake Capacity							Total
			Affiliated	Civil	Mechanised	Electrical	Chemical	Tele-Com- munication	Architecture	
1.	College of Engineering, Trivandrum	Trivandrum	University of Kerala	51	41	45	..	45	15	197
2.	T.K.M. College of Engineering	Quilon	do.	52	44	48	..	..	..	144
3.	Engineering College, Kothamangalam	Ernakulam	do.	36	28	32	..	..	..	96
4.	Engineering College, Trichur	Trichur	University of Calicut	37	29	33	40	..	..	139
5.	N.S.S. College of Engineering, Palghat	Palghat	do.	36	28	32	..	..	..	96
6.	Regional Engineering College, Calicut	Kozhikode	do.	66	94	90	..	..	..	250
Total				278	264	280	40	45	15	922

Table 17.8

TOTAL INTAKE OF STUDENTS IN THE GOVERNMENT AND PRIVATE ENGINEERING COLLEGES AND REGIONAL ENGINEERING COLLEGE, CALICUT FOR THE YEAR 1974-75

Government Colleges			Private Colleges			Regional Engineering College			Total		
Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
286	52	338	300	33	333	174	9	193	760	94	854

Table 17.9

DISCIPLINE-WISE DEGREE LEVEL ENROLMENT OF STUDENTS IN ENGINEERING COLLEGES DURING THE YEARS 1972-73 TO 1976-77

Year	Civil			Mechanical			Electrical			Chemical			Electronics and Communication			Architecture		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
	1972-73	438	39	477	1116	3	1119	813	28	841	161	..	161	156	14	170	17	8
1973-74	565	71	636	1088	5	1093	807	48	855	161	6	167	165	11	176	26	..	26
1974-75	729	113	842	1054	..	1054	941	33	974	168	5	173	133	35	168	28	17	45
1975-76	837	130	967	1083	1	1084	1003	56	1059	150	17	167	144	32	176	25	13	38
1976-77	834	209	1043	1274	4	1278	1076	98	1174	134	27	161	162	21	183	32	14	46

M—Male F—Female T—Total

Table 17.10

DETAILS OF SANCTIONED INTAKE OF STUDENTS TO VARIOUS DEGREE COURSES IN THE ENGINEERING COLLEGES IN KERALA DURING 1976-77

Sl. No.	Nam of Institution	Civil	Mechanical	Electrical	Parttime	Chemical	Telecommu- nications	Architecture	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1.	College of Engineering, Trivandrum	59	64	56	45	..	46	15	285
2.	College of Engineering, Trichur	35	50	34	45	40	..	..	204
3.	T. K. M. College of Engineering, Quilon	50	60	50	..	..	..	..	160
4.	M. A. College of Engineering, Kothamangalam	34	40	33	..	..	..	..	107
5.	N. S. S. Engineering College, Palghat	34	40	33	..	..	..	..	107
6.	Regional Engineering College, Calicut	..	250*	..	..	..	..	..	250
Total		212	504*	206	90	40	46	15	1113

\*Includes Civil and Electrical

Table 17-11  
 DEGREE LEVEL ENROLLMENT OF STUDENTS ACCORDING TO BRANCH OF STUDY AND MANAGEMENT DURING 1976-77

St. No.	Institutions	Civil			Mechanical			Electrical			Chemical			Architecture			Electronics			Grand total												
		M	F	(4)	T	M	F	(7)	T	M	F	(9)	T	M	F	(12)	T	M	F	(16)	T	M	F	(20)	T	M	F	(22)	T	(23)		
		(3)	(5)	(6)	(8)	(10)	(11)	(13)	(14)	(15)	(17)	(18)	(19)	(21)	(22)	(23)																
1.	Government Engineering Colleges (2)	279	79	358	400	3	403	330	40	370	134	27	161	32	14	46	162	21	183	1337	184	1521										
2.	Private Engineering Colleges (3)	354	114	468	482	1	483	436	37	473	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1272	152	1424
3.	Regional Engineering College (1)	201	16	217	392	..	392	310	21	331	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	903	37	940
Total		834	209	1043	1274	4	1278	1076	98	1174	134	27	161	32	14	46	162	21	183	3512	373	3885										



Table 17.12

DEGREE LEVEL SANCTIONED INTAKE DURING 1977-78 IN THE VARIOUS ENGINEERING COLLEGES IN KERALA

Sl. No.	Name of Engineering College	Type of Management	Civil	Mechanical	Electrical	Electrical and Chemical communication Engineering	Architectural engineering	Naval Architecture and ship building	Total
1.	College of Engineering, Trivandrum	Government	60	60	60	45	..	15	240
2.	Engineering college, Trichur	Cochin University	50	50	50	..	40	15	205
3.	T. K. M. College of Engineering, Quilon	Private	60	60	60	30	..	..	210
4.	M. A. College of Engineering, Kothamangalam	do.	40	40	40	..	..	..	120
5.	N. S. S. College of Engineering Palghat	do.	40	40	40	..	..	..	120
6.	Regional Engineering College, Calicut	Registered body	66	94	90	..	..	..	250
Total			316	344	340	75	40	15	1145

Table 17.13

ACTUAL INTAKE OF STUDENTS—B.SC. ENGINEERING COURSE—BRANCH-WISE, 1972-73 TO 1976-77

Year	Sanctioned intake	Branch-wise actual intake			Architecture	Telecommunication	Chemical Engineering	Total
		Civil	Mechanical	Electrical				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1972-73	830	95	275	181	45	43	45	684
1973-74	922	267	287	287	10	45	36	932
1974-75	932	260	264	230	15	45	40	854
1975-76	922	278	268	268	11	45	40	910
1976-77	1113	211	424	207	15	40	40	*937

\* Includes 90 four-year part-time degree students

Table 17.14

DATA ON SANCTIONED INTAKE OF STUDENTS IN 1978-79 FOR DEGREE COURSES IN THE VARIOUS ENGINEERING COLLEGES IN THE STATE

Sl. No.	Name of Institution	Civil	Mechanical	Electrical	Part-time	Chemical	Telecommunication	Architecture	Total
1.	College of Engineering, Trivandrum	70	70	70	45	..	46	15	316
2.	Do. Trichur	60	45	35	45	41	..	..	226
3.	T. K. M. College of Engineering, Quilon	60	60	60	..	..	30	..	210
4.	M. A. College of Engineering, Kothamangalam	40	*40	40	..	..	..	..	120
5.	N. S. S. College of Engineering, Palghat	40	40	40	..	..	..	..	120
6.	Regional Engineering College, Calicut	70	90	90	..	..	..	..	250
Total		340	345	335	90	41	76	15	1242

Table 17. 15

DATA ON ACTUAL INTAKE OF STUDENTS FOR DEGREE COURSES IN THE VARIOUS ENGINEERING COLLEGES IN THE STATE DURING 1978-79

Sl. No.	Name of Institution	Civil		Mechanical		Electrical		Part-time		Chemical		Telecommuni- cation		Archi- tecture		Total		Grand total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1.	College of En- gineering, Tri- vandrum	36	36	66	2	43	25	43	2	..	..	28	17	12	2	228	84	312	
2.	Engineering College, Trichur	28	29	58	..	24	10	44	2	34	1	..	..	..	..	188	42	230	
3.	T. K. M. Engi- neering College, Quilon	41	19	59	1	49	11	..	..	..	..	25	5	..	..	174	36	210	
4.	M. A. College of Engineering, Kothamangalam	22	17	38	1	26	13	..	..	..	..	..	..	..	..	86	31	117	
5.	N. S. S. College of Engineering, Palghat	32	8	40	..	36	4	..	..	..	..	..	..	..	..	108	12	120	
6.	Regional Engi- neering College, Calicut	76	7	101	..	73	8	..	..	..	..	..	..	..	..	250	15	265	
	Total	235	116	362	4	251	71	87	4	34	1	53	22	12	2	1034	220	1254	

Table 17. 16—(Cont.)

DATA ON SANCTIONED INTAKE OF DEGREE STUDENTS FOR COURSES(FULL TIME) DURING 1979-80 AND 1980-81 IN THE VARIOUS ENGINEERING COLLEGES IN KERALA

Name of college	Civil		Mechanical		Electrical		Tele-communi- cation		Architecture	
	1979-80	1980-81	1979-80	1980-81	1979-80	1980-81	1979-80	1980-81	1979-80	1980-81
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Engineering College, Trivandrum	80	120	80	120	80	80	46	50	15	20
Engineering College, Trichur	60	60	50	50	40	50	..	..	..	..
T.K.M.College of Engineering, Quilon	70	80	70	80	70	70	35	35	..	..
M.A. College of Engineering Kothamangalam	50	60	50	60	50	60	..	..	..	..
N.S.S College of Engineering, Palghat	50	60	50	60	50	60	..	..	..	..
Regional Engineering College, Calicut	70	70	90	70	90	60	..	30	..	..
Total	380	450	390	440	380	380	81	115	15	20

Table 17. 16—(Concl.)

