

**REPORT
OF
MASTER PLAN COMMITTEE
ON
TECHNICAL EDUCATION
IN
MAHARASHTRA STATE**

**GOVERNMENT OF MAHARASHTRA
EDUCATION & EMPLOYMENT DEPT.
MANTRALAYA, BOMBAY 400 032**

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CHAIRMAN'S FOREWARD

A.P. DHANDE
CHAIRMAN
M.S.E.B.

Prakash Gad
BOMBAY 51

Dated: 29.04.88.

Hon'ble Prof. Ram Meghe
Minister for Education
Government of Maharashtra
Mantralaya, Bombay 400 032.

Respected Shri Megheji,

It gives me great pleasure to present you the enclosed report of the MASTER PLAN COMMITTEE for technical education in Maharashtra State. On behalf of the Expert Committee I wish to thank the Government of Maharashtra for entrusting us with the task of drawing up this report.

The Committee has made every attempt to comply with the Terms of Reference to examine the present position of the technical institutions in Maharashtra State and make innovative suggestions to improve the quality of technical education in Maharashtra State in the light of the New Education Policy earlier announced by our Prime Minister Shri Rajiv Gandhi. I sincerely hope that the exercise undertaken by us will help the Government of Maharashtra in formulating the future course of action as regards both the existing and new institutions that may perhaps be sanctioned in certain backlog areas keeping in view the quality of education, manpower potential that would be available and needs of the industry. I also take this opportunity to thank all the Committee members.

Thanking you once again for the opportunity given to the Expert Committee.

With warm regards,

Yours sincerely,

(A.P. DHANDE)
Chairman
Master Plan Committee

Encl: a/a.

LIST OF COMMITTEE MEMBERS

LIST OF COMMITTEE MEMBERS

Sr.No.	Name	
1.	Shri A.P. Dhande Chairman M.S.E.B. Maharashtra State.	Chairman
2.	Dr. K.R. Pandit Vice President Tata Electric Companies Tata Vidyut Karyalaya Bombay 1.	Member
3.	Dr. G.N. Garud Principal V.R.C.E. Nagpur.	Member
4.	Shri B.B. Chopane Director of Technical Education Maharashtra State Bombay 1.	Member
5.	Shri K.M. Gedam Director of Vocational Education & Training Maharashtra State Bombay 1.	Member
6.	Shri M.G. Nayak I.A.S. Deputy Secretary (Technical Education) Education & Employment Dept Mantralaya Bombay 32.	Member-Secretary

TERMS OF REFERENCE

महाराष्ट्र राज्यातील तंत्रशिक्षण

बृहत् योजना [मास्टर प्लान] आख्यासाठी

तज्ञ समितीची नियुक्ती.

महाराष्ट्र शासन,
शिक्षण व सेवायोजन विभाग,
शासन निर्णय क्रमांक - टीईएम ३३८७/[०२१५]/तां शि-१-अ
मंत्रालय विस्तार भवन, मुंबई - ४०० ०३२.
दिनांक : ६ जुलै १९८७

शासन निर्णय

गेल्या काही दशकांमध्ये राज्याच्या औद्योगिक विकासाच्या प्रगतीत लक्षणीय बदल झाला असून तंत्रज्ञानातील नित्यनव्या शोधांमुळे त्यात दिवसेंदिवस भर पडत आहे या औद्योगिक घटकांना निरनिराळ्या स्तरावर लागणारे प्रशिक्षित मनुष्यबळ उपलब्ध करण्याच्या दृष्टीने राज्य शासनाने खाजगी संस्थांना विनाअनुदान तत्वावर तंत्रसंस्था उघडण्यास परवानगी देण्याचे धोरण स्विकारले. परिणामी राज्यात आज तंत्रशिक्षण व प्रशिक्षणाच्या सोयीमध्ये झपाट्याने वाढ होत आहे. सदर परिस्थितीत, तंत्रसंस्थांची सध्याची उपलब्धता पुरेशी आहे किंवा काय, अथवा त्यामध्ये वाढ करावयाची झाल्यास ती राज्यातील कोणत्या भागात होणे आवश्यक आहे, ह्या व संबंधीत इतर बाबींचा आढावा घेणे, ह्या संस्थांचा दर्जा सुधारणांच्या व प्रगतीच्या दृष्टीने आवश्यक झालेले आहे.

२. प्रस्तुत परिस्थितीत, राज्यातील तंत्रशिक्षणाच्या विकासास मार्गदर्शक ठरेल अशा स्वभावाची एक " बृहत् योजना [मास्टर प्लान] " तयार करण्यासाठी एका तज्ञ समितीची नियुक्ती करण्यास शासन याद्वारे मंजूरी देत आहे. सदर समितीवर खालील व्यक्ती असतील.

१] श्री. के. आर. पंडित,
संचालक,
टाटा इलेक्ट्रिक कंपनी प्रायव्हेट लिमिटेड,
मुंबई.

- २] डॉ. जी. एन. गस्ड,
प्राचार्य,
विश्वेश्वरच्या प्रादेशिक अभियांत्रिकी महाविद्यालय,
नागपूर.
- ३] श्री. अंबादास धाडे,
चेअरमन,
महाराष्ट्र राज्य विद्युत भंडार,
मुंबई.
- ४] संचालक,
तंत्रशिक्षण, महाराष्ट्र राज्य,
मुंबई.
- ५] संचालक,
व्यवसाय शिक्षण व प्रशिक्षण,
महाराष्ट्र राज्य, मुंबई.
- ६] उपसचिव, ... सदस्य -सचिव
शिक्षण व सेवायोजन विभाग.

३. बृहत्संयोजना तयार करण्याच्या दृष्टीने सदर तज्ञ समितीच्या अधीन साधारणतः पुढील बाबी असतील :-

- १] अखिल भारतीय तंत्रशिक्षण परिषदेने घालून दिलेल्या मार्गदर्शक सूत्रानुसार [परिशिष्ट "अ"] राज्यातील पदवी / पदविका / प्रमाणपत्रांतर तंत्रसंस्थांची सोय झालेली आहे किंवा काय,
- २] राज्यातील विविध भागांच्या औद्योगिक विस्ताराच्या प्रमाणात पुरेसे तांत्रिक मनुष्यबळ उपलब्ध होण्याच्या दृष्टीने त्या त्या भागात पदवी/पदविका/प्रमाणपत्रांतर तंत्रसंस्थांची पुरेशी सोय उपलब्ध आहे किंवा काय,
- ३] ज्या भागात ज्या स्तरावरील तंत्रसंस्थांची पुरेशी सोय नसेल तेथे आता तंत्रसंस्थांची किती आवश्यकता आहे. ,
- ४] सध्या चालू असणा-या तंत्रसंस्था विकसित करण्याची आवश्यकता.

४. उपरोक्त समिती ही राज्यस्तरीय समिती असेल व तिच्या आगतकीय

सदस्यांना प्रवासभत्ता महाराष्ट्र नागरीसेवा नियम खंड-२ परिच्छेद १३(अ) नियम १(ब) अन्वये व शासन निर्णय, वित्त विभाग क्रमांक टिआर १४७७/१०३२/सी-सईआर-५, दिनांक २३ सप्टेंबर, १९७७ प्रमाणे मिळण्यास पात्र समजण्यात येईल. शासकीय सदस्य त्यांना विविध असलेल्या नियमानुसार प्रवासभत्ता व दैनिकभत्ता मिळण्यास पात्र असतील. या शिवाय सभितीच्या अशासकीय सदस्यांना प्रत्येकी रु. १५००/- मानधन देण्यात येईल. ज्यामध्ये दैनिक-भत्ता सुधदा अंतर्भूत असेल.

५. या निर्णयानुसार होणारा खर्च २२०३ तंत्रशिक्षण -००१ संचालन व प्रशासन -संचालनालय " या प्रमुख अर्थीषाखाली संबंधित उपशीर्षाखालील तरतूदीतून भागविण्यात यावा.
६. हा निर्णय वित्त विभागाच्या सहमतीने त्या विभागाच्या अनौपचारिक संदर्भ क्रं. सीआर-९६०/८७/व्यय-५, दिनांक ३ जून १९८७ अन्वये निर्गमित करण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने,

सही

[महेश नायक]

उप सचिव, महाराष्ट्र शासन.

प्रति,

संचालक, तंत्र शिक्षण, महाराष्ट्र राज्य, मुंबई.
 संचालक, व्यावसाय शिक्षण प्रशिक्षण, महाराष्ट्र राज्य, मुंबई.
 महालेखापाल [लेखा व अनुश्रेयता] १/२, महाराष्ट्र, मुंबई/नागपूर.
 महालेखापाल [लेखापरीक्षा] १/२, महाराष्ट्र, मुंबई / नागपूर.
 अधिदान व लेखा अधिकारी, मुंबई.
 निवासी लेखा परीक्षा अधिकारी, मुंबई

श्री. के. आर. पंडित, संचालक, टाटा इलेक्ट्रिक कंपनी प्रायव्हेट लि.,
मुंबई.

डॉ. जी. एन. गव्ह, प्राचार्य, विश्वेश्वरध्या, प्रादेशिक अभियांत्रिकी,
महाविद्यालय, नागपूर.

श्री. अंबादास धांडे, चेअरमन, महाराष्ट्र राज्य विद्युत मंडळ, मुंबई,
स्वीय सहाय्यक, शिक्षणमंत्री,
घित्त विभाग [घ्यय - ५],
शिक्षण व सेवायोजन विभाग [अर्थसं - २]
निष्ठा नस्ती [तांशि-१अ]

[पत्रादारे]

परिशिष्ट "अ"

नवीन संस्था उघडण्याच्या दृष्टीने अखिल भारतीय तंत्रशिक्षण
परिषदेची मागणीक सूत्रे :-

- [१] एकूण मनुष्यबळ विचारात घेता ज्या ठिकाणी तंत्रशिक्षणाच्या नवीन
सोयी निर्माण अथवा विस्तारित करावयाच्या असतील तेथे [स्थानिक,
विभागीय अथवा राष्ट्रीय पातळीवर] त्या विषयातील कुशल मनुष्य
बळाची कमतरता तीव्रपणे भासत असल्याबाबत राज्यशासनाची
खात्री पटणे आवश्यक आहे.
- [२] नवीन संस्थाद्वारे शक्यता नेहमीचे अभ्यासक्रम सुरु न करता तंत्र-
शास्त्रातील नवनवीन / प्रगत अभ्यासक्रम की ज्यांसाठी भविष्यात
भरपूर मागणी असेल असे अभ्यासक्रम सुरु करण्यात यावेत.
- [३] सुरु करावयाच्या नव्या संस्था किंवा विस्तारित करावयाच्या चालू
संस्था ह्या एकतर भरपूर रोजगार उपलब्ध असणा-या क्षेत्रात
असाव्यात किंवा आर्थिक दृष्ट्या मागासलेल्या विभागात असाव्यात
आणि / अथवा समाजातील दुर्बल घटकांच्या विकासाार्थ असाव्यात.

=x=x=x=x=

PREFACE

CHAPTER 4P R E F A C E

The Master Plan Committee for Technical education in Maharashtra State was constituted by the Government of Maharashtra on 6th July 1987. The Master Plan Committee held its first meeting on 3rd September 1987 and the report was to be submitted within a period of 3 months ending November 1987. This period was further extended by Government upto 31st March 1988. The Master Plan Committee held a total of 6 meetings at various places including Nagpur before formulating its report. During these meetings it had valuable inter-action with representatives of Industry and experts in the field of education. It also referred to the guidelines as enunciated in the new Education Policy and took a critical view of the existing technical institutions in the State Viz. infrastructural facilities available, existing course contents, staffing pattern and the need for revision of syllabi, taking into account the development in the industrial areas. The committee has also taken into account the observations made by the Universities in their Master plans in respect of Technical Education.

MODALITY:

The Committee decided that the basic information that would be required by the Committee should be collected Revenue Division wise. This information would pertain to the existing population,

the number of Engineering Colleges, Polytechnics, Industrial Training Institutions and the existing intake capacity in respect of the Degree, Diploma and Certificate courses. A break-up of this information was also obtained districtwise. A review of the eligible students and the existing industry was taken, with an indepth study to ascertain the need for starting/continuation of the courses based on the subjects as appended in the list at Appendix-I. The Committee also obtained the views of the various Regional Development Councils of Kokan, Vidarbha, Marathwada and Western Maharashtra, as also the Maharashtra Chamber of Commerce and the Thana Manufacturer's Association, in order to elicit their views pertaining to the need for more technical institutions and type of courses that would be approved by Government alongwith their duration. The Committee also examined the needs of the areas where a backlog still exists, as suggested by the Fact Finding Committee headed by Dr. V.M. Dandekar. The Committee also considered the suggestions from the Government Corporations like MIDC, MSSIDC, MELTRON and SICOM.

The Committee was of the opinion that the present educational set up was more Laboratory oriented, with there being no provision for industrial visits of the teaching staff or an opportunity for them to actually function in the industry to gain working knowledge. The Committee also stressed the needs for faculty development programmes and continuing education as envisaged

in the New Education Policy. A need was also felt for setting up an Administrative Staff College for technical teachers with emphasis on themes like Management, Teaching, Planning and Teacher-Industry Relation. The Committee felt that education in technical field should be looked upon as a management concept where more involvement by teachers was necessary. There was also a need for regimentation, accountability and teachers resource development. In order to achieve this, it was suggested that the "Best Teacher Award" could be mooted on the lines of I.S.T.E. The Committee has also considered the following areas while preparing the Master Plan.

- a. Role of Industry.
- b. Emerging courses and their demand.
- c. Grouping of courses.
- d. Linkage with Industrial Development.
- e. Academic excellence.
- f. Need of new teaching staff due to retirement vacancies during the next five years.
- g. Girl's Polytechnic.
- h. Minority Colleges.
- i. Fees structure.
- j. Viability of institution
- k. Objectives and suggestions for improvement.

The Committee was of the opinion that there is a need for

motivation through training aids such as Audio-Visual presentations for training and developing technically trained manpower and entrepreneurship development programmes. In this respect the Audio-Visual Cassettes already prepared by the Entrepreneurship Developing Institution of India, Ahmedabad can be made available to Teaching Institutions. Moreover, the Bank Loan Scheme as prevalent in Gujarat State, which was beneficial to newly trained entrepreneurs with limited resources could also be introduced in Maharashtra.

The Committee also considered information that was made available Boardwise showing the number of students who have passed Xth Standard and XIIth Standard during the last academic year while considering the need for new Engineering Colleges, Polytechnics, I.T.Is. and Vocational Institutions. The Committee has taken care to ensure that the requirement for new Technical Institutions is based as per the Industry and the needs of developing Industries in the educationally backward and tribal areas of the State. The Committee also felt that sufficient emphasis should be given to Research and Development and Professors in the Technical Institutions should devote more time for publishing research papers than is being done at present. The Committee while preparing this report has also considered one important aspect i.e. finished products in the form of students emerging from the Technical Institutions being exportable commodity. The technically educated and trained person is a resource which

can benefit the country even though it may result in a brain drain. The requirement of technically trained persons is in increasing demand outside the country especially in developing countries. Similarly, trained persons from Maharashtra are increasingly in demand abroad and this would benefit the country in the long run in earning valuable foreign exchange. The Committee has therefore made a serious indepth study as per the requirement of the Industry with a view to ensure that the development of backward areas is on a equal footing with the developed areas. The Committee felt that there was a flagrant interaction between industry and institutions to meet the demand for engineers and remove the mismatch existing at present. In this respect, the Committee suggests that Government may examine formation of a Technological Forecast Cell consisting of experts from Technical Education and Industrial fields to envisage appropriately, planned future development.

The Committee would also like to place on record its appreciation of the various valuable suggestions made by Dr. B.R. Karnore, Dr. H.R. Takhalate and Dr. V.N. Gupchup, Experts in the field of Education and the various organisations approached by the Committee which helped in the formulation of this report.

PREAMBLE

CHAPTER 5P R E A M B L E

It is now well recognised that Science and Technology are the catalysts for growth and propellants for progress. It becomes prerogative for each country to develop a well-integrated technical education system for sustained growth. India is indeed fortunate to have the third largest scientific and technical manpower in the world with a large infrastructure for higher technical education, research and development. Yet the fond hope that the fruits of science and technology will diffuse to improve the economic well-being of the people has not materialised. Instead the gap has only widened between the urban elite and the rural poor. Obviously there is a mis-match between the educational objectives and the social needs.

The employment opportunities commensurate with advanced knowledge and the skills of highly trained personnel are quite limited, resulting in unemployment, under-employment and brain drain. There is thus a mis-match between university products and industry's requirements.

It becomes clear that the goal of the technical education and research in engineering must include development philosophy to remove the existing imbalances. There is room to believe that an engineer should be trained as a preactising engineer

with entrepreneurial ability. Development is a transdisciplinary process requiring transdisciplinary approach. The days of the 'lone wolf' in education and research should give way to trans-disciplinary, tran-organisational approach to resolve the problems.

Similarly, the ambivalent attitude of academicians should change towards relevance. The problems of the poor could be equally intellectually challenging and professionally satisfying. The societal problems should be the legitimate concern of engineering and science.

Maharashtra occupies a place of pride on the industrial map of the country. It can boast of traditions in engineering education which are more than a century old. It has an industrial base which is unique in the country. Yet the fact cannot be ignored that the base is located in one part of the state and naturally backwardness prevails in many other parts of the State. Only a decade ago, the Technical Education Institutes in the country were very limited and inadequate to satisfy even the sustenance of the industry in the State. Naturally, they were very inadequate to promote the growth of the industrial culture. Maharashtra Government has in the recent past adopted a revolutionary approach in permitting the managements with educational background to start engineering institutions both at polytechnic as well as at college level on no-grant basis. This system envisages the financing of the institutions directly through the beneficiaries

i.e. the students. No doubt this is a revolutionary approach and, as is expected has invited lot of interest, criticism and comments. Though the approach was initially introduced by other States, yet the number of institutions that have started in Maharashtra are so large that Maharashtra has attracted the attention of the country. The country is awaiting with interest the final evaluation of this revolutionary experiment.

In view of the interest that the experiment has generated, the Maharashtra Government has constituted a state level committee to look into all aspects of the technical education and put forth recommendations and suggestions for its improvisation, keeping in view particularly the following aspects (1) the industrial requirement (2) social aspirations (3) emerging technologies and (4) entrepreneurship development.

As the task was really stupendous, the committee thought it best to have a wider discussion and invite suggestions from all sectors. The committee has invited suggestions from the industrial sector through industries' associations, chamber of commerce and many well known industrial houses. It also discussed the issues with the faculties of various technical educational institutions, the administrators of the technical educational institutions and the student community. Last, but not the least, the planners of the industrial programmes were also consulted. The views expressed by these sectors were taken into consideration

in the preparation of this report. It is well understood that when any state desires to review its technical education programme, it has to take care of the dynamic aspect of the industrial growth and the emerging technologies. The unfortunate part of emerging technology is that in this country is that presently it is not a leader in technology but is only a follower, which makes it very difficult to foresee the changes and plan manpower requirements well in advance. Hence it is essential that this exercise is carried out periodically and the objectives of the technical education are reviewed and modified suitably, from time to time.

THE PRESENT SCENARIO

CHAPTER 6THE PRESENT SCENARIO

Technical education can broadly be divided into three-tier system consisting of Industrial Training Institutes, Engineering Polytechnics and Engineering Colleges, Engineering Colleges offering undergraduate and post-graduate programmes. The training imparted in each of these institutions have their own respective significance since the requirements of the industry are many. These requirements can broadly be divided into those of "skill" and of "knowledge" and depending upon the nature of industry, a suitable mix has to be considered. The skills are imparted mainly in the Industrial Training Institutes and partly in the Polytechnics. As far as the imparting of knowledge is concerned, it is mainly at the Engineering College level. The industrial requirement of the technicians, diploma holders and the graduates vary from industry to industry and it is very difficult to stipulate the division of personnel employed in the two categories in any industry. The requirement of skill also varies considerably depending upon the industrial activity, e.g. in a typical workshop, the major requirement can be for the machinist, moulders, fitters, etc. while in an electronic industry they could be for plating, soldering, instrument maintenance, etc. This requirement being very diversified and dynamically changing with technology, the programmes offered in the Training Institutes are bound to vary in their duration as well as contents. Most of the industrial

training institutes in the state were started directly by the government and they follow a common pattern. The detailed discussion on this has been incorporated in separate ensuing chapters and the statistical information is at Annexure II.

As regards the Polytechnics, the aim of the polytechnic education policy is to generate the manpower which can be employed in quality control, absorption and utilisation of various major instrumentation techniques and adoption of innovative measures for the extension of their utility. At present there are government polytechnics, practically one in every district and government has permitted many private managements to start polytechnics on no-grant basis. The number of such institutions are 136 with total intake capacity of 24550 students. These institutions are offering as many as 40 diversified courses. As regards the evaluation of the students admitted in polytechnic programmes, it has adopted a centralised system managed and controlled by the Board of Technical Education.

As regards College education, there are only nine government supported institutions in the state offering programmes mainly in the conventional fields, i.e. Civil, Mechanical, Electrical and recently Electronics and Computer Science has been introduced. Government has permitted many private managements to start Engineering Colleges on no-grant basis. These colleges are offering not only the conventional programmes but also diversified programmes to a large extent particularly in the emerging technology areas.

As regards evaluation of the students, these colleges enjoy a status of affiliates to a University, the students take the examination conducted by the University and also undergone the programme, the curriculum decided mainly by the University system. As regards post-graduate activities, only a few of the government supported Engineering Institutions offer courses/programmes. These programmes are very few and at present the financial support is available from Government of India alone.

The linkages between the sectors of the three-tier technical educational system, though very desirable, are at present very loose. The linkage of the education system with the industrial sector is also far from adequate. Exposure of the students to the industrial sector is mainly through practical training imparted during vacations which, at present, is also not compulsory. The students in the government supported institutions mainly undergo practical training on a limited basis while in the non-aided institutions, the practical training programmes are non-existent. This situation is prevalent both in the Polytechnics as well as in the Colleges. The linkage of the education system with other sectors of the social system is also far from adequate,

It is well known that the success of any educational system depends primarily upon the dedication and commitment of the faculty. The situation even in respect of the faculty strength

is not satisfactory. In the government supported institutions it is even lower. There are various reasons for the large number of vacancies which exist. An attempt has been made in this report to analyze the situation and recommend certain measures for its rectification.

Apart from the large number of vacancies which exist, the faculty itself is not adequately trained to discharge its duties. Though the All India Council of Technical Education stipulates a Master's Degree plus one year's industrial exposure at the entry point in the technical educational systems, the colleges have to offer the faculty positions to fresh graduates without Master's Degrees and without any industrial exposure.

The infrastructural facilities for technical education, the government supported institutions do have a minimum required support in the form of building and equipment. However, the financial support to these institutions from the government had been inadequate and hence the modernization of the equipments in time could not take place in most of the institutions. Further the government supported institutions do not enjoy the administrative autonomy and hence their purchase programmes and the building programmes are controlled by agencies which do not have direct involvement. This system needs review and improvement.

As regards the non-aided institutions by and large, the situation

is far from satisfactory. Not only the institutions find themselves financially weak but, due to non-availability of experienced faculty, they are not in a position to evaluate their requirement properly and effectively prioritise the purchases.

The committee has studied all the aspects of technical education in depth and put forward suitable recommendations to contain the problems.

UNDERGRADUATE AND POSTGRADUATE PROGRAMMES

CHAPTER 7

I. UNDERGRADUATE & POSTGRADUATE PROGRAMMES

I.A. UNDERGRADUATE PROGRAMME:

As regards the undergraduate programmes, the table in Annexure-II provides the regionwise intake in the various Government aided and the non-aided institutions.

The tables contain number of eligible students who can get admission in the engineering programmes regionwise, in the government, aided as well as non-aided institutions. These tables are significant in planning the allocation of the new engineering institutions as and when the need is felt for it. As regards the various disciplines in which the programmes are to be offered they could be distributed as in the following categories (Annexure I).

Another significant observation is that the programmes of the emerging areas have been assigned to non-aided institutions and the conventional programmes are being offered in the government aided institutions.

As regards the employment profile, since the non-aided institutions have been very recently started and in many of these institutions the first batch admitted is only in the final year, it is very difficult to ascertain their employability. However, in the government started institutions which are existing for more than 25 years, the employability is very high and practically all the students get jobs within a reasonable time after passing out.

Another aspect which the committee has noted regarding employment is that it is available in plenty in the Bombay-Pune industrial belt of the state while the opportunities in the other parts of the state are much lower. Those students who are willing to migrate to the industrial region find immediate employment but the other students who find it difficult to migrate find problems in getting suitable employment and tend to pick up jobs which do not have direct relevance to their educational background. Many of the bright students do join higher educational programmes at the national institutes. Since the last 3-4 years, Government of India has introduced a common entrance GATE examination for admission to the post-graduate programmes. It is essential to take a look at the performance of the students from Maharashtra in these examinations. The statistics reveal that, except for VJTI, the performance of the students passing from other government started institutions is far from satisfactory. This is particularly a matter of concern as regards the quality of the programmes offered. No statistics are available as regards the performance of the students from Maharashtra at the Engineering services examination conducted by UPSC. However, the committee got an impression that most of the students passing from Maharashtra seek jobs only in Maharashtra and very few of them join the All-India cadre.

I. B. POSTGRADUATE PROGRAMME & R&D ACTIVITY

The present accepted pattern of undergraduate programme is of duration of 4 years with broad based streams like Civil, Mechanical, Electrical, Electronics, Computer, Chemicals, Metallurgical and Mining. Further it is becoming essential to expose at the undergraduate students to Computer, Management, Environmental Engineering etc. Hence undergraduate curriculum is getting crowded and further taking into account the exponential growth in the knowledge and dynamic nature of technology, introduction of more and more postgraduate programmes is imperative. At present in Maharashtra only 7 institutes offer postgraduate programmes and that to in very limited area. In order to cater for the growth in knowledge, it is essential to augment the post graduate programmes both as regards number as well as depth.

By and large it is essential that for generation and satisfaction of faculty atleast one postgraduate programme must be offered in each discipline of the Aided and Government colleges. The postgraduate programme is the link between the undergraduate and the professions. Further it is essential to monitor the programme carefully and change them depending, upon the needs. At present it is observed that many postgraduate courses have lost their relevance but are being continued either due to myopic faculty or inadequate inputs. This situation requires immediate correction and massive inputs.