Name of college	Chemical		Production cum plant Engineering		Production Engineering		Instrumentation and central system		Total	
	1979-80	1980-81	1979-80	1980-81	1979-80	1980-81	1979-80	1980-81	1979-80	1980-81
(1)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
Engineering College, Trivandrum	..	..	..	..	..	..	..	..	301	390
Engineering College, Trichur	50	50	15	15	..	..	..	..	215	225
T.K. M. College, of Engineering Quilon	..	15	..	..	..	15	..	..	245	295
M.A. College, of Engineering Kothamangalam	..	..	..	..	..	..	..	..	150	180
N.S.S. College, of Engineering Palghat	..	..	..	..	..	..	..	15	150	195
Regional Engineering College, Calicut	..	..	..	..	..	..	..	..	250	230
Total	50	65	15	15	..	15	..	15	1311	1515

Table 17.17

DATA ON SANCTIONED INTAKE OF STUDENTS FOR DEGREE COURSES (PART TIME) DURING 1979-80 AND 1980-81  
IN THE VARIOUS ENGINEERING COLLEGES IN KERALA

Name of College	Civil		Mechanical		Electrical		Total	
	1979-80	1980-81	1979-80	1980-81	1979-80	1980-81	1979-80	1980-81
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. Engineering College, Trivandrum	15	15	15	15	15	15	45	45
2. Engineering College, Trichur	15	15	15	15	15	15	45	45
3. T.K.M. Collee of Engineering, Quilon	..	15	..	15	..	15	..	45
Total	30	45	30	45	30	45	90	135

Table 17. 18

DATA ON ACTUAL NUMBER OF STUDENTS IN THE VARIOUS ENGINEERING COLLEGES IN THE STATE DURING 1978-79  
DEGREE COURSE BRANCH-WISE

Year	Civil	Mechanical	Electrical	Part-time	Chemical	Tele-commu- nication	Architecture	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
First year	351	366	322	91	35	75	14	1254
Second Year	307	362	296	90	33	75	15	1178
Third Year	291	331	273	85	40	43	12	1075
Fourth Year	257	304	265	86	40	49	11	1012
Grand total for all the four years	1206	1363	1156	352	148	242	52	4519

Table 17.19

DATA ON OUTTURN OF DEGREE HOLDERS—BRANCH-WISE—1970-71 TO 1978-79

Year	Branch-wise Outturn						Total
	Civil	Mechanical	Electrical	Architecture	Telecommuni- cation	Chemical Engineering	
1970-71	175	327	302	34	57	30	925
1971-72	80	234	162	18	29	29	552
1972-73	67	230	80	8	22	20	427
1973-74	57	245	185	..	28	29	544
1974-75	45	180	115	3	38	33	414
1975-76	197	311	231	8	17	15	779
1976-77*	174	183	181	10	38	18	604
1977-78	247	255	251	12	42	37	844
1978-79	264	294	263	13	48	35	917
TOTAL	1306	2259	1770	106	319	246	6006

\* Figures furnished for the year are provisional.

Table 17.20

DATA ON NUMBER OF STUDENTS APPEARED AND PASSED FOR DEGREE LEVEL EXAMINATIONS DURING 1977-78 AND 1978-79

Sl. No.	Category	1977-78			1978-79		
		Number appeared	Number passed	Percentage	Number appeared	Number passed	Percentage
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Civil Engineering	294	247	84.0	305	264	86.6
2	Mechanical Engineering	371	255	68.7	370	294	79.5
3	Electrical Engineering	338	251	74.3	340	263	77.4
4	Electronics and Telecommunication	51	42	82.4	59	48	81.3
5	Chemical Engineering	56	37	66.1	49	35	71.4
6	Architecture	21	12	57.1	20	13	65.0
	TOTAL	1131	844	..	1143	917	..

## SUPPLY OF ENGINEERING PERSONNEL IN THE STATE DURING 1978-83

## DIPLOMA HOLDERS AND CERTIFICATE HOLDERS

The data on the supply of diploma holders and Certificate holders in the various branches of Engineering are presented in the following tables:

1. Diploma level Enrolments of students according to branch of study for the years 1974-75 to 1976-77 (Table 18.1)
2. Diploma level of Enrolment of students according to branches of study and Type of Institutions during 1976-77 (Table 18.2)
3. Details of sanctioned intake in the polytechnics in Kerala during 1976-77 (Table 18.3)
4. Details of actual intakes in the polytechnics in Kerala during 1976-77 (Table 18.4)
5. Data on total strength of students during 1978-79 sex-wise (Table 18.5)
6. Data on total strength of students during 1978-79 year-wise/sex-wise—in the various polytechnics in the State (Table 18.6)
7. Data on sanctioned intake and actual intake of students for part time Diploma courses during 1978-79 (Table 18.7)
8. Data on sanctioned intake in the polytechnics in the State during 1978-79 (Table 18.8)
9. Data on sanctioned intake during 1978-79—Part-time diploma course (Table 18.9)
10. Details of sanctioned intake and actual intake (Engineering subjects only) in the 3 women's polytechnics during 1976-77 (Table 18.10)
11. Data on sanctioned intake and actual intake during 1978-79 in the women's polytechnics in the State (Table 18.11)
12. Data on total strength of students during 1978-79 studying for Engineering subjects in the 3 women polytechnics in the State (Table 18.12)
13. Data on total strength of students studying for part-time diploma courses in various polytechnics during 1978-79 (Table 18.13)
14. Data on out turn of Diploma Holders Branch-wise 1970-71 to 1979-80 (Table 18.14).
15. Details of students appeared and passed in K.G.T. Examinations during 1977-78 (Engineering subjects only) (Table 18.15)
16. Details of students appeared and passed in K. G. T. Examinations during 1978-79 Engineering subjects only (Table 18-16)
17. Details of students appeared and passed in K.G.T. Examination during 1979-80 (Engineering subjects only) (Table 18.17)
18. Enrolment of students in Junior Technical Schools for the year 1974-75 to 1978-79 (Table 18.18)
19. Data on sanctioned intake, actual intake and total strength of students in the various J. T.S's. in the State during 1978-79 (Table 18.19)
20. District-wise data on sanctioned intake in each branch of Engineering in the recognised (private) Engineering Institutions in Kerala in 1977-78 (Table 18.20)
21. Number of Trainees appeared and passed in the trade list held in July 1977 (Table 18.21)
22. Number of Trainees appeared and passed in the trade test in July 1978 (Table 18.22)

The data on actual out-turn of diploma holders are available for the year 1977-78, 1978-79 and 1979-80. The out-turn for the year 1980-81 and 1981-82 are estimated and furnished in Table 19.2.

With regard to certificate holders the data have to be compiled from the results of K. G. T. Examinations City and Guilds Examination and Trade tests constructed by Industrial Training Department. The data regarding the number of students passed are not available from the last two sources. Hence data relating to certificate holders are not furnished in Table 19.2.

Table 18.1

DIPLOMA LEVEL ENROLMENT OF STUDENTS ACCORDING TO BRANCH—SUBJECT OF STUDY (ENGINEERING SUBJECTS ONLY) FOR THE YEARS 1974-75 TO 1976-77.

Branch/subject of study	1974-75			1975-76			1976-77		
	M	F	T	M	F	T	M	F	T
Civil	1372	141	1513	1219	172	1391	1519	243	1762
Mechanical	1456	..	1456	1271	12	1283	1662	2	1664
Electrical	1514	27	1541	6413	44	1507	1864	46	1910
Chemical Technology	61	..	61	61	..	61	53	..	53
Chemical Engineering	87	13	100	67	4	71	71	7	78
Automobile Engineering	113	..	113	126	..	126	134	..	134
Electronics	153	126	279	185	124	309	214	136	350
Instrument Technology	..	23	23	..	32	32	..	40	40
<b>TOTAL</b>	<b>4756</b>	<b>330</b>	<b>5086</b>	<b>4392</b>	<b>388</b>	<b>4780</b>	<b>5517</b>	<b>474</b>	<b>5991</b>

M—Male, F—Female, T—Total.