Though India claims very high number of S&T personnels yet its contribution to technology is minimal. This is due to lack of emphasis on quality and non-availability of R&D facilities. It is essential to create centres of excellence in atleast some selected colleges and support them adequately.

Centres of excellence should be decided by the competence of the existing faculty and not by the geographical location of this colleges. Further the centres of excellence should not become ivory towers but participate in solving the technological needs of the Indian Society. Thus they must have a strong linkage with the social systems and particularly rural system.

The Centre of the excellence should have wings to interact with the rural environment and must be fed with problems by these wings. This would assure the research engineers fruitful role, otherwise in many of the research laboratories one finds sense of funstruction among the research workers.

Since in Maharashtra, the research culture in engineering education is not represented, it is recommended that a representative study group should be constituted to plan the activity in sufficient depth. The Group should consist of appart from acdemicians the industrialists and representatives from other user organisations. The Group should formulate the proposals phasing them out suitably.

POLYTECHNIC DIPLOMA AND POST DIPLOMA PROGRAMMES

Postgraduate programme by research may also be encouraged. For all research minded and knowledge hungry persons, it may not be possible to join the institute for further higher studies as they are already working and doing seriously studies and research. The study group may recommend constructive approach in this area also.

II. POLYTECHNIC & POST DIPLOMA PROGRAMME

II.A. POLYTECHNIC PROGRAMME:

Most of the government polytechnics offer standard programmes in classical fields of Civil, Mechanical and Electrical and in a few cases, Electronics Engineering. The programmes in emerging technology areas have been allotted to non-aided institutions which have started functioning 3-4 years ago. Since the Government of Maharashtra have the same administrative set-up for colleges and the polytechnics, the teachers were transferred from one type of institution to the other. There were no specific qualifications for recruitment of teachers to the polytechnic and thus the polytechnic programmes and the college programmes were partly an extension of each other. No special emphasis was given on polytechnic programmes vis-a-vis the role which the diploma holders have to play in industry. This has also created a very peculiar situation as regards the manning of both types of institutions in the State. The committee has further noted the problems which beset the polytechnic programmes

because of the centralised examination system and has suggested suitable corrective measures for the same.

II. B. POST DIPLOMA PROGRAMME:

The post diploma programme has very broad spectrum based on utility, diversification and specialisation. They would get more appreciation with job potential. But unfortunately the programme remained the most neglected.

These programmes can take industry close to the institutes due to its applied advanced nature. Many sponsorships may support the development of these programmes with specified aims and objectives. The persons in fields along with regular degree and diploma students may seek advantage of the programmes.

The post diploma programme must be expanded for the needs of specialisation diversification and profession.

The programme may be started in the Government polytechnic so that each district will get due share of opportunity. In addition to this, deserving institutes should be encouraged to undertake the need based programme of post diploma.

The study group that is to be constituted for post graduate programme should also plan post diploma programme as its needs are parallel. The programmes should have suitable flexibility to frame their adoptability to the industrial demands.

PHARMACY PROGRAMME

CHAPTER 9PHARMACY EDUCATION IN MAHARASHTRA

Pharmacy education has taken deep roots in Maharashtra and there are a total of 54 institutions imparting education at various levels. There are three major levels at which pharmacy education is imparted, namely, diploma level, degree level and postgraduate level.

DIPLOMA LEVEL EDUCATION:

The diploma level education is mainly designed for practising pharmacists those who wish to start a drug store or seek employment in a retail, pharmacy. By the act of Indian Parliament passed in 1948, every drug store is required to have a licenced pharmacist at the counter, who is only authorised to dispense medicines. The policies for the diploma education are mainly determined by a central body created by the Act of Parliament called "Pharmacy Council of India". This council lays down the rules and regulations of the conduct of Diploma in Pharmacy course which is of two years duration after high school graduation. However, the conduct of course and examinations is left to the Board of Technical Education.

DEGREE LEVEL EDUCATION:

The degree level courses in Pharmacy leading to the Bachelor of Pharmacy degree (B. Pharm) are mainly under the auspices

of the universities. This degree course is of four years duration after junior college level. There is heavy emphasis on basic sciences like Chemistry, Physics, Biology and Mathematics in the first year of the degree course.

There are at present 12 degree institutions in Maharashtra State with an intake capacity of 600 seats. Similarly there are 42 Diploma level institutions with an intake capacity of 2080 seats. The Committee has been informed that the Pharmacy Council of India has prescribed a ceiling limit of about 2000 seats for Maharashtra for the years 82-84, in respect of Diploma courses. The Council was also of the opinion that there are sufficient number of Pharmacy institutions at present in Maharashtra catering to the needs of Diploma and Degree level students. The Committee felt that even if this be so that there was still scope for a Degree level institution in Marathwada, Vidharbha - Nagpur University region and Konkan - Bombay University region.

ARCHITECTURAL PROGRAMME

CHAPTER 10ARCHITECTURAL PROGRAMME

The concept of towns and buildings have been widely changed. The importance of planning needs specialisation for a job of design, service and management. It has created a place of honour to the persons who are called as 'Architects'.

Due to its nature of specialisation, education facilities for Architecture programme have to be reinforced as a special branch in Technical Education.

The committee feels that present facility for Architectural programme as not adequate and there is wide scope to expand of Architectural programme.

At present there are 13 institute with total seats 580.

The scope to start new Architectural Institutes in every university region has been estimated in Table No.4. Justified scope may be given to the backward areas.

Postgraduate programme in Architecture should be introduced as the need of teaching faculty and profession.

The present Architectural programme needs a touch of modern approaches and exposures.

As a profession; the architects are effectively working in urban

areas, rural areas many adopt its duplication without considering the needs. The architectural impact on rural planning should be of properly thought over for development and uplift.

Architectural programme may incorporate the topics of rural areas with sufficient stress so that blind adoption of non-matching urban concepts can be avoided.

OTHER COURSES

CHAPTER 11

OTHER COURSES PROGRAMME

In the state various types of courses like Printing Technology, Leather Technology, Dress making design, Interior Decoration, Textile Manufacturing, Food Technology, Industrial Safety, Surface Coating Technology etc. etc. are existing.

The response to these courses are comparatively good in terms of employment and self employment and however these courses need to be developed and modernised to suit the changes in the technology and to fulfil the user requirements. There is a need to review the present position of these courses and to modify and extend them suitably.

For this purpose it is essential to constitute a specialised study group. to recommend emerging areas and suggest various diversified other courses to serve the needs of the society.

VOCATIONAL EDUCATION & TRAINING

CHAPTER 12VOCATIONAL EDUCATION & TRAINING

The Vocational Education, since ages moves around diversification in learning opportunities enabling the students to study the field knowledge and skills in keeping with their aptitude, interest and abilities. This increases their competence in relevant areas by practising the skills and thereby their employability. This in turn provides society with personnel having wide knowledge and training to feed diverse manpower for its economic development at the workers stage. The important aspect of vocational education and training is an appropriate diversification in learning cycle of human being. The Vocational Education and training and learning of skills is an important input in national development. Though, however, it should contribute in such a way that productivity increases in all the sectors. In a country like ours where human resources are abundant, the skill learning is more less self reliant. It will be observed that in industries and world of work, those who are working, have attained the skill competencies by experience. Though there are formal Vocational Education and training programmes, the skill learning still is mostly by "doing and learning". The fulfilment of this requirement implies that school system ensures that those who leave formal education at any stage, have been exposed to such Vocational Education and training and skill information as it would enable them to register higher productivity in jobs they might do than those who might be doing jobs on traditional lines.

The Vocational Education and training at SSC and pre-SSC level falls in three categories in Maharashtra State:-

- i) Craftmanship Training Scheme and Apprenticeship Training Scheme.
- ii) Vocational Education at +2 level after Xth Std. and Vocational Education at pre-SSC stage in Std.VIII, IX and X.
- iii) Limited skills vocational courses at the State level for school dropouts.

The abovementioned three training programmes are formal one wherein facilities of training are created as per norms laid down by either Central Government or State Government. These programmes provide fleet of fully trained and limited skill trained persons at the various levels in the engineering industry. Maharashtra has got good heritage of skill possession in the industrial sector. Even in the pre-independence era, Maharashtra had textile industry, engineering industry, electrical industry, and miscellaneous industries. After independence, the industrial development has taken sporadic growth in Maharashtra State and consequently the training facilities also are multiplied.

At present, Maharashtra State has good infrastructure for training facilities. The scheme are divided in various training programmes as below:

- i) Craftsman Training Scheme as per norms laid down by National Council of Vocational Training.
- ii) Apprenticeship Training Programme under the Apprentices Act, 1961.
- iii) Junior Colleges and Government Higher Secondary Technical Schools for imparting training to students of Std.XI and XII.
- iv) Government Technical High Schools for imparting training in pre-SSC vocational subject in Std.VIII, IX and X.
- v) Short duration vocational courses for out of school students conducted by the Board of Vocational Examinations, Maharashtra State.

Present status of all these schemes as as below:

Craftsman Training Scheme:

The Craftsman Training Scheme implemented by the National Council of Vocational Training is introduced in Maharashtra State in the year 1959. This scheme contemplates establishment of Industrial Training Institutes in the country. Accordingly, large number of Industrial Training Institutes were started in the State to meet the growing need of trained manpower for organised sector.

This scheme mainly provides skilled persons for organised industrial sectors and the training is given in more than 60 different trades for duration ranging from 1 year to 2 years. The qualification for admission is SSC fail to certain trades and SSC pass for the remaining trades. The ITIs have been established in all the districts of Maharashtra State. Recently, consequent upon the diversification of industrial policy, the ITIs also have been introduced in taluka places and backward areas. The survey shows that most of the students coming out from the ITIs find opening in the world of work with the result that there is good demand for starting more and more ITIs in the State. Initially, though this scheme was implemented in Government sector, many private organisations initiated to introduce ITIs of their own. Government of India do not provide any grant-in-aid for private ITIs. In spite of this, the organisations have established institutions of their own. At present there are 103 Government Industrial Training Institutes and 78 non-government institutes. The training is imparted in 51 different trades and the total strength of the students is 41,736 including Government and Non-Government Institutes. The spread of the institutes is all over the State covering district headquarters as well as some talukas in the districts.

Apprentices Training Scheme:

The Apprentices Act is implemented in this State since the year 1963. The surveys have been conducted by the Department

and seats of training have been located in more than 180 industries in the State. The facility exist in more than 2500 establishments and located seats are round about 23,000. The engagement is around 20,000 which is 80% quite above the national average of 70%. The number of located seats depends on the facilities available in the industries as per norms prescribed by NCTVT and hecne, unless industry grows, the training facilities are not multiplied.

This is always in correspondence with the facility available in the existing industry and industrial establishments have to offer training without disturbing their schedule of production, manufacturing and service with the result that isolated efforts for expansion of the scheme is not possible and the expansion takes place with the expansion in the industrial establishments.

Junior Colleges and Government Technical Higher Secondary Schools in the State:

The vocational education at +2 level is introduced in the State in 1977-78 at higher secondary level. The vocational education introduced by the State is in deviation with the vocational education contemplated by the Indian Education Commission (Kothari Commission). The Indian Education Commission advocate terminal type of vocational education for students who would leave Std.Xth in the pattern of 10+2+3. However, taking into consideration the existing circumstances and the terminal vocational education

available in the state, and after having ascertained opinion of the cross sections of the society, it was decided that the nature of vocational education at +2 stage should be bifocal and the vocational contents be raised step by step. The terminal vocational courses should end up in fruitful employment. If the employment potential does not exist, then the students get frustrated as neither they get a job nor they can continue their education further. To avoid this, the SSC Board prepared curriculum for vocational education scheme in such a way that the students require to offer one language, three optional subjects and in lieu of two subjects one vocational subject. The vocational content was 35% of the time table of the education at +2 stage. The bifocal pattern entitle students either to enter world of work or continue the education vertically upward. For those who would like to enter the world of work, 6 months' on-the-job training was prescribed during which students used to get stipend of Rs.200/- per month. The SSCE Board prepared curriculum for 24 vocational subject in six various areas such as engineering commerce, agricultural, food technology, fisheries and para-medical groups.

The vocational subjects were introduced in higher secondary and junior colleges in 1977-78 and initially for first three years, the schools were given financial assistance to the extent of 100% of staff salary and Rs.100/- per month per student for contingency expenditure.

The scheme picked up very well and there was heavy demand from the society for introducing vocational education at +2 stage but because of the paucity of funds, there were restrictions on starting new institutions. However, private organisations initiated to introduce this education of their own without any financial assistance from Government. Permission to such institutions who would comply with the infrastructural requirements was given and the vocational education expanded since then. As it stands today, there are more than 450 Government and Non-Government higher secondary and junior colleges who are conducting vocational courses and the facility of training exist for more than 45,000 students. This is roughly 6% of the total student population at the +2 stage.

Vocational Courses at Pre-SSC Level:

In Maharashtra State there existed a scheme of offering technical subject at SSC level. This scheme changed with the time and now students have to offer one of the vocational subjects under optional one at SSC level. There are 10 subjects for which curriculum is prepared by SSC Board. The examinations are taken by SSC Board and certificates are also awarded by them. The students offer all subjects prescribed for SSCE and one vocational subjects from amongst below:

1. Carpentry
2. Blacksmithy

3. Moulding
4. Welding
5. Fitting
6. Turning
7. Plumbing
8. Building Construction
9. Rural Technology
10. Wireman

The students who have offered vocational/technical subject at SSC level, can learn further in Std. XI and offer any discipline as he wishes to. He can also get admission in Polytechnic or ITI with preference. There are more than 350 schools in Maharashtra with facilities for 42,000 students.

Limited Skill Courses:

All the above schemes impart training to prepare manpower for organised sector in the industrial and economic activities. Organised sector normally comprise large and medium scale industries. Small Scale Industries constitute an important part of the industrial activity. Since the perks and salary packet in Small Scale Industries is not much attractive, persons who are formally trained are not also attracted in this field. Untrained and illiterates mostly find place in employment market of the Small Scale Units. However, it is necessary that some formal training is provided for this sector. With this objective in

mind, Board of Vocational Examinations framed more than 80 courses for out of school students who have education ranging from Std. IV to Std.V. There are various courses in engineering, chemical, food-craft, civil, architecture, garment, mining, navigation etc. This training is given mainly through the private institutes and there are more than 1,500 institutes with infrastructural facilities for 70,000 students.

The Government of India, ten years ago, took a stock of situation in the then skill market and observed that since technology is changing, it is necessary that the workers in the industry should also be given additional input by way of skill and knowledge. With this view in mind, an in-service training scheme known as Advance Vocational Training Programme which is launched in collaboration with the UNDP/ILO, Government of India and State Government. The scheme provides infrastructural facilities for in-service workers of the industries to upgrade update and advance their knowledge both in cognate and psychomotor domain. In Maharashtra State, advance vocational training scheme is introduced at 8 places namely Pune, Kolhapur, Amaravati, Nagpur, Nasik, Aurangabad, Nanded and Ambernath. The facility is made available in various areas such as MTM (Mechanical), MTM (Electrical), Automobile Mechanic, Air-conditioning and Refrigeration, Process Control Instrumentation, Advanced Welding, Reading of I.S.& Engg. Drawing, Plastic Mould Making, Metrology & Inspection, Tool and Die Making, Hydraulic and Pneumatic Controls,

etc. The facility exists for 2 or 3 areas at one place with only exception at Pune where facility is available for all the areas. The curriculum of this scheme is jointly prepared by the Department & Industries including duration and methodology of training. The training duration varies from 2 weeks to 12 weeks depending on the nature of skill. More than 6000 workers have been trained in this scheme during the last 10 years. The centre at ITI Pune has received foreign assistance in terms of advanced equipment worth more than \$ 50,000. Financial assistance for advanced equipment is expected from World Bank and the training scheme is poised for a good start in the days to come. Because of the innovations and improved methods of manufacturing and servicing, it is necessary that the existing workers are given additional advance input of training module to keep them at part with the industrial development.

The Manpower requirement in various sectors in Maharashtra State is definitely growing high in the years to come. The dispersal policy of the Government contemplates the industrial growth in the mofussil and backward areas also. So also agricultural workers are being converted into industrial workers because of the limitations of availability of land and lack of irrigation facilities. The New Education Policy and the growth rate shows a definite trend of increase in the industrial and vocational education facilities. The Bombay High project and its downstream industries also give boost for the industrial

development in petrochemicals and allied industrial areas. This is definitely a challenge before the Maharashtra State to prepare adequate manpower for all types of industries in 10 years to come. The expansion is expected in the following ways:-

Industrial Training Institutes:

At present 25,000 students are made available every year to enter in the world of work. Taking into consideration the existing growth rate of the industry which is around 6% this figure falls short and there is necessity for more industrial training institutes in the State. The Dandekar Committee which worked out on the backlog in various fields have also shown that there is still backlog of 4439 seats in the ITIs. The backlog is predominantly in Greater Bombay, Ahmednagar, Jalgaon, Solapur, Aurangabad, Parbhani, Beed, Nanded, Buldhana, Yeotmal, Chandrapur districts. Steps have been taken to remove this backlog in the last two years. However, the backlog still continues in Greater Bombay, Sindhudurg, Ahmednagar and Solapur districts. It will be observed that all these districts have potential growth in the industrial sector, and therefore, it is necessary that institutes in Greater Bombay, one in Sindhudurg, one in Ahmednagar and one in Solapur district are introduced to make the backlog good.

In addition to these new institutes, it is necessary that the existing institutes where appropriate facilities in terms of building,

equipment and trained staff is not available, should be consolidated first. There are more than 60 institutes who have no building of their own. There are more than 80 institutes where hostel facilities are inadequate. There is no a single institute where staff quarters are constructed atleast for essential staff and many institutes have no playgrounds even. Eventhough Government of India has provided in the norms staff quarters for 50% of the staff, hostel facilities for 50% students and adequate playground, the facility is not available in our State. It becomes imperative that in next 5 years, a programme should be taken to build up necessary facilities as soon as possible. In addition to that the women candidates constitute very small number in the existing training programme. Eventhough there are 6 institutes for women candidates, there is necessity of more institutes especially for women candidates. It is therefore proposed that each district should have atleast one institute especially for women candidates and the trades which are suitable for women candidates should be started therein.

Vocational Education at +2 Stage:

The New Education Policy contemplates full competency based vocational courses at +2 level. Maharashtra also has followed the mainstream of the various recommendations and Plan of Action contemplated in the New Education Policy. Accordingly, to begin with 20 vocational subjects have been identified to be introduced from the year 1988-89. These full competency courses are prepared

in line with the minimum competency based curriculum prepared by NCERT. The National Policy contemplates that 10% of the student population at +2 level should be covered under vocational education programme upto 1990, and 25% upto 1995.

The Maharashtra Government is poised for this challenge and has prepared occupational survey work in the State. The survey will identify useful courses in the State which will provide employment to the students coming out from the vocational education programme. It is therefore necessary that this programme is started in the right spirit and words and necessary facilities are made available to the vocational students.

In addition to conducting vocational surveys, it is necessary that the vocational subjects are prepared as per the requirements come up and tested in the society. A State Institute of Vocational Education is also contemplated to carry out all functions of research and try out the evolutions etc.

Training of Teachers forms an important aspect of the vocational education. It is therefore necessary that necessary training arrangements for teachers are made in the State. A separate Teachers Training Institute should also be considered for this purpose. Learning materials also constitute important aspect in implementation of the vocational education programme. Adequate learning materials, text-books, reference books, audio-visual aids, etc. are necessary for students. This should be made

available from the initial stage. Modern audio-visual aids such as cassetts, video tapes, should be used and assistance of TV network should also be taken for dissimination of skills and knowledge.

Entrepreneurship Development Programme should also be introduced in vocational curriculum so that students are motivated to start their own enterprise instead of running after wage employment. For getting right type of motivation to the students, recruitment rules should also be changed in the organised sector so that the vocational students find place for employment.

Government is a large employer and hence, it is necessary that Government departments should initiate to modify the recruitment rules and to include the education at +2 level as one of the criteria for entry into the services. There should be bridge courses from bifocal to terminal courses as well as from terminal to higher education. The students should not be blocked careerwise and he should also get entry to higher education whenever he so desires. To achieve this, number of bridge courses should be introduced to make the vocational education more useful and effective.

Vocational Education at Pre-SSC Stage:

At pre-SSC stage, the vocational education at present is in isolation. The vocational education should be properly linked and systematically upgraded from Std. IX, X, XI and XII so

that alongwith the academic subjects, the students also complete minimum competencies in the vocational skills. It is important that the steps are taken to vocationalise the complete education rather than starting vocational education in isolation. The New Education Policy contemplates vocational education at VIII+ Std. Though Maharashtra State has taken initiative in this case, it is not yet accepted. Efforts should be made in this direction to consolidate the vocational education from Std. VIII+ in such a way that students learn skills at a tender age and imbibe the practice on soil with their hand from the early childhood. This will create awareness and likings in the students to go in for school education even in the adult age. It is therefore necessary that the education at middle school level is properly channelised by introducing vocational education of appropriate level in the school system.

Advanced Vocational Training: System:

At present, the advanced vocational training system is conducted in the existing ITIs. This scheme is bound to get importance because of the fast changing technology. It is therefore necessary that adequate accommodation is provided for this scheme including adequate equipment, and training infrastructure. Building component is being proposed at AVTS Pune. However, building components is also required at Ambarnath, Aurangabad and Nagpur to meet the demand of those areas. It is therefore necessary that adequate

infrastructure is made available for expansion of this scheme at these places.

As regards courses under Board of Vocational Examinations, these courses are running quite a long time. The Board is recently constituted and it is necessary that the courses are verified and updated to the modern requirements. These courses are very useful for small scale industries and should be properly streamlined. These courses ranges from 6 months to 2 years depending on the need and many more courses depending on the survey of the districts should be framed to get the semi-skilled manpower at lower level. The courses should be framed on the cafeteria basis and various Small Industries Associations should be involved in this process. Moreover, at present there is no financial assistance for these courses and hence they are mostly running on the basis of tuition fees they get from the students. It will be **better** if Government gives assistance to these courses to some extent as per even present formula of reimbursing salary of the teachers to the extent of 50%. It will give some relief to the private organisation to conduct these courses effectively. As far as possible, these courses should be attached to existing institutions to maintain an educational atmosphere and discipline. This way, the infrastructure can also be concentrated and enriched to give better training to the students.

TECHNICAL INSTITUTIONS FOR WOMEN

CHAPTER 13TECHNICAL INSTITUTIONS FOR WOMEN

The New Education Policy for technical education lays emphasis for the need for more technical institutions for women. At present Maharashtra State there are a total of 10 institutes with an intake capacity of 1280, catering to the needs and aspirations of women. These institutes run a variety of courses right from fashion designing, interior decoration, correspondence courses to food craft.

The Committee was of the opinion that merely starting new Engineering colleges or polytechnics exclusively for women is likely to meet with difficulties for obtaining the adequate response in respect of admissions. There is also the financial constraints for opening such new institutions. The Committee therefore, feels that at least one residential type of girls polytechnic in the State may be considered by the government to be located at a suitable place. The Committee was also of the opinion that instead of opening new institutions for women, the government should consider opening of exclusive women's wings in the existing institutions, depending upon the needs of the area. This would serve the requisite purpose and also put less burden on the State's exchequer.

MINORITY INSTITUTES

CHAPTER 14MINORITY INSTITUTES

The Prime Minister in his 15 Point directive about welfare minorities has specifically mentioned that the acquisition of technical skills by those minorities who are lagging behind would also help in national development. He therefore, desired that arrangements should be made to set up ITIs. and Polytechnics by Government or private agencies in predominantly minority areas to encourage admission in such institutions of adequate number of persons belonging to minority communities.

The Committee having taken an overall review of the existing institutions in predominantly minority areas has observed that there are near about 17 institutions run by minorities with an intake capacity of 2895 seats. The Committee is therefore, of the opinion that there is still scope for minority technical institutions in the Marathwada and Nagpur University areas.

COMPUTER INSTITUTES FOR POSTGRADUATE DIPLOMA COURSES

CHAPTER 15COMPUTER INSTITUTES FOR POST-GRADUATE DIPLOMA COURSES

The Government of Maharashtra has in the recent past, keeping in view the growing needs for education in Computer Technology sanctioned 36 Computer Institutes for running Postgraduate diploma courses in the State. The break up, areawise, of these institutes having a total intake capacity of 3340 seats is as under:

<u>REGION/DISTRICT</u>	<u>NO. OF INSTITUTES</u>	<u>NO. OF SEATS</u>
Bombay	21	2,500
Pune	6	420
Amravati	2	120
Thane	2	120
Aurangabad	1	60
Nasik	1	60
Sindhudurg	1	60
<hr/>		
Total	36	3,340

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The Committee feels that with the emphasis laid on Computer education which is the "in" thing for advent into the 21 century. The Government may consider sanctioning atleast 1 Computer Institute for Postgraduate diploma courses in each of the remaining districts with a minimum intake capacity of 60 after prior

satisfaction that such a institute fulfils the basic norms for infrastructural facilities as prescribed by the State Government. The Committee also feels that it may consider granting a maximum of 5 Computer Institutes of 60 intake at each of the revenue divisional head quarters (except Bombay) where the demand is likely to be more.

RECOMMENDATIONS

CHAPTER 16RECOMMENDATIONS**PART (I): Engg College Programmes:**

a. Administrative Aspects:

For the success of a technical educational institution, it is very essential that the faculty in the institution is involved in all the administrative activities of the institution. At present the state has got a centralised administrative system with a directorate and the services of the faculty members are transferable from one institution to the other. Further the state practises the policy of transferring the teachers periodically. Mention has already been made about the centralized purchase system as well as the construction activity. The faculty selection and recruitment is carried out centrally through the PSC. This administrative set-up suffers from a serious drawback in that the faculty is not involved in planning and administration of the institution. It is very essential that the colleges should be given administrative autonomy in a phased-out manner. The administrative autonomy should be on lines similar to that prevailing in IITs or RECs. This implies that the college would be administered by a governing board or management council with due representations to The State Government, industry and faculty.