Table 18.2

DIPLOMA LEVEL ENROLMENT OF STUDENTS ACCORDING TO BRANCH OF STUDY (ENGINEERING SUBJECT, ONLY)  
AND TYPE OF INSTITUTIONS DURING 1976-77

Category	Government Institutions (Full time) (8 Nos.)			Government Institution (Part time) (4 Nos.)			Private Institutions (6 Nos.)			Women's Polytechnic (3 Nos.)			Total		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Civil	735	149	884	186	..	186	598	94	692	..	..	..	1519	243	1762
2. Mechanical	753	..	753	205	..	205	704	2	706	..	..	..	1662	2	1664
3. Electrical	952	21	973	211	..	211	701	25	726	..	..	..	1864	46	1910
4. Chemical	71	7	78	..	..	..	..	..	..	..	..	..	71	7	78
5. Automobile	77	..	77	..	..	..	57	..	57	..	..	..	134	..	134
6. Electronics	109	..	109	..	..	..	105	1	106	..	135	135	214	136	350
7. Chemical Technology	53	..	53	..	..	..	..	..	..	..	..	..	53	..	53
8. Post Diploma in Industrial Electronics	9	1	10	..	..	..	..	..	..	..	..	..	9	1	10
9. Instrument Technology	..	..	..	..	..	..	..	..	..	..	40	40	..	40	40
<b>TOTAL</b>	<b>2759</b>	<b>178</b>	<b>2937</b>	<b>602</b>	<b>..</b>	<b>602</b>	<b>2165</b>	<b>122</b>	<b>2287</b>	<b>..</b>	<b>175</b>	<b>175</b>	<b>5526</b>	<b>475</b>	<b>6001</b>

Table 18.3

DETAILS OF SANCTIONED INTAKE IN THE POLYTECHNICS IN KERALA DURING 1976-77

Name of Institution	Civil	Mechanical	Electrical	Part-time	Automobile	Electronics	Textile Technology	Post-Diploma in Industrial Electronics	Textile Technology certificate Course	Printing Technology	Chemical Engineering	Craft Course	Chemical Technology	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
1. Central Polytechnic, Trivandrum	40	40	40	72	..	40	30	10	30	..	..	36	..	338
2. Government Polytechnic, Kottayam	32	32	32	..	..	..	..	..	..	..	..	..	..	96
3. Government Polytechnic, Kalamassery	50	30	50	48	30	..	..	..	..	..	..	..	20	228
4. M. T. I., Trichur	40	35	25	48	..	..	..	..	..	..	30	..	..	178
5. Government Polytechnic, Pathanamthitta	25	25	25	..	..	..	..	..	..	..	..	..	..	75
6. K. G. P. T. Calicut	64	60	64	48	..	..	..	..	..	..	30	..	..	266
7. Government Polytechnic, Cannanore	33	32	35	..	..	..	30	..	30	..	..	..	..	160
8. Institute of Printing Technology, Shoranur	..	..	..	..	..	..	..	..	..	30	..	..	..	30
9. S. N. Polytechnic, Kottayam	48	48	48	..	..	..	..	..	..	..	..	..	..	144
10. N. S. S. Polytechnic, Panthalam	48	48	48	..	..	..	..	..	..	..	..	..	..	144
11. Carmel Polytechnic, Alleppey	48	48	48	..	..	..	..	..	..	..	..	..	..	144
12. Thyagaraja Polytechnic, Alagappanagar	48	48	48	..	..	..	..	..	..	..	..	..	..	144
13. Sree Rama Polytechnic, Valappad	60	30	30	..	..	..	..	..	..	..	..	..	..	120
14. S. S. M. Polytechnic, Tirur	32	32	32	..	..	30	..	..	..	..	..	..	..	126
15. S. N. Polytechnic, Kanhangad	..	24	..	..	20	..	..	..	..	..	..	..	..	44
<b>Total</b>	<b>568</b>	<b>532</b>	<b>525</b>	<b>216</b>	<b>50</b>	<b>70</b>	<b>60</b>	<b>10</b>	<b>60</b>	<b>30</b>	<b>60</b>	<b>36</b>	<b>20</b>	<b>2217</b>

Note:—Details of intake in the 3 women's polytechnics are furnished separately.

Table 18.4

DETAILS OF ACTUAL INTAKE IN THE POLYTECHNICS IN KERALA DURING 1976-77

Sl. No.	Name of Institution	Civil	Mecha-nical	Elect-rical	Part-time	Auto-mobile	Elec-tronics	Textile Techno-logy	Post Diploma in Industrial Electro-nics	Di-ploma in Techno-logy	Textile Techno-logy certificate course	Printing techno-logy	Chemi-cal Engi-neering	Craft course	Chemi-cal Te-chnology	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
1.	Central Polytechnic, Trivandrum	45	40	42	75	..	40	32	10	31	..	..	28	..	343	
2.	Government Polytechnic, Kottayam	36	30	32	..	..	..	..	..	..	..	..	..	..	..	
3.	Do. Kalamasserry	50	30	50	48	30	..	..	..	..	..	..	..	20	223	
4.	M. T. I., Trichur	45	39	34	44	..	..	..	..	..	..	..	..	..	162	
5.	Govt. Polytechnic, Perinthalmanna	18	2	23	..	..	..	..	..	..	..	..	..	..	..	
6.	Do. Calicut	57	58	56	47	..	..	..	..	..	..	30	..	..	248	
7.	Do. Cannanore	33	32	35	..	..	..	29	..	30	..	..	..	..	159	
8..	Institute of Printing Technology, Shoranur	..	..	..	..	..	..	..	..	..	30	..	..	..	30	
9.	S. N. Polytechnic, Kottayam	48	49	49	..	..	..	..	..	..	..	..	..	..	146	
10.	N. S. S. Polytechnic, Pandalam	52	51	47	..	..	..	..	..	..	..	..	..	..	150	
11.	Carmal Polytechnic, Alleppey	48	48	48	..	..	..	..	..	..	..	..	..	..	144	
12.	Thyagaraja Polytechnic, Alagappanagar	48	49	49	..	..	..	..	..	..	..	..	..	..	146	
13.	Sree Rama Polytechnic, Valappad	35	31	28	..	..	..	..	..	..	..	..	..	..	94	
14.	S. S. M. Polytechnic, Tirur	32	32	32	..	..	40	..	..	..	..	..	..	..	136	
15.	S. N. Polytechnic, Kanhangad	..	24	..	..	20	..	..	..	..	..	..	..	20	44	
Total		547	515	525	214	50	80	61	10	61	30	30	28	40	2191	

Note: Details of intake in the 3 women's polytechnics are furnished separately.

Table 18-5

DATA ON ACTUAL INTAKE IN THE POLYTECHNICS IN THE STATE DURING 1978-79 (SEX-WISE)

Sl. No.	Name of Polytechnic	Civil		Mechanical		Electrical		Automobile		Electronics		Post Diploma in Industrial Electronics		Chemical Technology		Chemical Engineering		Post Diploma in Aircrafting		Polymer Technology		
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	
(1)	(2)	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	
1.	Central Polytechnic, Trivandrum	30	4	39	..	33	1	..	..	36	3	7	3	..	..	..	..	..	..	..	..	
2.	Government Polytechnic, Kottayam	29	6	34	..	32	1	..	..	..	..	..	..	22	4	..	..	..	..	..	10	
3.	Do. Kalamassery	37	25	43	1	44	3	31	..	..	..	..	..	..	..	..	..	..	10	..	..	
4.	Maharaja's Technological Institute, Trichur	37	7	42	..	33	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
5.	Government Polytechnic, Perithalmanna	36	3	27	..	24	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
6.	Kerala Government Polytechnic, Calicut	80	3	78	..	40	..	..	..	..	..	..	..	..	..	26	1	..	..	..	..	
7.	Government Polytechnic, Cannanore	41	..	42	1	37	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
8.	S. N. Polytechnic, Kottiyam	53	10	62	..	43	12	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
9.	N. S. S. Polytechnic, Pandalam	55	8	62	..	46	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
10.	Carnal Polytechnic, Alleppey	55	10	62	..	53	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
11.	Thyagaraja Polytechnic, Alagappanagar	44	13	71	..	46	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
12.	Sreeram Polytechnic, Valappad	36	7	28	..	20	6	..	..	..	..	..	..	..	..	..	..	..	..	..	..	
13.	S.S.M. Polytechnic, Tirur	30	5	37	..	34	..	..	..	38	1	..	..	..	..	..	..	..	..	..	..	
14.	S. N. Polytechnic, Kanhangad	..	..	31	..	..	..	30	..	..	..	..	..	..	..	..	..	..	..	..	..	
Total		563	101	658	2	485	34	61	..	74	3	7	3	22	4	26	1	10	..	..	10	..

Note.—1. Data relating to Institute of Printing Technology, Shoranur and the 3 women's polytechnics are not furnished in this table.

2. Data relating to intake of students for Engineering subjects only are furnished in this table.



Table 18.6

DATA ON TOTAL STRENGTH OF STUDENTS DURING 1978-79 YEAR WISE &amp; SEXWISE—IN THE VARIOUS POLYTECHNICS IN THE STATE

Subject (1)	First year		Second year		Third year	
	M (2)	F (3)	M (4)	F (5)	M (6)	F (7)
1. Civil Engineering	588	95	391	88	380	72
2. Mechanical Engineering	661	2	435	..	354	..
3. Electrical Engineering	500	27	493	13	404	18
4. Automobile Engineering	60	..	50	..	38	..
5. Electronics	74	3	68	2	69	..
6. Post Diploma in Industrial Electronics	7	3	..	..	..	..
7. Chemical Engineering	22	..	24	..	17	..
8. Chemical Technology	26	..	24	..	17	..
9. Polymur Technology	10	..	..	..	..	..
10. Post Diploma in Air Conditioning	10	..	..	..	..	..
Total	1958	130	1485	103	1279	90

Table 18-7

DATA ON SANCTIONED INTAKE AND ACTUAL INTAKE OF STUDENTS FOR PART TIME DIPLOMA COURSES DURING 1978-79

Name of polytechnic (1)	Sanctioned intake				Actual intake			
	Civil (2)	Mechanical (3)	Electrical (4)	Total (5)	Civil (6)	Mechanical (7)	Electrical (8)	Total (9)
1. Central Polytechnic, Trivandrum	24	24	24	72	22	23	19	64
2. Government Polytechnic, Kalamassery	16	16	16	48	17	16	17	50
3. Maharaja's Technological Institute, Trichur	16	16	16	48	Not Finished			51
4. Kerala Government Polytechnic, Calicut	16	16	16	48	do.			41
Total	72	72	72	216	..	..	..	206

Table 18-8

DATA ON SANCTIONED INTAKE IN THE POLYTECHNICS IN THE STATE DURING 1978-79

Sl. No.	Name of Institution	Polymer technology	Civil	Mechanical	Electrical	Auto-mobile	Electronics	Post diploma in industrial technology	Chemical Engineering	Chemical Technology	Post diploma in Air condition	Total	Remarks
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.	Central Polytechnic, Trivandrum	..	40	40	40	..	40	10	..	..	..	170	
2.	Government polytechnic, Kottayam	10	32	32	32	..	..	..	..	..	..	106	
3.	Do. Kalamassery	..	60	40	50	30	..	..	..	20	10	210	
4.	Maharajas Technological Institute, Trichur	..	44	42	38	..	..	..	..	..	..	124	
5.	Govt. Polytechnic, Perinthalmanna	..	40	40	40	..	..	..	..	..	..	120	
6.	Kerala Govt. Polytechnic, Calicut	..	80	80	80	..	..	..	30	..	..	270	
7.	Govt. Polytechnic, Cannanore	..	41	43	37	..	..	..	..	..	..	121	
8.	S. N. Polytechnic, Kottayam	..	60	60	60	..	..	..	..	..	..	180	
9.	N. S. S. Polytechnic, Pandalam	..	60	60	60	..	..	..	..	..	..	180	
10.	Carmel Polytechnic, Alleppey	..	60	60	60	..	..	..	..	..	..	180	
11.	Thyagaraja Polytechnic, Alagappanagar	..	60	60	60	..	..	..	..	..	..	180	
12.	S. R. Polytechnic, Valappad	..	60	30	30	..	..	..	..	..	..	120	
13.	S. S. N. Polytechnic, Tirur	..	40	40	40	..	40	..	..	..	..	160	
14.	S. N. Polytechnic, Kanhangad	..	..	30	..	30	..	..	..	..	..	60	
Total		10	677	657	627	60	80	10	30	20	10	2181	

1. Data relating to the Institute of Printing Technology, Shoranur and the 3 women's polytechnics are not furnished in this table.
2. Data relating to intake of students for Engg. subjects are only furnished in this table.

Table 18.9

DATA ON SANCTIONED INTAKE DURING 1978-79—  
PART TIME DIPLOMA COURSE

Sl. No.	Name of polytechnic	Civil	Mechanical	Electrical	Total
(1)	(2)	(3)	(4)	(5)	(6)
1.	Central Polytechnic Trivandrum	24	24	24	72
2.	Government Polytechnic, Kalamassery	16	16	16	48
3.	Maharaja's Technological Institute, Trichur	16	16	16	48
4.	Kerala Government Polytechnic, Calicut	16	16	16	48
Total		72	72	72	216

Table 18-10

DETAILS OF SANCTIONED INTAKE AND ACTUAL INTAKE  
(ENGINEERING SUBJECT ONLY) IN THE 3 WOMEN'S POLYTECHNICS DURING 1976-77

Sl. No.	Name of Institution	Electronics Instrument Technology			
		Sanctioned intake	Actual intake	Sanctioned intake	Actual intake
(1)	(2)	(3)	(4)	(5)	(6)
1.	Womens Polytechnic, Trivandrum	..	..	15	15
2.	Womens Polytechnic, Trichur	45	45	..	..
3.	Women's Polytechnical, Calicut	..	..	..	..
Total		45	45	15	15

Table 18-11

DATA ON SANCTIONED INTAKE AND ACTUAL INTAKE DURING 1978-79  
IN THE WOMEN'S POLYTECHNIC, IN THE STATE (ENGINEER-  
ING SUBJECT, ONLY)

Sl. No.	Name of institution	Sanctioned intake		Actual intake	
		Electro- nics	Instrument Technology	Electro- nics	Instrument Technology
(1)	(2)	(3)	(4)	(5)	(6)
1.	Women's Polytechnic, Trivandrum.	..	15	..	15
2.	Women's Polytechnic Trichur	45	..	45	..
3.	Women's Polytechnic, Calicut	..	..	..	..
Total		45	15	45	15

Table 18-12

DATA ON TOTAL STRENGTH OF STUDENTS DURING  
1978-79 STUDYING FOR ENGINEERING SUBJECTS IN THE  
3 WOMEN'S POLYTECHNICS IN THE STATE

Subject	First year	Second year	Third year
(1)	(2)	(3)	(4)
1. Instruments Technology	15	12	14
2. Electronics	44	36	43
Total	59	48	57

Table 18-13

DATA ON TOTAL STRENGTH OF STUDENTS STUDYING FOR  
PART-TIME DIPLOMA COURSES IN VARIOUS POLYTECHNICS  
DURING 1978-79

Branch of study	First year	Second year	Third year	Fourth year
(1)	(2)	(3)	(4)	(5)
Civil	57*	65*	26*	13
Mechanical	56*	52*	32*	25
Electrical	52*	46*	32*	30
Total	165	193	90	68

Number of students studying in Government Polytechnic  
Calicut has not been included for want of data-branchwise.  
Only data relating to total number of students is  
available.

Table 18-14

DATA ON OUT-TURN OF DIPLOMA HOLDERS—BRANCH-WISE—1970-71 TO 1979-1980

Year	Actual out turn							
	Civil	Mechanical	Electrical	Chemical Engineer	Chemical Technology	Automobile Engineer	Industrial Technology	Electronics
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1970-71	233	383	291	22	21	35	..	28
1971-72	136	893	225	18	11	33	..	32
1972-73	110	200	185	10	11	21	..	26
1973-74	124	145	175	10	7	5	..	15
1974-75	87	135	132	3	8	24	..	13
1975-76	303	240	362	15	15	25	..	71
1976-77	223	220	318	13	17	34	..	45
1977-78	539	299	488	12	14	35	10	85
1978-79	479	382	511	N. A.	14	34	11	104
1979-80	377	402	380	17	18	31	15	96

Table 18-15

DETAILS OF STUDENTS APPEARED AND PASSED IN K. G. T. EXAMINATIONS DURING 1977-78 (ENGINEERING SUBJECTS ONLY)