The governing Board could have sub-committees like Finance Committee, Staff Selection Committee, Store Purchase Committee, Building Committee, Executive Committee and Academic Committee. Each of these Committees will have specific representation of the staff and would have final authority in taking decisions as regards selection of the staff, purchase of the equipment, planning and execution of the construction programmes, academic activities, etc. A suitable funding pattern on lines similar to that in IITs or RECs will have to be envisaged and once the Finance Committee of the college prepares the revenue budget, taking into account the needs of the institution, the funds required should be made available by the State Government in suitable instalments. This set-up is highly desirable since it will mean involvement of the staff in planning of the institution and squarely putting the responsibility upon them. Further this will give the necessary flexibility to the head of the institution as well as the faculty as regards the utility of funds.

For the success of the autonomous institutions, it is very essential that the faculty should have the necessary exposure. Discussion with the faculty members revealed that this policy will have to be implanted first in their minds and the faculty will have to be nurtured so that they can shoulder the necessary responsibilities. Hence, it

is recommended that administrative autonomy should be given initially on a selective basis.

b. Academic Aspect:

All these colleges in the state enjoy the affiliatory status. For all the under-graduate programmes they are affiliated to a university located in the region. Thus their academic programmes, curriculum, schemes of examinations, syllabi, etc. are decided by the University bodies like Board, of Studies, Faculty of Engineering and Technology, Academic Council, Executive Council, etc. This has created a basic problem of delay in planning of a programme and its execution. Further through other university bodies the technical institutions get clubbed up with science, commerce and arts institutions through certain common ordinances. This curtails a very desirable freedom for introduction of flexibility as regards the evaluation of the students. Further since each university has got a large number of engineering students today, the students get examined by examiners who have not taught them which create serious problems particularly in technical education. Thus one can say that the university scheme at present atleast as regards technical education is outdated and it is essential that a new system is substituted which offers the necessary flexibility in introduction of modification and changes

expeditiously. Both these aspects are very essential taking into account the dynamic nature of technology and the obsolescence rate of technology of today. The committee recommends that academic autonomy should be awarded to the institutions also in a phased out manner. To start with this autonomy offered should be within the framework suggested by UGC which envisages the establishment of boards of studies and the faculty in the college which takes all the decisions as regards institution of programme, scheme of examination, curriculum and syllabi. Further the college itself will evaluate the students and the degree will be awarded by the university on the basis of the recommendations of the college.

This will enable the faculty to get involved deeply in the evaluation of its own students and alongwith the responsibilities that they have to shoulder they will find it very easy to introduce suitable modifications depending upon the needs of the industry and the desire of the students. Further suitable evaluation system could be planned and executed by the faculty which will go a long way in improving the quality of the education imparted. At present the university system does not permit this flexibility but with autonomy, the colleges could even give credit for extra-curricular activities, innovative nature of the students, development activities undertaken

by the students and encourage these very qualities which are vital for the manning of the industry. The committee recommends that to start with few selected institutions could be identified for academic autonomy within the UGGC/AICTE framework say one or two colleges in each University area and about 10 polytechnics in the state.

c. Faculty:

As mentioned earlier, the faculty situation in all the colleges is to say the least alarming. The main parameters responsible for the situation are (1) salary structure of the engineering teachers (2) lack of specific faculty development programmes (3) policies of transfer of teachers from one institution to the other (4) low status offered to the teachers as regards planning of the institution.

The Committee recommends the following:

Since the salary structure is decided in a centralized manner and it is very difficult for the state to offer a salary which is significantly different than that offered elsewhere in the country it is essential to think of offering suitable incentives to the teachers. The incentives could be sponsoring of teachers to national institutions inside the country or even to well known institutions abroad for exposure and it is essential to permit a teacher to avail so that he can either join the industry or a suitable institution for adequate exposure to the state of

art in his area of specialisation. The other incentives that could be thought of is to liberally depute the teachers for the national conferences as well as international conferences in his area is specialisation as and when he presents a technical paper.

Still other incentives could be thought of in the way of providing suitable accommodation, providing suitable educational opportunities for his children and providing medical facilities for him and his family. One more incentive which is practised in many of the well-known institutions is to provide a teacher with allowance for purchase of books or for subscription to journals in his area of specialisation. At present it is noticed that the faculty strength in the institution is decided by a norm either by a work load norm or by the staff-student ratio. Further the faculty is distributed in the three categories: Professor, Assistant Professor and Lecturer and their distribution is fixed by a norm 1:2:4. This has got a demoralising effect since many a times the faculty member is not likely to get a promotion unless his senior colleague retires or changes position or migrates. It is very essential for the growth of a health institution that this distribution should be flexible and any time when a junior staff member acquires the necessary proficiency, it should be possible for him to get the promotion even if there are no posts vacant. Hence the committee strongly recommends that the faculty strength should be calculated on the basis of staff to student ratio but the distribution should be more flexible.

In summary the Committee makes the following recommendations:

1. No. of available of seats in Bombay Region is considerably less in relation to the average for the state. The existing programme and demand of this region force the eligible students to go out of the region as needbased facilities are not available. It is therefore recommended that increasing the intake of aided institutes of the region, starting of new Govt. engineering college or encouraging industrial house to open new engineering college with suitable needbase courses like Chemical engg, Computer technology, Nuclear engg, Petrochemical & fertilizer, Pollution control, Electronics, Marine, Textile engg and food processing.
2. The analysis shows that the number of seats available in aided colleges compared with the number of students qualifying for admission is very less in Nagpur University area. Hence the committee recommends that one government college should be started in Nagpur University area. The programmes could be Mining Engineering, Metallurgical Engineering, Electronics, Architecture, Electrical Engineering and Mechanical Engineering and Sugar technology.
3. When there is a large student population in any institution, it is not possible to manage the institution effectively and as such the committee recommends that, while allotting the number of seats to any institution, the criteria that the total strength of the college does not exceed 1200 should be kept in mind.

4. Analysing the position of the various government institutions at present it is found that certain working conditions e.g. sanction of leave, issue of pay-slip, transfers, etc. are not suitable to promote the excellence. Hence, it is recommended that in a phased out manner, administrative autonomy be conferred on all the governmental institutions. To start with, college of Engg Pune, the oldest institutions awarded the administrative autonomy.
5. Considering the fact that all the government institutions at present are affiliated to a university and further that these institutions are more than 25 years old, while the new institutions which have started very recently have also got affiliated to the same university, it is causing a lot of problems to the university taking into account the growth in the two institutions. Hence, it is recommended that all the government and aided institutions should be given academic autonomy. Further, in this matter the UGC has already formulated guidelines for autonomous colleges more than 25 years ago, the same may be implemented in a phased manner.
6. It is found that at present there are number of faculty members who were appointed in engineering colleges but are working in polytechnics. In the opinion of the committee, the requirement of teaching in these two institutions are

diverse. Hence, administratively, the polytechnics and the colleges should be made separate.

7. At present AICTE has stipulated entrance qualification for teachers to both colleges and polytechnics. For the college, if a teacher does not possess M.E. or M.Tech degree, he is deputed under Q.I.P. to suitable institute. It is essential that in case of polytechnic, if a teacher does not possess the minimum prescribed industrial experience of 2 years, he should also be deputed to the industry under similar line of Q.I.P. Education facilities for M.E or M.Tech may be kept open by research supported by encouraging incentives.
8. Taking into account the growth of technical education in Maharashtra it is absolutely essential to strengthen the Directorate of Technical Education and Board of Technical Education. The committee recommends that there should be regional offices at the Regional Head Quarters for both the offices. Whereas, the technical institutions have shown a phenomenal increase since 1983-84, the Board's offices have inadequate staff support. The strengthening of the Board's offices is very essential.

9. It is noted that practically all the institutions, both aided and non-aided have got a number of faculty positions vacant since it is very difficult to attract good people for teaching. Hence it is essential to offer proper incentives and also to modify the recruitment procedures. It is recommended that government should institute a scheme of campus interview for recruitment of teachers which would enable them to identify good students when they are in the final year of their programme. It should be possible to give them incentives to join the post-graduate programmes as well as offer them suitable incentives after they joining teaching. The study group may be appointed to make recommendation in this connection. It should be possible for teacher to plan his career profile.
10. In order to generate the devotion to teaching, it is essential also to put certain restrictions on the faculty to take up part-time appointments or to participate in business ventures or to undertake individual consultancy work. The rules in this matter at present are not adequate to ensure this. Hence the government may think of introducing appropriate legislation in this matter.
11. Since it is very difficult to attract qualified teachers with M.Tech. qualification which is minimum it is essential to provide part-time M.Tech. courses or vocational M.Tech.

courses. The government should ensure that such programmes are run in some of the selected government institutions and also private institutions.

12. Since all the measures suggested above will not improve the faculty position immediately, it is essential that the institutions are asked to take advantage of the computer aided learning packages which are available. Further the national institutions like regional engineering colleges, TTTI etc. may be requested to generate this material for the benefit of the other students. In case special funding is required for them, provision for the same may be made. It is essential to identify certain minimum programmes in this direction and pursue it vigorously. These computer programmes could be very convenient particularly for tutorial classes which, in most of the institutions, are not being held at present.
13. The committee also found that in many of the Government aided institutions valuable and costly equipments are used for a short duration causing unnecessary expenditure committee therefore feels the need to establish a common facility centre which will house the costly sophisticated equipments and the equipments which are used for minimum time. This will avoid duplication and ensure optimal use of the equipment. This facility could be utilised by the institutions around the facility centre. To start with two

facility centres one at Pune Engineering college level and the other at Nagpur Polytechnic level, should be started on a pilot basis.

14. It is already noticed that the job opportunities in the engineering profession are not adequate and the situation is not likely to improve further. Hence it is essential that the graduates coming out of the engineering institutions do not seek jobs but are encouraged for self employment. The structure of the present engineering institution is such that there is no exposure of the students to the self-employment problems and hence the institutions cannot orient the students for self-employment. The government should create awareness of entrepreneurship and create in each of the institutions a full-fledged training, placement and entrepreneurship development programme. This department should have the manpower to liaison with the industries department, financial and marketing institutions. For this purpose the EDP facilities available in the state should be utilised. There should be an industrial cell specifically to liaison with regional industries on technological places. In this direction the Government of India have introduced the concept of setting up S&T and Entrepreneurship parks (STEP). Institution in Maharashtra should be supported to implement this.
15. It is noticed that many of the newly started engineering

institutions are having a tendency to add to their undergraduate programme every year. This tendency has to be curbed. It is essential that the institution should stabilize first with the sanctioned programmes and sanctioned strength before expanding their programmes.

16. it is observed that many of the present institutions do not have hostel staff quarters, academic facilities as per AICTE norms. It is recommended that the institutions should bridge the gaps expeditiously.

The specific recommendations in respect of the various types of technical institutions is as follows:

I.A. ENGINEERING COLLEGES

The recommendations have been detailed as above from 1 to 16.

I.B. POST GRADUATE PROGRAMME:

Specialisation and diversification at undergraduate and Polytechnical programme should be avoid and this should be restricted to Postgraduate and Post Diploma levels. Introduction of specialisation and diversification should be need based.

It is essential to start atleast one postgraduate programme in every major department of existing, aided or Government

institution. On similar line a post diploma programme in selected aided or Government Polytechnic should be introduced.

Considering dynamic changes taking place in technology, it is essential to introduce centres of advance studies in emerging areas in selected institutions. Similarly in selected Polytechnics developmental centres in relevant areas should be instituted.

It is essential that there should be a close liaison between those centres and the user system. It could be even contemplated that user system should be allowed to sponsor partially or completely these centres.

It is essential to create Central Reserve funds to be suitably administered and any faculty submitting a relevant research proposals, should be funded through this central fund. It is essential that technological university, unitary in nature fully devoted to Post Graduate and research activity should be started. This should work as nucleus to promote the research activity in the colleges and polytechnics.

II. POLYTECHNIC PROGRAMME

A. Diploma Programme:

As regards areas in which the programmes should be instituted and the faculty problems, there is a close

link between the Colleges and Polytechnics. Hence most of the observations in Part IA above are equally valid for Diploma programme also.

However the growth of Polytechnics has followed a different pattern than that of colleges which is revealed in the table No. 3. Hence the committee recommends that new polytechnics could be started in Bombay, Amaravati and Nagpur university area mainly for Tribal education.

As regards the branches to be offered the guidelines given in part 1 are recommended.

B. Post Diploma Programmes:

Technicians are co-ordinating connection control cords in the organisation of industries, services and managements their roles has been highly appreciated at various levels.

The committee has observed that the programme of post Diploma is much neglected though it has wider scope and relevance.

Since there is considerable similarity between Post Graduate programme and post diploma programmes as regards aim and objectives the recommendations in part I.B are valid for post diploma programme.

III. A & B: PHARMACY PROGRAMME:

The Pharmacy programme at degree and diploma should respond the needs of the society and must be supported to meet its requirements.

IV.A. ARCHITECTURAL PROGRAMME:

Architectural programme will have deep impact on the society. The recommendations envisage the institutes of these programmes, with constructive modification so that they can dialogue with modern time and needs of the society. They must be strengthened by broad support for infrastructure, and manning.