Sl. No.	Name of subject	Number appeared			Number passed		
		Male	Female	Total	Male	Female	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	K. G. Civil Engineering Examination, 6/1977	2186	257	2443	281	33	314
2.	Do. 12-1977	882	35	917	217	7	224
3.	Carpentry (Lower)	14	..	14	8	..	8
4.	Do. (Higher)	3	..	3	..	..	..
5.	Smithy (Lower)	5	..	5	1	..	1
6.	Do. (Higher)	3	..	3	..	..	..
7.	First Year Diploma Examination 6/77	2682	131	2813	991	64	1055
8.	Do. Electronics	1375	55	1430	582	21	603
9.	Do. Chemical Technology	25	..	25	13	..	13
10.	Do. Instrument Technology	..	20	20	..	11	11
11.	Second Year Diploma Examination—Civil	715	116	831	392	44	436
12.	Do. Mechanical	851	42	893	401	15	416
13.	Do. Electrical	901	..	901	395	..	395
14.	Do. Electronics	83	62	145	395	11	50
15.	Do. Automobile	56	..	56	24	..	24
16.	Do. Chemical Engineering	53	..	53	23	..	23
17.	Second Year Diploma Examination Chemical Technology	18	..	18	7	..	7
18.	Do. Instrument Technology	..	18	18	..	11	11
19.	Do. Civil	545	80	625	381	25	406
20.	Do. Mechanical	485	18	503	204	4	208
21.	Do. Electrical	758	..	758	363	..	363
22.	Do. Electronics	49	52	101	33	37	70
23.	Do. Automobile	49	..	49	29	..	29
24.	Do. Chemical Technology	21	..	21	13	..	13
25.	Do. Chemical Engineering	23	..	23	11	..	11
26.	Do. Instrument Technology	..	11	11	..	8	8
27.	First year Diploma Examination 12/77	1703	51	1754	850	21	871
28.	Do. Electronics	34	24	58	26	18	44
29.	Second Year Diploma Examination Chemical Technology	13	..	13	..	..	..
30.	Do. Instrument Technology	..	9	9	..	4	..
31.	Do. Civil	420	6	426	205	2	207
32.	Do. Mechanical	541	..	541	221	..	221
33.	Do. Electrical	561	..	561	232	..	232
34.	Do. Electronics	43	45	88	39	39	78
35.	Do. Chemical Technology	6	..	6	4	..	4
36.	Do. Instrument Technology	..	7	7	..	5	5
37.	Do. Automobile Engineering	25	..	25	14	..	14
38.	Do. Chemical Engineering	34	..	34	21	..	21
39.	Final Year Examination Civil Engineering	282	12	294	130	3	133
40.	Do. Mechanical Engineering	183	..	183	91	..	91
41.	Do. Electrical Engineering	263	..	263	125	..	125
42.	Final Year Examination Electronic	10	10	20	7	8	15
43.	Do. Chemical Technology	3	..	3	1	..	1
44.	Do. Instrument Technology	..	3	3	..	2	2
45.	Do. Automobile	11	..	11	6	..	6
46.	Do. Chemical Engineering	3	..	3	1	..	1

Table 18-16

DETAILS OF STUDENTS APPEARED AND PASSED IN K.G.T. EXAMINATION, DURING 1978-79 (ENGINEERING SUBJECTS ONLY)

Sl. No.	Name of Subjects	Number appeared			Number passed		
		M	F	T	M	F	T
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Diploma Examination 7/78, Engineering/Technology-First year	2726	315	3041	845	57	902
2	Diploma Examination 1/79 do.	1701	153	1854	506	70	576
3	First year Electronics 7/78	92	52	144	49	20	69
4	do. 1/79	50	17	67	23	10	33
5	First year chemical technology 7/78	24	..	24	9	..	9
6	do. 1/79	13	..	13	3	..	3
7	First year Instrument Technology 7/78	..	20	20	..	14	14
8	do. 1/79	..	5	5	..	5	5
9	Second year Diploma Examination civil 6/78	720	84	804	230	36	266
10	do. 1/79	371	80	451	90	40	130
11	do. Mechanical 6/78	803	..	803	245	..	245
12	do. Mechanical 1/79	470	..	470	158	..	158
13	do. Electrical 6/78	758	50	808	260	25	285
14	do. Electrical 1/79	400	54	454	135	17	152
15	do. Electronics 6/78	130	23	153	38	7	45
16	do. Electronics 1/79	80	17	97	33	9	42
17	do. Chemical Technology 6/78	20	6	26	12	2	14
18	do. Chemical Technology 1/79	7	2	9	6	1	7
19	do. Instrument Technology 6/78	..	15	15	..	10	10
20	do. Instrument Technology 1/79	..	4	4	..	3	3
21	do. Automobile Engineering 6/78	59	..	59	18	..	18
22	do. Automobile Engineering 1/79	31	..	31	13	..	13
23	do. Chemical Engineering 6/78	40	6	46	9	2	11
24	do. Chemical Engineering 1/79	22	5	27	4	1	5
25	Last year diploma Examination Civil 6/78	611	77	688	313	40	353
26	do. Civil 1/79	201	45	246	106	20	126
27	do. Mechanical 6/78	612	..	612	271	..	271
28	do. Mechanical 1/79	231	..	231	111	..	111
29	do. Electrical 6/78	620	42	662	320	18	338
30	do. Electrical 1/79	250	24	274	130	13	143
31	do. Electronics 6/78	92	18	110	90	6	96
32	do. Electronics 1/79	10	2	12	7	1	8
33	do. Chemical Technology 6/78	16	..	16	7	..	7
34	do. Chemical Technology 1/79	9	..	9	6	..	6
35	do. Instrument Technology 6/78	..	16	16	..	9	9
36	do. Instrument Technology 1/79	..	5	5	..	2	2

Table 18-17

DETAILS OF STUDENTS APPEARED AND PASSED IN K.G.T. EXAMINATIONS DURING 1979-80 (ENGINEERING SUBJECTS ONLY)

Sl. No.	Name of Subject	Number appeared			Number passed		
		M	F	T	M	F	T
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	K.G.T.Civil Engineering Examination 9/79	2611	954	3565	292	105	397
2	First Year Examination—Engineering Technology 7/79	2770	342	3112	836	56	892
3	First Year Electronics	84	56	140	61	24	85
4	First Year Chemical Technology	25	..	25	10	..	10
5	First Year Instrument Technology	..	12	12	..	..	..
6	Second Year Diploma Examination Civil 7/79	722	98	820	288	42	330
7	do. Mechanical	768	..	768	272	..	272
8	do. Electrical	807	14	821	309	6	315
9	do. Electronics	101	49	150	64	30	94
10	do. Chemical Technology	17	..	17	5	..	5
11	do. Instrument Technology	..	13	13	..	7	7
12	do. Automobile Engineering	61	..	61	26	..	26
13	do. Chemical Engineering	43	2	45	16	1	17
14	Final Year Diploma Examination July 1979 Civil	516	85	601	233	23	256
15	do. Mechanical	541	10	579	277	5	282
16	do. Electrical	569	10	579	277	5	82
17	do. Electronics	64	43	107	52	26	78
18	do. Chemical Technology	21	..	21	14	..	14
19	do. Instrument Technology	..	16	16	..	8	8
20	do. Automobile Engineering	42	..	42	24	..	24
21	do. Chemical Engineering	18	1	19	15	..	15
22	First Year Diploma Examination Civil	1817	162	1979	443	40	483
23	do. Electronics	25	30	55	1	1	2
24	do. Chemical Technology	16	..	16	..	..	..
25	do. Instrument Technology	..	8	8	..	1	1
26	Second Year Diploma Examination 1/80-Civil	355	35	390	136	19	155
27	do. Mechanical	381	..	381	122	..	122
28	do. Electrical	423	5	428	155	3	58
29	do. Electronics	30	25	55	17	14	31
30	do. Chemical Technology	10	..	10	3	..	3
31	do. Instrument Technology	2	..	2	..	..	..
32	do. Automobile Engineering	29	..	29	13	..	13
33	do. Chemical Engineering	24	1	25	2	..	2
34	Final Year Diploma Examination 1/80 Civil	189	58	247	93	28	121
35	do. Mechanical	181	..	181	81	..	81
36	do. Electrical	225	3	228	97	1	98
37	do. Electronics	16	13	29	6	12	18
38	do. Chemical Technology	6	..	6	4	..	4
39	do. Instrument Technology	..	8	8	..	7	7
40	do. Automobile Engineering	9	..	9	7	..	7
41	do. Chemical Engineering	3	1	4	2	..	2

Table 18-18

ENROLMENT OF STUDENTS IN JUNIOR TECHNICAL SCHOOLS FOR THE YEARS 1974-75 TO 1978-79

Year	Standard VIII			Standard IX			Standard X			Total		
	B	G	T	B	G	T	B	G	T	B	G	T
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1974-75	1325	29	1354	1061	28	1089	985	19	1004	3371	76	3447
1975-76	1319	22	1341	1196	30	1226	783	25	808	3298	77	3375
1976-77	1267	32	1299	1190	24	1214	893	19	912	3350	75	3425
* 1977-78	..	..	..	..	..	..	..	..	..	..	..	..
1978-79	..	..	1504	..	..	1234	..	..	975	..	..	3713

B: Boys G: Girls T: Total

\* Details not available

Table 18-19

DATA ON SANCTIONED INTAKE, ACTUAL INTAKE AND TOTAL STRENGTH OF STUDENTS IN THE VARIOUS JUNIOR TECHNICAL SCHOOLS IN THE STATE DURING 1978-79

	(1)	Sanctioned Intake	Actual Intake	Total Strength			Total
				I Year	II Year	III Year	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Junior Technical School, Attingal		60	60	60	60	58	178
2 do. Nedumangad		80	80	86	62	48	196
3 do. Adoor		80	80	86	65	60	211
4 do. Ezhukone		80	80	87	64	50	201
5 do. Sherthallai		60	59	66	59	54	179
6 do. Krishnapuram		60	59	66	62	49	177
7 do. Pampady		60	51	63	57	41	161
8 do. Palai		60	55	63	61	46	170
9 do. Perumbavoor		80	71	80	59	55	194
10 do. Koratty		60	56	67	66	51	184
11 do. Kodungallur		80	71	88	61	40	189
12 do. Trichur		60	60	65	59	41	165
13 do. Kunnankulam		80	75	88	57	50	195
14 do. Chittoor		60	50	66	59	34	159
15 do. Shoranur		60	47	66	57	38	161
16 do. Calicut		60	66	66	66	50	182
17 do. Badagara		30	30	33	30	30	93
18 do. Manjeri		60	54	66	55	42	163
19 do. Cannanore		80	80	88	61	52	201
20 do. Cheruvathur		80	84	88	49	35	172
21 do. Mattannur		60	66	66	65	59	190
Total		1390	1334	1504	1234	983	3721

Table 18-20

DISTRICT-WISE DATA ON SANCTIONED INTAKE IN EACH BRANCH OF ENGINEERING IN THE RECOGNISED (PRIVATE)  
ENGINEERING INSTITUTIONS IN KERALA IN 1977-78

District	No. of Civil Institutions		Mechanical		Electrical		Automobile		Tele Communi- cations		Refrige- ration		Radio Engi- neering		Total		Grand total	
	K	C	K	C	K	C	K	C	K	C	K	C	K	C	K	C		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)
Trivandrum	8	360	..	150	..	195	180	180	135	..	120	..	45	..	45	885	525	1410
Quilon	5	270	15	120	..	165	135	195	..	..	135	..	..	..	..	750	285	1035
Alleppey	11	510	..	465	..	385	195	270	90	..	315	..	35	..	75	1630	710	2340
Kottayam	6	300	..	165	..	240	120	120	45	..	120	..	30	..	15	825	330	1155
Idukki	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Ernakulam	4	135	..	..	..	..	..	45	..	..	..	..	..	..	..	180	..	180
Trichur	5	315	..	90	..	150	45	135	45	..	105	..	45	..	90	690	330	1020
Palghat	1	..	..	..	..	45	..	..	..	..	75	..	..	..	..	45	75	120
Malappuram	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kozhikode	2	90	..	45	..	90	..	45	..	..	..	..	45	..	90	270	135	405
Cannanore	..	..	..	99	..	..	..	..	..	..	..	..	..	..	..	99	..	99
Total	42	1980	15	1134	..	1270	675	990	315	..	870	..	200	..	315	5374	2390	7764

K.—K.G.T.E.

C.—City and Guilds

Table 18.21

NUMBER OF TRAINEES APPEARED AND PASSED IN THE  
TRADE TECHNICAL EXAMINATION HELD IN JULY 1977

Sl. No.	Name of Institution	Number of Trainees appeared		Number of Trainees passed	
		Regular trainees	Private candidates	Regular trainees	Private candidates
(1)	(2)	(3)	(4)	(5)	(6)
1	I.T.I. Dhanuvacha puram	535	6	284	1
2	Do. Trivandrum	519	32	367	8
3	Do. Attingal	275	..	154	..
4	Do. Quilon	485	19	327	6
5	Do. Chengannur	475	8	265	1
6	Do. Ettumanoor	389	33	338	19
7	Do. Kalamasserry	478	26	342	9
8	Do. Chalakudy	451	10	311	3
9	Do. Palghat	461	4	200	..
10	Do. Areacode	105	..	79	..
11	Do. Calicut	351	4	311	1
12	Do. Cannanore	403	16	505	3
Total		4927	158	3283	51

TABLE 18.22

(July 1978)

Sl. No.	Name of Institution	Number of Trainees appeared	Number of Trainees passed
(1)	(2)	(3)	(4)
1	I.T.I. Dhanuvachapuram	681	215
2	Do. Trivandrum	663	437
3	Do. Attingal	305	156
4	Do. Quilon	502	331
5	Do. Chengannur	529	369
6	Do. Ettumanoor	487	367
7	Do. Kuttappana	53	34
8	Do. Kalamasserry	470	383
9	Do. Chalakudy	454	200
10	Do. Palghat	433	329
11	Do. Areacode	258	151
12	Do. Calicut	352	263
13	Do. Cannanore	492	390
	Total	5679	3625



## CHAPTER 19

## SUMMARY AND CONCLUSION

Before presenting the findings of the study the limitations of the study mentioned in chapter 1 and 19 may be considered.

It is found that manpower planning has not been seriously attempted in our State. Many of the public sector undertakings/ corporations/ boards etc. are not in a position to furnish the annual additional requirements for each year of the period 1978-83.

So also data regarding out-turn of Engineering personnel are not available accurately.

The total requirement of Engineering personnel in the state during 1978-83 and out-turn of Engineering personnel are furnished in Tables 19.1 and 19.2.

It is observed that the supply is more than the demand in almost all branches of Engineering. This

does not suggest that we should decrease the intake capacity. An analysis of marks obtained by those who seek admission for Engineering courses reveal that most of the applicants are those who have obtained marks in the range 83% to 95% (subject marks). They aspire to get qualified and seek employment in other parts of India and abroad. Since the number of educated unemployed persons in Kerala is very high, to whatever extent out plan schemes are labour-intensive the state will not be in a position to provide employment to all of them. So it is better to give better training, to qualified youth to enable them to earn their bread any-where.

Another finding of the study is that some new course such as graduate course for Agricultural Engineering is to be started in our university.

Table 19.1

STATEMENT SHOWING YEAR-WISE, BRANCH-WISE, QUALIFICATION-WISE DEMAND OF ENGINEERING PERSONNEL IN THE STATE DURING 1978-83

## (i) Civil

(1)	1978-79			1979-80			1980-81			1981-82			1982-83		
	G	D	C	G	D	C	G	D	C	G	D	C	G	D	C
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Public Works Department	25	215	300	60	205	60	170	100	60	80	60	60	130	60	60
2. Public Health Engineering Department	10	65	150	50	50	150	90	60	200	140	190	150	140	200	200
3. Town Planning Department	..	1	..	..	..	..	..	..	2	..	1	4	..	1	..
4. Local Bodies —Corporations, Municipalities and Panchayats	45	40	50	18	10	10	36	40	15	30	20	20	30	20	20
5. Post Department	..	..	..	..	..	..	13	16	6	..	..	..	..	..	..
6. Agriculture Department	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
7. Kerala State Housing Board	..	..	..	..	..	..	42	30	20	..	..	..	..	..	..
8. Department of Technical Education	2	..	..	2	..	1	2	4	2	27	10	2	1	..	..
9. Kerala Agricultural University	..	..	..	6	4	..	..	..	..	..	..	..	..	..	..
10. University of Cochin	..	..	2	..	1	..	..	..	..	..	..	..	..	..	..
11. State Government undertaking/ Agencies	12	20	16	5	10	16	30	35	25	6	10	8	8	10	10
12. Government of India Public undertaking in the State	..	1	..	1	1	1	1	1	..	2	1	..	..	1	1
Total	94	342	518	142	281	233	384	286	330	286	292	244	309	292	291

## (ii) Mechanical

(1)	1978-79			1979-80			1980-81			1981-82			1982-83		
	G	D	C	G	D	C	G	D	C	G	D	C	G	D	C
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. P.W.D.	..	60	75	..	40	20	..	20	20	..	40	30	..	40	30
2. Local Bodies	..	4	2	..	2	..	..	3	2	..	2	2	..	2	2
3. Agriculture Department	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..
4. Kerala State Electricity Board	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..
5. Kerala Road Transport Corporation	..	13	60	1	13	60	..	13	60	..	13	60	..	13	60
6. Department of Technical Education	1	2	4	2	2	3	7	24	18	37	37	26	10	11	11
7. Kerala Agriculture University	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..
8. State Government Undertakings Agencies	4	10	16	3	5	18	6	6	18	3	5	15	2	5	6
9. Government of India's Public Undertakings in the State	5	32	..	1	33	..	3	1	..	3	1	..	..	1	..
Total	11	121	157	9	95	101	16	67	118	44	93	133	12	72	109

## (iii) Electrical

(1)	1978-79			1979-80			1980-81			1981-82			1982-83		
	G	D	C	G	D	C	G	D	C	G	D	C	G	D	C
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
1. Public Works Department	..	..	..	..	..	2	1	..	2	..	..	..	..	1	..
2. Kerala State Electricity Board	80	200	50	75	150	60	80	120	40	50	100	40	50	100	50
3. Kerala State Housing Board	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..
4. Department of Technical Education	..	..	..	..	..	..	1	..	..	28	6	10	1	..	..
5. State Government Undertakings/ Agencies	6	8	16	6	7	16	6	4	8	3	3	5	2	5	8
6. Government of India undertakings in the State	9	3	..	3	1	..	1	1	..	1	1	..	..	1	..
Total	95	211	66	84	158	76	91	125	48	82	110	55	53	106	58

## (iv) Architecture

	1978-79			1979-80			1980-81			1981-82			1982-83		
	G	D	C	G	D	C	G	D	C	G	D	C	G	D	C
1. Public Works Department	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..
2. Town Planning Department	3	..	..	1	..	..	7	..	..	3	..	..	2	..	..
Total	3	..	..	1	..	..	7	..	..	5	..	..	2	..	..