V.A. OTHER COURSES:

Various other non-conventional as well as conventional courses are going to establish their own place in various programmes in the nearest future in technical education. Though at present there are no specific recommendations for other courses, they must get all possible support to make them able to render the service to the needs the society. On their merits, suitable recommendations can be proposed after receiving reports form constituted study group.

VI. VOCATIONAL AND TRAINING:

1. Two Industrial Training Institutes should be established in Greater Bombay. (1500)
2. One Industrial Training Institutes should be introduced in Sindhudurg District. (200)
3. Appropriate trades should be added in the existing Industrial Training Institutes at Ahmednagar and Solapur.
4. The existing Industrial Training Institutes should be consolidated and adequate infrastructure by way of building, hostel, staff quarters should be provided in all the ITIs established so far.
5. One Institute in each district should be established especially for women candidates with appropriate trades suitable for them.
6. Occupational surveys should be conducted in all the districts and appropriate full competency based vocational courses should be introduced as per need.

7. Bridge courses covering bifocal courses and full competency courses should be introduced wherever there is demand and skilled manpower is required by the economic activities.
8. Efforts should be made to cover 10% student population under Vocational Education by 1990 and 25% by 1995 at +2 stage.
9. Adequate infrastructure should be created in all the vocational high schools so that the students at +2 level get adequate skills to get employment - wage or self.
10. A State Institute of Vocational Education should be established for conducting research in vocational education in the State.
11. Teacher Training Institute should be established in the State for orientation of teachers on permanent basis for all the vocational education and certificate level courses.
12. A Cell for learning materials, audio-visual aids, etc. should be established so as to give boost for creation of appropriate learning materials for the students of vocational education.
13. EDP Module should be added as a part of the curriculum in the vocational education.

14. Necessary recruitment rules should be modified to accommodate the vocational students in the world of work - Government, semi-government and private.
15. Vocational Education should be introduced from VIII+ Std. so that students get manipulative skills at the lower age and they stick up to the vocational education during the entire school period.
16. Additional infrastructure should be created in the existing Advanced Vocational Training System and a separate building should be provided at Ambernath, Aurangabad and Nagpur alongwith the hostel facilities.
17. Board of Vocational Examinations should be strengthened to cope up with the requirements for conducting examinations for vocational students.
18. The Directorate of Vocational Education and Training and office of the District Vocational Education Officer should be properly strengthened to cope up with the requirement of 20% of the student population proposed to be diverted towards vocational education by 1995.
19. Vocational Courses should be properly streamlined and appropriate textbooks and learning materials should be prepared for these courses at appropriate level.

20. Textbooks should be made available for all the vocational courses at +2 level as well as in the ITIs.
21. Adequate provision for purchase of modern machines and replacement of old machines in the ITIs should be made so that the students are conversed with the modern equipment available in the industry.
22. Separate monitoring and evaluation cell should be created at the State level to monitor the programme of vocational education in its right spirit and word.
23. The courses under the Board of Vocational Examinations should be properly streamlined and rearranged depending on the existing needs. These courses should be attached to the existing institutions and financial assistance to the extent of 50% of staff salary should be provided to those institutes who would like to conduct these courses effectively.

SYNOPSIS OF THE REPORT AND DECISIONS REQUIRED

CHAPTER 17SYNOPSIS OF REPORT AND DECISIONS REQUIREDI.A. ENGINEERING COLLEGES:

The Committee observed that there are already 76 Engineering Colleges in the State catering to an intake capacity of 14250 students with about 33 disciplines. The Committee felt that there was need for a Government Engineering College one each in Nagpur and Bombay University region. The government may consider creation of seats for increasing the intake capacity of the existing colleges depending upon the needs of specific areas. The Committee also felt the need for reduction in the number of diversified courses to a minimum of 10 and such diversified courses may be introduced at the post-diploma and Post-Degree level. This is because too many diversified courses at Diploma and undergraduate level is likely to create problem of suitable employment to the students passing out. There was a felt need for encouraging continuing and distance learning education at degree level. See table No.2.

POST GRADUATE PROGRAMME:

I.B. The recommendations envisage the institutions of new programmes, modifications to the existing programmes and support required both as regards manning as well as infrastructures so that the institution can address themselves to the technological needs of the society and coming future.

II.A. POLYTECHNICS:

Government has already taken a conscious to have at least one government Polytechnic in each District. The Committee felt that there was no need for new Polytechnics except for women, handicapped and under privileged sections of society. The Committee felt that in view of the fact that there are a total of 136 Polytechnics with total intake capacity of 24550, government may consider creation of additional seats in the existing polytechnics in specified courses depending upon the needs of the tribal and backward areas. The Committee also felt the need for reduction in the number of diversified courses to a minimum say 10. Diversified courses may be introduced in Polytechnic at post diploma and post graduate level. Continuing and distance learning education needs to be encouraged at Diploma level (See Table No.3).

II.B. POST DIPLOMA PROGRAMMES:

The recommendation in connection of these programmes will have great impact because these programme will get appreciating response from the society and industry. The technological needs can be positively fulfilled effectively through these programmes more in short duration of implementation.

The potential of developed institutes under these programmes has responsible position to undertake new programmes and modification, provided they are supported by proper manning and essential infrastructure.

III.A PHARMACY COLLEGES:

Awareness of medicines has brought up this emerging branch of pharmacy. The pharmacy programme has been developed as undergraduate programme and post graduate programme. The most of the observations in part I.A above are equally vide for pharmacy programme also.

However Table No.5 reveals that there is scope for institutions of the programme in all university regions. Specifically Konkan in Bombay University area, Vidarbha in Nagpur University area and in Marathwada University region.

III.B PHARMACY DIPLOMA INSTITUTES:

Pharmacy Diploma level programme is important from the point of service to the society and self employment. It may be encouraged making part IIA valid for this programme.

Table No.6 indicates further possible scope in different regions.

The Committee is of opinion that even though the pharmacy council of India had placed certain constraints on the

grant of new Diploma institutes, there is scope for expansion of pharmacy programme.

IV.A. ARCHITECTURE DEGREE/DIPLOMA INSTITUTES:

Diploma and degree in Architecture are at par and also postgraduate programme can be introduced hence part I A & B recommendations are valid for this programme.

Table No.4 however points out further scope of expansion.

V. OTHER COURSES:

Need of other courses arises when regular education programmes can not meet and serve certain definite needs. Society adopts phases of changes and these changes create potential to develop programmes of various other courses.

The modern time, many new programmes are finding their places, and they have to be considered under categories of other courses.

However the scope of present other courses and new emerging courses may be studied on their needbase before making any proposal.

A special study group may be constituted to develop the perspective of the emerging scope of the programme.

These new areas of programmes can be developed as undergraduate programme, diploma programme, vocational programmes etc. and accordingly recommendations of Part II or of vocation education and training programme can be valid for these programmes.

VOCATIONAL EDUCATION & TRAINING

The Industrial Training Institute form be backbone of manpower requirement of industry at the skill level. As it stands to day there are 180 institutes with training facilities for 38677 candidates.

There is need of additional training facilities in Bombay and Pune University Regions. However more need is for consolidation, enriching training facilities as per modern needs, renovation of equipment which have become absolute.

This is also need for creating training facilities for women in advanced trades.

Alternation is also required for retraining and advanced training of existing workers to meet the challenging need of skills because of change of technology.

Vocational Education also needs prime attention in the line with new education policy of Government of India. More and more need-based vocational courses will have to be identified and introduced at +2 level so as to make school education effective and useful.

Limited skill courses will also to be developed to supply steady trained manpower to small scale units. Alteration will also have to be paid to upgrade the potential of teachers and learning materials.

ANNEXURE I

COURSES

CHAPTER 18ANNEXURESAPPENDIX 'I'

Courses based on:

1. Industries -
 - a. Agrobased
 - b. Forest based
 - c. Mineral based
 - d. Chemical Gas based
 - e. Engineering based
2. Metallurgical Industries -
 - a. Steel
 - b. Rolling
 - c. Founding
3. Electronic + Telecommunication Industry & Computer.
4. Commercial Establishment
5. Cottage Industry
6. Construction Engineering (including Architecture).
7. Environmental Engineering (Ecology Water Wir)
8. Transport Industry (Automobiles)

9. Energy Generation -
 - a. Conventional
 - b. Non-conventional

10. Coastal based Industry -
 - a. Trawlers
 - b. Oceanography - underwater mining

11. Hotel Industry & Tourism

12. Leather Industry

13. Textile (Manmade & Natural)
Engineering

LIST OF COURSES PROPOSED BY THE NCERT AND PROPOSED TO
BE INTRODUCED IN THE STATE DURING 1988-89 (TERMINAL).

TECHNICAL GROUP:

1. Electronics Tech.
2. Maintenance & Repairs of Domestic Appliances
3. Building Maintenance
4. Mechanical Technology
5. Auto Engg. Technician

COMMERCE GROUP:

6. Purchasing & Store keeping
7. Marketing & Salesmanship
8. Accountancy & Auditing

AGRICULTURE GROUP:

9. Horticulture
10. Crop Science

PARAMEDICAL GROUP:

11. X-Ray Technician
12. Creche & Pre-School Management
13. Ophthalmic Technician
14. Medical Laboratory Technician

FISHERIES:

15. Fresh Water Fish Culture
16. Inland Fisheries

HOTEL & CATERING

17. Institutional House Keeping
18. Bakery & Confectionery
19. Cookery
20. Travel and Tourism

ANNEXURE II

PROGRAMMES

ANNEXURE II

Statement showing the position of existing Technical Institute in Maharashtra State including Non-Technical Institute s

Sr. No.	Name of University	Districts	Population (in lakhs)	No. of Institutions		Intake Capacity		Demand	Students available				
				5A	5B	6	7						
1.	BOMBAY	05	154.35	PVT.	58	11415	26453	-	1985	03,13,998			
2.	PUNE	05	145.32	AID	13	1655	5247	-	1986	03,67,580			
3.	SHIVAJI	04	089.25	GOVT.	05	1180	4852	-	1987	02,90,562			
				<u>TOTAL</u>	76	14250	36552						
<u>POLYTECHNIC. (T. - Technical N.T.- Non Technical)</u>													
4.	MARATHWADA	07	097.48	PVT	T. 98 N.T. 90	T. 13900 N.T. 4665	T 28448 N.T. 5735	-	S.S.C. X 1985	5,03,297			
5.	AMRAVATI	04	069.37	AID	11	24	1840	1659	6235	4194	-	1986	7,28,488
6.	NAGPUR	05	074.09	GOVT.	27	05	3810	145	10201	316	-	1987	8,57,916
				<u>TOTAL</u>	136	119	24550	6469	44884	9645			
<u>MAHARASHTRA STATE</u>													
		30	629.86	PVT.	246	34980		60036					
				AID	48	5146		15676					
				GOVT.	37	5135		15369					
				<u>TOTAL</u>	331	45369		91081					

TABLE No.1

POPULATION INPUT RATIO = $\frac{\text{POPULATION}}{\text{No. of Students}}$

Category	Maharashtra	Bombay	Pune	Shivaji	Marathwada	Amaravati	Nagpur
X STD	70	78	79	77	82	68	54
XII STD	210	200	234	262	191	248	172
Polytechnic	2566	3293	2128	2177	2945	2658	2453
Engg. College	4420	6113	3450	4075	4352	5195	3940

TABLE No.2

ENGINEERING COLLEGE: Ratio = $\frac{\text{No. of seats in Engg. College}}{\text{No. of students at XII}}$

Sr. No.	Region	No. of students XII		Growth	Provisional Ratio	Estimated Total seats 1992	Existing seats 1987	Estimated additional seat (May) 1992	Recommended additional seats upto 1992
		1987	1992 (provisional)						
I.	Maharashtra (State as whole)	(Lakh) 2.91	(Lakh) 3.6	Fast	1:20 (Present)	18000	14250	8750	2400
II.	<u>Details work out</u>								
a.	Bombay University	0.78	1.00	Fast	1:20	5000	2525	2475	1500 a. Bombay + New Bombay 600 b. Thane 300 c. Raigad 240 d. Ratnagiri 240 e. Sindhudurg 180
b.	Pune University	0.63	0.80	Fast	1:20	4000	4105	-	Tribal Area Nasik/Dhule 300
c.	Shivaji University	0.35	0.40	Medium	1:25	1600	2190	-	-
d.	Marathwada Univ.	0.44	0.50	Medium	1:25	1200	2250	-	-
e.	Amravati Univ.	0.28	0.35	Medium	1:25	1400	1310	-	Tribal area 180
f.	Nagpur University	0.43	0.50	Medium	1:25	2000	1880	120	Tribal Area 240

TABLE No.3

POLYTECHNICS: Ratio = $\frac{\text{No. of seats in Polytechnic}}{\text{No. of students at X}}$

Sr. No.	Region	No. of students X		Growth	Ratio (Prov).	Estimated total seats 1992	Existing seats 1988	Estimated additional seats upto 92	Additional seats recommended upto 1992
		1987	1992 (provisional)						
I.	Maharashtra	(Lakh) 8.68	(Lakh) 10.00	Fast	1:35	28500	24550	3950	2500
II.	Details work out (University Region)								
a.	Bombay	1.98	2.20	Fast	1:35	6286	4680	1606	1500
b.	Pune	1.84	2.00	Fast	1:35	5750	6830	-	-
c.	Shivaji	1.16	1.30	Medium	1:40	3250	4100	-	-
d.	Marathwada	1.19	1.33	Medium	1:40	3325	3310	-	-
e.	Amravati	1.01	1.10	Medium	1:40	2750	2610	140	180 (Tribal)
f.	Nagpur	1.37	1.50	Medium	1:40	3750	3020	0730	300 (Tribal)

TABLE No. 4

ARCHITECTURE FACULTY (Degree or Diploma) Ratio = $\frac{\text{No. of Seats}}{\text{No. of students at XII}}$

Sr. No.	Region	No. of students XII		Growth	Ratio (Provisional)	Estimated total seats	Existing seat	Additional estimated seat	Recommendation additional seats
		1987	1992 (Prov.)						
I.	Maharashtra State	(Lakhs) 2.91	(Lakhs) 3.6	Fast	1:300	1200	580	620	600
II.	Details work out in University Region								
a.	Bombay	0.78	1.00	Very fast	1:200	500	190	310	240
b.	Pune	0.63	0.80	Fast	1:300	267	160	100	160
c.	Shivaji	0.35	0.40	Medium	1:400	100	70	30	30 to 60
d.	Marathwada	0.44	0.50	Medium	1:400	125	70	55	60
e.	Amravati	0.28	0.35	Medium	1:400	90	30	60	60
f.	Nagpur	0.43	0.50	Medium	1:400	125	45	80	60

TABLE No.5

PHARMACY (DEGREE) Ratio = $\frac{\text{No. of seats}}{\text{No. of students at XII}}$

Sr. No.	Region	No. of students XII		Growth	Ratio (Provisional)	Estimated total seats 1992	Existing seats 1987	Estimated Add. seat 1992	Recommended additional seats upto 1992
		Lakhs 1987	Lakhs 1992 (prov.)						
I	Maharashtra State	2.91	3.60	Fast	1:300	1200	600	600	600
II.	Details workout (University Region)								
a.	Bombay	0.78	1.00	Fast	1:300	333	210	123	120
b.	Pune	0.63	0.80	Fast	1:300	267	180	87	60
c.	Shjivaji	0.35	0.40	Medium	1:400	100	30	70	60
d.	Marathwada	0.44	0.50	Medium	1:400	125	30	95	60
e.	Amravati	0.28	0.35	Medium	1:400	90	60	30	60
f.	Nagpur	0.43	0.50	Medium	1:400	125	90	55	60

TABLE No.6

PHARMACY (DIPLOMA)

Ratio = $\frac{\text{No. of Seats}}{\text{No. of students at X}}$

Sr. No.	Region	No. of students (X)		Growth	Ratio (Provn)	Estimated seats 1992	Existing seats	Addl. Seats	Recommendation for addl. seats
		1987	1992 (Provn.)						
		Lakhs	Lakhs						
I.	Maharashtra	8.68	10.00	Fast	1:300	3330	2110	1225	600
II.	Details workout (University Region)								
a.	Bombay	1.98	2.20	Fast	1:300	734	280	454	420
b.	Pune	1.84	2.00	Fast	1:300	667	540	127	120
c.	Shivaji	1.16	1.30	Medium	1:400	325	300	25	30
d.	Marathwada	1.19	1.33	Medium	1:400	332	390	-	-
e.	Amravati	1.01	1.10	Medium	1:400	275	300	-	-
f.	Nagpur	1.37	1.50	Medium	1:400	375	270	105	120

ANNEXURE III

VOCATIONAL EDUCATION & TRAINING

TABLE No.7

INDUSTRIAL TRAINING INSTITUTE: Ratio = $\frac{\text{No. of seats in I.T.I.}}{\text{No. of students at X}}$

Sr. No.	Region	No. of students X		Growth	Ratio (Prov)	Estimated total seats 1992	Existing seats 1988	Estimated additional seats upto 92	Additional Seats recommended upto 1992
		1987	1992 (Prov)						
I.	Maharashtra	(Lakh) 8.68	(Lakh) 10.00	Medium	1:23	50,000	38675	11525	10000
II.	Details work out (University Region)								
a.	Bombay	1.98	2.20	Fast	1:15	14500	6222	8978	4000
b.	Pune	1.84	2.00	Fast	1:15	13300	7190	6710	2500
c.	Shivaji	1.16	1.30	Fast	1:15	8600	9705	-	500
d.	Marathwada	1.19	1.33	Medium	1:20	6600	5832	788	1000
e.	Amravati	1.01	1.10	Medium	1:20	5500	4286	1214	1000
f.	Nagpur	1.37	1.50	Medium	1:20	7000	3918	3582	1000

Statement showing the position of existing Technical Institute in Maharashtra State including Non-Technical Institutes
(University-wise)

Sr. No.	Name of University	Districts	Population (in lakhs)	No. of Institutions		Intake Capacity	Present strength	Demand	Students available				
				5A	5B				6	7	8	9	
1.	BOMBAY UNIVERSITY	BOMBAY	82.43	<u>ENGG. COLLEGE</u>						<u>H.S.C. XII</u>			
		THANE	35.52	PVT.	6	1665	5168	-	1985	0,87,757			
		RAIGAD	14.86	AID	7	860	2804	-	1986	0,95,145			
				GOVT.	-	-	-	-	1987	0,77,752			
		RATNAGIRI	13.80	TOTAL	17	2525	7972	-					
		SINDHUDURG	07.74	<u>POLYTECHNIC (T-Tech. N.T.-Non Tech)</u>									
					T.	N.T.	T.	N.T.	T.	N.T.			
				PVT.	17	09	3270	410	6097	236	-	1985	1,41,372
				AID	6	10	990	844	3669	2699	-	1986	1,79,262
				GOVT.	4	03	420	65	729	138	-	1987	1,98,854
		TOTAL	154.35	TOTAL	27	22	4680	1319	10498	3073	-		

TOTAL PRESENT STRENGTH:

PVT.	11501
AID	9172
GOVT.	<u>867</u>
GRANT TOTAL	<u>21540</u>
	=====

Statement showing the position of existing Technical Institute in Maharashtra State including Non-Technical Institute
(University wise)

Sr. No.	Name of University	Districts	Population	No. of Institutions		Intake capacity	Present strength	Demand	Students available				
				5A	5B								
1	2	3	4	5A	5B	6	7	8	9				
			(in lakhs)										
				<u>ENGG COLLEGE</u>					<u>H.S.C. XII</u>				
2.	PUNE UNIVERSITY	PUNE	41.64	PVT.	17	3495	7683	-	1985	0,68,319			
		NASIK	29.92	AID	3	160	460	-	1986	0,79,677			
		DHULE	20.50	GOVT.	1	450	2161	-	1987	0,62,788			
		AHMEDNAGAR	27.08	TOTAL	21	4105	10304	-					
		JALGAON	26.18	<u>POLYTECHNIC (T-Tech, N.T.-Non Tech)</u>						<u>S.S.C. X</u>			
					T.	N.T.	T.	N.T.	T.	N.T.			
				PVT.	23	20	5400	1055	7191	1195	-	1985	1,14,240
				AID	1	05	220	275	835	730	-	1986	1,60,113
				GOVT.	5	00	1210	00	2752	00	-	1987	1,84,094
		TOTAL	145.32	TOTAL	29	25	6830	1330	10778	1925	-		
	TOTAL PRESENT STRENGTH			PVT.					16096				
				AID					2025				
				GOVT.					4913				
				GRAND TOTAL						23007			
									=====				

Statement showing the position of existing Technical Institute in Maharashtra State including Non-Technical Institute

(University wise)

Sr. No.	Name of University	Districts	Population	No. of Institutions		Intake capacity	Present strength	Demand	Students available				
1	2	3	4	5A	5B	6	7	8	9				
			(in lakhs)										
				<u>ENGG COLLEGE</u>					<u>H.S.C. XII</u>				
3.	SHIVAJI UNIVERSITY	Kolhapur	26.64	PVT	09	1680	3865	-	1985	0,39,905			
		Sangli	18.31	AID	01	300	931	-	1986	0,46,299			
		Satara	20.89	GOVT.	02	210	824	-	1987	0,34,331			
		Solapur	25.91	TOTAL	12	2190	5620						
				<u>POLYTECHNIC (T-Tech, N.T.-Non-Tech)</u>					<u>S.S.C. X</u>				
					T.	NT	T.	NT	T	NT			
				PVT	19	05	3180	130	6813	136	-	1985	0,70,663
				AID	02	03	220	180	1017	319	-	1986	0,99,804
				GOVT.	03	01	560	60	1899	120	-	1987	1,16,341
		TOTAL	89.25	TOTAL	24	09	4100	370	9729	575	-		
TOTALPRESENT STRENGTH:				PVT					10814				
				AID					2267				
				GOVT					2843				
				GRAND TOTAL					15924				=====

Statement showing the position of existing Technical Institute in Maharashtra State including Non-Technical Institute
(University wise)

Sr. No.	Name of University	Districts	Population (in lakhs)	No. of Institutions		Intake capacity		Present strength	Demand	Students available			
				5A	5B	6	7						
4.	MARATHWADA UNIVERSITY	Aurangabad	15.88	ENGG. COLLEGE									
		Jalna	10.32	PVT	08	1770	2908	-	1985	0,32,409			
		Latur	12.94	AID	01	210	565	-	1986	0,40,034			
		Osmanabad	10.30	GOVT.	01	260	988	-	1987	0,44,023			
		Nanded	17.49	TOTAL		10	2240	4461					
		Parbhani	16.43	POLYTECHNIC (T. Tech. NT - Non Tech)									
		Beed	14.12	H.S.C. X									
				T.	NT	T	NT	T	NT				
				PVT	15	31	2670	1770	2751	1969	-	1985	0,57,163
				AID	-	04	-	240	-	296	-	1986	0,95,549
				GOVT	07	01	640	20	1938	58	-	1987	1,19,662
		TOTAL	97.48	TOTAL	22	36	3310	2030	4689	2323			
TOTAL PRESENT STRENGTH				PVT.			7628						
				AID			0861						
				GOVT.			2984						
				GRAND TOTAL				11473		=====			

Statement showing the position of existing Technical Institute in Maharashtra State including Non-Technical Institute

(University wise)

Sr. No.	Name of University	Districts	Population	No. of Institutions		Intake capacity	Present strength	Demand	Students available	
				5A	5B					
1	2	3	4			6	7	8	9	
			(in lakhs)							
				<u>ENGG COLLEGE</u>					<u>H.S.C. XII</u>	
5.	AMARAVATI UNIVERSITY	Amaravti	18.61	PVT	5	1050	2570	-	1985	0,33,631
		Akola	18.27	AID	-	-	-	-	1986	0,42,383
		Buldhana	15.09	GOVT	1	260	879	-	1987	0,28,369
		Yavatmal	17.37	TOTAL	8	1310	3449			
				<u>POLYTECHNIC (T-Tech., NT-Non Tech)</u>					<u>S.S.C. X</u>	
					T.	NT.	T.	NT.	T.	NT.
				PVT	10	12	1390	640	1850	840
				AID	1	01	120	-	355	65
				GOVT	4	-	600	60	2008	-
				TOTAL	15	13	2610	700	4213	905
			TOTAL	69.37						
				TOTAL PRESENT STRENGTH						
					PVT				5260	
					AID				420	
					GOVT				2887	
									<u>8567</u>	
					GRAND TOTAL				8567	=====

Statement showing the position of existing Technical Institute in Maharashtra State including Non-Technical Institute
(University wise)

Sr. No.	Name of University	Districts	Population	No. of Institutions		Intake capacity	Present strength	Demand	Students available		
				5A	5B						
1	2	3	4	5A	5B	6	7	8	9		
			(in lakhs)								
				<u>ENGG. COLLEGE</u>				<u>H.S.C. XII</u>			
6.	NAGPUR UNIVERSITY	Nagpur	25.89	PVT	9	1755	4259	-	1985	0,51,947	
		Wardha	09.27	AID	1	125	487	-	1986	0,64,042	
		Bhandra	18.38	GOVT	-	-	-	-	1987	0,43,299	
		Chandrapur	14.18	TOTAL	10	1880	4746				
		Gadchiroli	06.37	<u>POLYTECHNIC (T-Tech. NT-Non Tech)</u>				<u>S.S.C.</u>			
					T.	NT.	T.	NT.	T.	NT.	
				PVT	14	13	2490	660	3746	759	
				AID	1	01	150	60	359	85	
				GOVT.	4	-	380	-	875	-	
		TOTAL	74.09	TOTAL	19	14	3020	720	4980	844	
	TOTAL PRESENT STRENGTH			PVT			875				
				AID			931				
				GOVT			8764				
				GRAND TOTAL			10570				
							=====				

STUDENTS AVAIALBLE BOARDWISE

Board	S.S.C. No. of students			H.S.C. No. of students		
	1985	1986	1987	1985	1986	1987
Bombay	141372	179262	198854	087757	095148	077752
Pune	184903	259917	300435	108224	125976	97119
Aurangabad	057163	095549	119662	032409	040034	044023
Nagpur	119859	193760	238965	85578	106425	71664
State	503297	728488	8157916	0313998	0367580	0290526

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INDUSTRIAL TRAINING INSTITUTE