## (v) Telecommunication and Electronics

1. Technical Education Department	..	1	..	..	..	..	2	..	..	12	8	12	2	..	..
2. State Government Undertakings	2	3	3	2	5	..	3	8	..	2	10	..	2	6	..
3. Government of India Undertakings in the State	1	..	..	2	..	..	1	..	..	..	..	..	..	..	..
Total	3	4	3	4	5	..	6	8	..	14	18	12	4	6	..

## (vi) Chemical Engineering

1. State Government Undertakings	..	..	..	..	..	..	4	..	..	2	..	..	..	..	..
2. Government of India's Undertakings in the State	7	5	..	2	..	..	1	..	..	2	..	..	..	..	..
3. Technical Education Department	..	..	..	..	..	..	2	1	1	7	2	2	3	1	1
Total	7	5	..	2	..	..	7	1	1	11	2	2	3	1	1

## Agricultural Engineering

Agriculture Department	..	..	..	..	..	..	15	..	..	..	..	..	..	..	..
Total	..	..	..	..	..	..	15	..	..	..	..	..	..	..	..

## Instrument Control and Instrument Technology

Government of India's undertakings in the state	2	4	..	5	1	..	1	..	..	7	..	..	4	..	..
Department of Technical Education	..	..	..	..	..	..	1	..	..	3	2	2	..	..	..
Total	2	4	..	5	1	..	2	..	..	10	2	2	4	..	..

## Automobile Engineering

University of Cochin	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..
Total	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..

## Production Engineering

Department of Technical Education	..	..	..	..	..	..	2	..	..	3	..	..	1	..	..
Total	..	..	..	..	..	..	2	..	..	3	..	..	1	..	..

Note:—1. G. Degree Holders including post graduates, 2. D. Diploma Holders 3. C. Certificate Holders

Certificate

	Welder			Turner			Smithy			Wireman								
	1978-1979	1980-1981	1982-1983	1978-1979	1980-1981	1982-1983	1978-1979	1980-1981	1982-1983	1978-1979	1980-1981	1982-1983						
1. Public Works Department	9	2	1	3	1	1	5	1	1	2	2	1						
2. K.S.R.T.C.	25	25	25	25	262	262	262	262	262	262	262	262						
3. State Government Undertakings	2	2	2	2	2	2	3	2	4	3	3	4						
4. Government of India's Undertakings in the State	63	23	6	4	4	4	1	1	1	1	1	1						
<b>Total</b>	<b>90</b>	<b>53</b>	<b>29</b>	<b>26</b>	<b>25</b>	<b>11</b>	<b>6</b>	<b>1</b>	<b>268</b>	<b>271</b>	<b>265</b>	<b>262</b>	<b>262</b>	<b>4</b>	<b>3</b>	<b>8</b>	<b>7</b>	<b>4</b>

Lab Milling

1. Government of India's Undertakings in the State	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
<b>Total</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>

	Mechanics			Plumbers			Filters			Surveyor										
	1978-1979	1980-1981	1982-1983	1978-1979	1980-1981	1982-1983	1978-1979	1980-1981	1982-1983	1978-1979	1980-1981	1982-1983								
P.H.E.D.	3	5	3	2	2	2	2	2	2	2	2	2								
Local Bodies	133	133	133	133	133	133	133	133	133	133	133	133								
K.S.R.T.C.	50	40	3	6	6	6	6	6	6	6	6	6								
State Government Undertakings	186	173	142	144	138	4	5	10	5	15	310	208	375	305	335	10	60	30	100	50
<b>Total</b>	<b>372</b>	<b>351</b>	<b>279</b>	<b>285</b>	<b>276</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>	<b>275</b>

	Instrument Mechanic			Moulder			Sheet Metal Worker			Carpentry		
	1978-1979	1980-1981	1982-1983	1978-1979	1980-1981	1982-1983	1978-1979	1980-1981	1982-1983	1978-1979	1980-1981	1982-1983
K.S.R.T.C.	1	1	1	1	1	1	1	1	1	1	1	1
State Government Undertakings	2	2	2	2	2	2	2	2	2	2	2	2
Government of India's Undertakings in the State	1	1	1	1	1	1	1	1	1	1	1	1
<b>Total</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>

	Electrician				Machanist				Electroplating				Boiler Mechanic							
	1978-79	1979-80	1980-81	1981-82	1982-83	1978-79	1979-80	1980-81	1981-82	1982-83	1978-79	1979-80	1980-81	1981-82	1982-83					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)
1. Local Bodies	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2. K. S. R. T. C.	40	40	40	40	40	8	8	8	8	8	8	8	..	..	..	..	..	..	..	..
3. State Government undertakings	4	13	15	8	10	4	5	6	5	3	..	..	1	2	..	..	..	..	1	1
4. Government of India's under takings in the state	..	..	1	1	1	..	7	5	1	1	..	..	..	..	..	..	..	..	..	..
Total	45	53	57	50	51	12	20	19	14	12	..	..	1	2	..	..	..	..	1	1
	Paper pulp Technology				Grinder				Motor Winder				Glass Blowing							
Government of India's under takings in the State	48	..	..	..	..	3	2	2	..	..	2	1	..	..	..	..	..	1	..	..
Total	48	..	..	..	..	3	2	2	..	..	2	1	..	..	..	..	..	1	..	..

Table 19-2

DATA ON OUT-TURN OF ENGINEERING PERSONNEL DURING THE PERIOD 1977-82

Sl. No.	Category	1977-78	1978-79	1979-80	1980-81	1981-82
(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Post Graduates</i>						
1.	Civil Engineering	14	10	15	18	18
2.	Mechanical Engineering	17	20	20	21	21
3.	Electrical Engineering	19	23	28	27	27
4.	Electronics and Telecommunication	4	5	2	6	6
5.	Chemical Engineering	5	5	5	5	5
Sub Total		59	63	70	77	77
<i>Degree Holders</i>						
1.	Civil Engineering	247	264	300	320	342
2.	Mechanical Engineering	255	294	304	350	400
3.	Electrical Engineering	251	263	280	292	315
4.	Architecture	12	13	10	11	12
5.	Telecommunication and Electronics	42	48	48	47	48
6.	Chemical Engineering	37	35	36	37	38
Sub Total		844	917	978	1057	1155
<i>Diploma Holders</i>						
1.	Civil Engineering	539	479	377	420	432
2.	Mechanical Engineering	299	382	402	460	470
3.	Electrical Engineering	488	511	380	400	410
4.	Electronics	85	104	96	100	102
5.	Chemical Engineering	12	NA	17	18	18
6.	Chemical Technology	14	14	18	18	18
7.	Automobile Engineering	35	34	31	32	32
8.	Industrial Technology	10	11	15	15	14
Sub Total		1482	1535	1336	1463	1496
Total		2385	2515	2384	2597	2728

Note.—Some of the figures furnished in this table are actual, and other are estimated. For further details please refer to chapter 18.

## APPENDIX I

Table-1

DATA ON BRANCHWISE NUMBER OF SEATS AVAILABLE FOR STUDENTS FROM KERALA IN REGIONAL ENGINEERING COLLEGES IN OTHER STATES—1980-81

Name of College	Open Seat							Reserved seat for S.C.				Grand total
	A	B	C	D	E	F	G	A	B	C	D	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. R.E.C., Warangal, Andrapradesh	..	1	1	..	..	1	1	..	..	..	..	4
2. Regional Institute of Technology, Jamshedpur, Bihar	..	1	1	..	1	..	1	..	..	..	..	4
3. R. E. C. Kurushethra, Punjab	1	2	1	..	..	..	..	1	..	..	..	5
4. Regional college of Engineering and Technology, Surat, Gujarat	2	1	1	..	..	..	..	1	..	..	..	5
5. R.E.C., Naseembagh, Srinagar, J&K. State	1	1	1	..	..	..	..	..	1	..	..	4
6. Viswaswaraya Regional College of Engineering, Nagapur, Maharashtra	1	..	1	..	1	..	..	..	1	1	..	5
7. Malavia Regional Engineering College, Jaipur, Rajasthan	..	1	1	..	..	..	..	..	..	..	..	2
8. R.E.C. Roorkala, Orissa	..	1	..	..	..	..	..	..	..	..	..	1
9. Motilal Nehru Regional Engineering College, Allahabad, U.P.	1	2	1	..	..	..	..	1	..	..	..	5
10. R.E.C., Durgapur, West Bengal	..	2	1	..	1	..	..	..	..	..	1	5
11. Moulana Azad college of Engineering Technology, Bhopal, Madhyapradesh	..	..	..	..	..	..	..	..	..	..	..	..
12. R. E. C., Silohar, Assam	..	..	..	..	..	..	..	..	..	..	..	..
13. R.E.C., Surathkal, Mangalore, Karnataka	..	..	..	..	..	..	..	..	..	..	..	..
14. R.E.C., Thiruchinappally, Tamilnadu	..	..	..	..	..	..	..	..	..	..	..	..
TOTAL	6	12	9	..	3	1	2	3	2	1	1	40