Sr. No.	Name of the University	Districts	Population	No. of Institutions			Intake Capacity			Present strength		
				Private	Govt.	Total	Private	Govt.	Total	Private	Govt.	Total
1.	Bombay Univ.	Gr. Bombay	8243405	12	4	16	788	1856	2644	833	1971	2804
2.	-do-	Thana	3351562	3	5	8	164	1804	1968	189	1557	1746
3.	-do-	Raigad	1486452	1	4	5	60	1216	1276	65	1112	1177
4.	-do-	Ratnagiri	1374655	4	2	6	220	840	1060	260	661	921
5.	-do-	Sindhudurg	774749	-	1	1	-	208	208	-	174	174
6.	Pune Univ.	Nasik	2991739	3	4	7	252	1860	2112	260	1536	1796
7.	-do-	Dhule	2050294	2	3	5	64	1460	1524	711	1406	2117
8.	-do-	Jalgaon	2618274	6	4	10	316	1264	1580	329	1141	1470
9.	-do-	Ahmednagar	2708309	11	4	15	743	1100	1848	759	837	1596
10.	-do-	Pune	4164470	8	7	15	384	2488	2872	384	2427	2811
11.	Shivaji Univ.	Satara	2038677	3	3	6	184	2028	2212	189	2186	2375
12.	-do-	Sangli	1831212	3	3	6	168	1192	1360	171	1243	1414
13.	-do-	Solapur	2591220	1	4	5	108	1160	1268	108	1191	1299
14.	-do-	Kolhapur	2463837	4	2	6	268	1608	1876	272	1594	1866

Sr. No.	Name of the University	Districts	Population	No. of Institutions			Intake Capacity			Present strength		
				Private	Govt.	Total	Private	Govt.	Total	Private	Govt.	Total
15.	Nagpur Univ.	Nagpur	2588811	3	5	8	120	1908	2028	126	1891	2017
16.	-do-	Wardh	926618	-	2	2	-	596	596	-	508	508
17.	-do-	Bhandara	1837577	-	3	3	-	944	944	-	1026	1026
18.	-do-	Chandrapur	1418306	1	3	4	32	924	956	34	932	966
19.	-do-	Gadchiroli	637336	-	3	3	-	388	388	-	381	381
20.	Amravati Univ.	Amravati	1861410	2	6	8	48	1660	1708	53	1701	1754
21.	-do-	Buldhana	1508777	-	2	2	-	740	-	-	774	774
22.	-do-	Akola	1826952	-	2	2	-	836	836	-	802	802
23.	-do-	Yavatmal	1737423	-	5	5	-	952	952	-	958	958
24.	Matathwada University	Aurangabad	1588031	4	3	7	124	1148	1272	129	950	1079
25.	-do-	Jalna	1032157	-	2	2	-	336	336	-	261	261
26.	-do-	Parbhani	1642610	-	3	3	-	848	848	-	828	828
27.	-do-	Beed	1412342	1	2	3	92	648	740	95	675	770
28.	-do-	Nanded	1749334	3	5	8	152	1224	1396	157	1298	1455
29.	-do-	Latur	1293530	1	4	5	16	1100	1116	17	1063	1080
30.	-do-	Osmanabad	1029702	2	2	4	92	348	440	95	357	452
				78	102	180	7032	34704	41736	5236	33441	38677

DIRECTORATE OF VOCATIONAL EDUCATION & TRAINING, MAHARASHTRA STATE, BOMBAY 400 001

NO. OF VOCATIONAL INSTITUTES AT +2 STAGE 1986-87

Sr. No.	Name of University	District	No. of Institutes				In take Capacity			
			Private	Aided	Govt.	Total	Private	Aided	Govt.	Total
1.	Bombay	Gr. Bombay	19	19	4	42	975	1025	182	2182
2.	-do-	Thane	6	4	2	12	350	150	51	551
3.	-do-	Raigad	2	7	1	10	75	225	28	328
4.	-do-	Ratnagiri	4	4	1	9	175	200	31	406
5.	-do-	Sindhudurg	3	5	1	9	175	225	30	330
6.	Pune	Nasik	18	10	2	30	700	421	127	1248
7.	-do-	Dhule	9	-	1	10	450	-	40	190
8.	-do-	Jagaon	8	-	4	12	375	-	67	442
9.	-do-	Ahmednagar	5	2	1	8	375	319	55	749
10.	-do-	Pune	17	12	1	30	700	436	101	1237
11.	Shivaji	Satara	9	2	2	13	350	80	59	489
12.	-do-	Sangli	6	2	-	8	175	50	-	225
13.	-do-	Solapur	4	6	1	11	150	324	46	520
14.	-do-	Kolhapur	6	10	1	17	225	742	87	1054

Sr. No.	Name of University	District	No. of Institute				Intake Capacity			
			Private	Aided	Govt.	Total	Private	Aided	Govt.	Total
15.	Nagpur	Nagpur	14	8	1	23	600	434	88	1122
16.	-do-	Wardha	2	7	2	11	75	254	39	368
17.	-do-	Bhandara	7	1	2	10	250	50	34	334
18.	-do-	Chandrapur	2	6	2	10	50	438	57	545
19.	-do-	Gadchiroli	2	1	1	4	75	25	08	108
20.	Amravati	Amravati	9	12	1	22	575	687	91	1353
21.	-do-	Akola	9	6	1	16	500	186	70	756
22.	-do-	Buldhana	8	2	1	11	325	50	41	416
23.	-do-	Yeotmal	5	6	1	12	175	288	45	508
24.	Aurangabad	Aurangabad	4	11	3	18	200	571	89	860
25.	-do-	Jalna	-	1	1	2	-	90	06	96
26.	-do-	Parbhani	4	3	4	11	175	85	26	286
27.	-do-	Beed	2	2	3	7	75	84	28	187
28.	-do-	Nanded	2	7	2	11	75	344	35	454
29.	-do-	Osmanabad	2	3	1	6	75	108	18	201
30.	-do-	Latur	5	4	1	10	250	211	45	506
GRAND TOTAL			183	163	49	395	8625	8102	1624	18351

DIRECTORATE OF VOCATIONAL EDUCATION & TRAINING, MAHARASHTRA STATE, BOMBAY 400 001.

Distribution of existing Technical Institutes in Maharashtra Technical High School

Sr. No.	Name of the University	District	Population	No. of Institutions				Intake capacity				Present strength
				Private	Aided	Govt.	Total	Private	Aided	Govt.	Total	
1.	Bombay	Gr. Bombay	8243405	3	16	5	24	180	1595	740	2515	3947
	-do-	Thane	3351562	9	4	5	18	530	455	585	1570	3646
	-do-	Raigad	1486452	3	-	4	7	180	-	590	770	1215
	-do-	Ratnagiri	1374655	4	-	3	7	240	-	440	680	1146
	-do-	Sindhudurg	774144	2	-	3	5	120	-	260	380	810
2.	Pune	Nasik	2991739	16	-	3	19	1085	-	590	1675	2737
	-do-	Dhule	2050294	10	-	4	14	680	-	860	1560	3209
	-do-	Jalgaon	2618274	11	2	5	18	1050	365	945	2360	5434
	-do-	Ahmednagar	2708309	19	2	2	23	1065	280	290	1635	2293
	-do-	Pune	4164470	26	7	3	36	1560	1205	410	3175	6291
3.	Shivaji Univ.	Satara	2038677	9	1	3	13	445	100	445	940	2634
	-do-	Sangli	1831212	10	9	1	20	525	1005	60	1590	4365
	-do-	Kolhapur	2563837	17	8	2	27	430	865	330	1625	5723
	-do-	Solapur	2591220	21	6	2	29	1085	700	295	2080	4169

Sr. No.	Name of University	District	Population	No. of Institutions				Intake Capacity				Present Strength
				Private	Aided	Govt.	Total	Private	Aided	Govt.	Total	
4.	Nagpur Univ.	Nagpur	2588811	2	1	6	9	120	50	650	820	1684
	-do-	Wardha	926618	-	-	4	4	-	-	415	415	1255
	-do-	Bhandara	1837577	-	-	4	4	-	-	410	410	1160
	-do-	Chandrapur	1418306	-	-	4	4	-	-	435	435	1227
	-do-	Gadchiroli	637336	-	-	1	1	-	-	80	80	126
5.	Amravati Univ.	Amravati	1861410	6	-	4	10	360	-	355	715	1128
	-do-	Buldhana	1508777	7	-	4	11	410	-	375	785	1537
	-do-	Akola	1826952	9	-	4	13	525	-	295	820	955
	-do-	Yavatmal	1737423	4	-	5	9	225	-	530	755	1265
6.	Marathwada	Aurangabad	1588031	5	1	6	12	325	50	690	1065	2254
	-do-	Jalna	1032157	-	-	2	2	-	-	200	200	236
	-do-	Parbhani	1642610	-	-	6	6	-	-	630	630	1707
	-do-	Beed	1412342	2	-	5	7	95	-	605	700	2126
	-do-	Nanded	1749334	2	-	5	7	105	-	555	660	1324
	-do-	Latur	1293530	7	-	2	9	360	-	235	595	1059
	-do-	Osmanabad	1029702	2	1	3	6	105	50	370	525	685
				206	58	111	375	11805	6720	13670	32195	67347

DIRECTORATE OF VOCATIONAL EDUCATION & TRAINING
MAHARASHTRA STATE, BOMBAY

No. of Crafts & Other Technical Instt. Certificate level 1986-87

Region		No. of instts.	Intake
Bombay	Govt.	8	275
	Non-Govt.	308	19009
Nasik	Govt.	2	155
	Non-Govt.	150	6638
Pune	Govt.	9	427
	Non-Govt.	350	11897
Aurangabad	Govt.	4	375
	Non-Govt.	96	3444
Amaravati	Govt.	9	204
	Non-Govt.	118	2916
Nagpur	Govt.	2	340
	Non-Govt.	351	13714
TOTAL	Govt.	34	1776
	Non-Govt.	1373	57618
		1407	59394

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DIRECTORATE OF VOCATIONAL EDUCATION & TRAINING, BOMBAY 400 001

Basic Training & Related Instruction Centre 1986-87 (Government)

Districts	No. of Institutes	Intake capacity	Students on Roll
Gr. Bombay	10	6163	7170
Thane	4	2696	2259
Raigad	1	364	348
Ratnagiri	2	160	144
Sindhudurg	1	80	46
Nasik	2	555	492
Dhule	1	100	261
Jalgaon	2	340	332
Ahmednagar	1	478	426
Pune	4	3621	3226
Satara	2	550	328
Sangli	1	230	345
Solapur	1	528	546
Kolhapur	1	996	638
Nagpur	1	800	455
Wardha	2	355	103
Bhandara	2	395	76
Chandrapur Gadchiroli]	1	455	230
Amravati	1	400	271
Buldhana	1	135	142
Akola	1	400	319
Yavatmal	1	200	133
Aurangabad Jalna]	1	700	438
Parbhani	1	80	100
Beed	1	80	108
Nanded	1	200	129
Latur]	1	200	124
Osmanabad]			
	48	21259	19189

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COMPARATIVE STATEMENT SHOWING POSITION OF TECHNICAL INSTITUTIONS IN MAHARASHTRA STATE

Sr. No.	Type of Institution	Bombay Univ. area	Pune Univ. area	Marathwada Univ. area	Shivaji Univ. area	Amravati Univ. area	Nagpur Univ. area	Remarks
1.	<u>Engg. Colleges</u>							
	Existing: (seats)	2525	4105	2240	2190	1310	1880	
	Proposed by Univ.	in Konkan area	Nil	In every dist.	Institute for metallurgy & chem engg.	Colleges with new branches	Nil	
	Proposed by MPC:	One Engg Coll. (Govt)	-	-	-	-	One Engg Coll. (Govt)	
2.	<u>Pharmacy Colleges:</u>							
	Existing (seats)	210	180	30	30	60	30	
	Proposed by Univ.	-	-	-	-	-	-	
	Proposed by MPC:	120	60	60	60	60	60	
2.A	<u>Pharmacy (Dip)</u>							
	Existing (seats)	280	540	390	300	300	270	
	Proposed by MPC:	420	120	30	-	-	120	

No.	Type of Institution	Bombay	Pune	Marathwada	Shivaji	Amravti	Nagpur	Remarks
3.	<u>Arch. College</u>							
	Existing (Seats)	190	160	70	70	30	45	
	Proposed by Univ	-	-	-	-	-	-	
	Proposed by MPC:	240	160	60	60	60	60	
4.	<u>Polytechnics</u>							
	Existing (seats)	4600	6830	3_25	3250	2610	3000	
	Proposed by MPC (Seats)	1500	-	-	-	180	300	(more stress for tribal area)
5.	<u>Other Dip. Courses</u>							
	Existing Detail information has been collected						
	Proposed by MPC: Study group is suggested to find the scope						
6.	<u>Computer Insts.</u>							
	Existing (seats)	2680	480	60	Nil	120	Nil	
	Proposed by MPC:	-	300	300	300	300	300	

No.	Type of Institution	Bombay	Pune	Marathwada	Shivaji	Amravti	Nagpur	Remarks
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7. I.T. Is.

Existing	6222	7190	9705	5832	4286	3968	
Proposed by MPC:	4000	2500	1000	500	1000	1000	

Cert. Course

Existing (Seats)Detail information in Annexure III						
Proposed by MPC: Study group is suggested to find the scope.....						



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