A—Civil, B—Mechanical, C—Electrical, D—Chemical, E—Metallurgy, F—Electronics and Telecommunication G—Architecture

Table 2

DATA ON NUMBER OF SEATS AVAILABLE FOR STUDENTS QUALIFYING FROM SCHOOLS AND COLLEGES OF KERALA IN REGIONAL ENGINEERING COLLEGES OF OTHER STATES DURING 1980-81

Sl. No.	Name of Regional Engineering college	Seats Available			(1)	(2)	(3)	(4)	(5)
		open seats	Reserved seats	Total					
(1)	(2)	(3)	(4)	(5)					
1	R.E.C. Warangal, Andrapradesh	3	1	4	7	R.E.C., Roorkela, Orissa	2	..	2
2	Regional Institute of Technology, Jamshedpur, Bihar,	3	1	4	8	Malavia Regional Engineering College, Jaipur, Rajasthan	2	..	2
3	R.E.C. Kurushetra, Punjab	4	1	5	9	Motilal Nehru Regional Engineering College, Allahabad U.P.	4	1	5
4	Regional College of Engineering and Technology, Surat Gujarat	4	1	5	10	R.E.C., Durgapur, West Bengal	4	1	5
5	R.E.C. Naseembagh, Srinagar, JK State	3	1	4	11	Moulana Azad College of Engineering Technology, Bhopal, M. P.	..	..	..
6	Viswaswaraya Regional College of Engineering, Nagapur, Maharashtra	3	1	4	12	R.E.C., Silahar, Assam	..	..	..
					13	R.E.C., Surathkal, Mangalore Karnataka	..	..	..
					14	R.E.C., Thiruchirappally, Tamilnadu	..	..	..
						<b>TOTAL</b>	<b>32</b>	<b>8</b>	<b>40</b>



## APPENDIX II

## LIST OF I.T.I.'s. AFFILIATED TO N.C.T.V.T. DURING 1978-79

1. N.I. Institute of Engineering, I.T.C. Amaravila P.O., Neyyattinkara
2. C.S.I., I.T.C., Kodyannoorakonam, Nellimood P.O., Trivandrum District, Pin 695 524
3. M. P. I.T.C., Attakulangara, Trivandrum Pin 695 023
4. Kerala Institute of Technology, Komalavilas Building, Gowreesapattam, Trivandrum-4, Pin 695 004.
5. Bharathamatha I.T.C., Kottiyam P.O., Quilon Pin 691 571
6. The 'V' I.T.C., Quilon-2, Pin 691 013
7. Mohans' I.T.C., Kayamkulam
8. Mohans' I.T.C., Karunagapally Pin 690 518
9. National I.T.C., Chengannur, Pin 689 121
10. Mar Baselios ITC, Mavelikkara, Pin 690 101
11. Institute of Engineering Technology, ITC, Palace Road, Alleppey-1 Pin 688 001
12. Marthoma I.T.C., Cherukode P.O., Kozhencherry, Pin 689 650
13. The Radio and Electrical Engineering Institute, Kozhencherry P.O., Pin 686 141
14. The Welfare Technical Institute, Welfare Centre, Vaikom Pin 686 141
15. Industrial Training College, Karoor P.O., Palai Pin 689 101
16. Industrial Training Centre, Thiruvalla, Pin 689 101
17. Piur'X' I.T.C., PB No. 3, Edathua, Alleppey, Pin 689 573
18. Little Flower Engineering Institute, Kalamasserry, Alwaye, Pin 683 104
19. Jubilee Memorial Technical Training Institute, Veli, Cochin
20. Social Welfare Centre I.T.C., Kalamasserry P.O., Alwaye-4
21. The Kanjoor I.T.C., Kanjoor P.O., (Via) Alwaye Pin 683 575
22. Don Besee Technical, Vaduthala, Ernakulam Cochin-23, Pin 682 023.
23. Amulia I.T.C. Banerji Road, Ernakulam, Cochin 18, Pin 682 018
24. Social Welfare Technical School Association, Alwaye, Pin 683 101
25. C.S.I. I.T.C., Muttam, Thundanganad P.O., Thodupuzha.
26. K.C.M.I.T.C., Koonammavu P.O., North Parur, Alwaye (Via) Pin 683 518
27. St. Mary's Orphanage, Vocational Training Centre (ITC) Fatima Nagar, Trichur, Pin 680 005.
28. N.T.T.F. Technical Training Centre, P.B.No.1, Nettur, Tellicherry, Pin 670 105
29. Nirmala Training Centre, Pilatharu, Mandur, Cannanore.
30. Balanagar Technical Institute, Mookannur, Ernakulam
31. The Good Shepherd Technical Institute, Kunnamkulam
32. C.S.I., Technical Training Centre for Women Bathile Asram, Trichur.
33. N.S.I.T.C. Valayanchirangara Perumbavoor
34. Mannam Centenary Memorial I.T.I., Konni, Pathanamthitta.
35. Medona Institute of Electronics, Kanjirappally
36. Mar Philozinos Memorial I.T.C., Kuttikonang, Chengamanad, Kottarakkara
37. S.N.I.T.C. Kottiyam, Quilon
38. Malic Dinar I.T.C., Paliathod, Quilon
39. Ma-udinul Uloom Orphanage, Harippad, Alleppey District
40. Jaycee Institute, Nanthancode, Trivandrum-3
41. Mathew Mar Ivanious I.T.C., Pothampuram, Pampady
42. C.S.I., I.T.C., Mylom, Erayancode, Trivandrum.
43. Neyyar Educational and Cultural Foundation I.T.C., T.B. Junction, Neyyattinkara
44. M.E.S. I.T.C., Pallippuram, Pin. 695 301
45. Mount Carmel Asram, I.T.C., Mathilakom, East Kallada, Pin 691 502
46. R. Sankar Memorial I.T.C. Punalur, Pin 691 50
47. Michael Mar Dionysims Memorial I.T.C., Vadakkedathukavu, Adoor, Quilon
48. Mar Philaxions I.T.C., Mylapra Town, P.O., Pathanamthitta, Quilon
49. Bharathamatha I.T.C., Punalur, Quilon
50. Bishop Gleniss I.T.C., Vayala Buildings, Ranni P.O., Quilon
51. R. Sankar Memorial I.T.C., Kallelibhagam, Karunagappally
52. Sreekantan Nair, Memorial I.T.C., Puthenthura P.O., Quilon
53. Kannamthottathu Janardhanan Nair Memorial ITC, Kovilmukku, Perumpuzha, Kundara, Quilon
54. Mannam Sathrabhisheka Smaraka I.T.C., Perunna, Layikkadu P.O., Changanassery.
55. St. Johns I.T.C., Nedumkunnam P.O., Kottayam 686 542.
56. Mary Matha I.T.C., Kaduthuruthy Pin 686 604
57. Dr. Zakir Hussain Technical Training Centre, Vandipettah, Boat Jetty Road, Changanacherry.
58. St. Mary's I.T.C., Manarkadu P.O., Pin 686 019
59. Ninan's I.T.C., Nattakom, Kottayam.
60. Mar Grigories Memorial ITC, Rajakumari, Idukki
61. M. N. I.T.C., Pandalam, Pin 689 501
62. St. Mary's I.T.C., Niranam P.O., Thiruvalla
63. Kayamkulam I.T.C., PB No. 54, Kayamkulam
64. I.T.C., Mundankavu, Chengannur P.O.
65. St. Mary's I.T.C., Pulinkunnu P.O. Alleppey District
66. I.T.C., Nangyarkulangara P.O., Alleppey District.
67. K. M. George Memorial I.T.C., Muvattupuzha Pin 686 681
68. SNT I.T.C., Koorkancherry, Trichur
69. Sri Vidhyadhiraja ITC., Kuttanallur P.O., Trichur-5.
70. Akila Kerala Ezhuthachan Samajam I.T.C., Veyyoor, Chelakkara, Trichur.
71. M. E. S. I.T.C., Mundur, Palghat
72. Muslim Dharmaparipalana Sangam ITC, Ezhur Road, Muthur, Tirur, Malappuram
73. J. D. T. Islam I.T.C., Calicut, Pin 673 012
74. Fathima I.T.C., for Women, Old Court Road, Calicut, Pin 673 001
75. Kottur Technical Welfare Association I.T.C., Santhoma Nagar, Sreekanthapuram, Cannanore Pin 670 631.

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