

**NATIONAL EXPERT COMMITTEE
for
REVISION OF SALARY SCALES
of
TEACHERS OF TECHNICAL INSTITUTIONS**



REPORT

APRIL, 1987

(All India Council for Technical Education)

PREFACE

On behalf of my colleagues on the Committee, and myself, I would like to express to the Council, our gratitude for reposing in us so much confidence, as to entrust to our care, such a vital matter as the future of the technical teachers, so intimately linked with the development and prosperity of our country. We have approached the problem, entrusted to us, with a deep sense of responsibility, and have come up with some suggestions, in the hope that both the Government and the profession will find them acceptable & useful.

The exponential rate of growth of knowledge, characteristic of our age, poses a major challenge to technologists in every country. Their response has been in terms of development of new technologies based on latest scientific developments, fast enough to benefit their communities. While Science is universal, technologies are location specific and, therefore, countries are generally unwilling to part with their up-to-date technologies, particularly in emerging areas. Every country, therefore, has to develop its own capability i.e. a strong R&D base to develop new technologies or even to adopt and adapt technologies borrowed from other countries. This requires Engineer-Scientists of a very high calibre and competence.

Yet, another consequence, of this rapid rate of change is the very high degree of obsolescence generated within the system both in terms of processes and human resource employed. This challenge of obsolescence has to be met with a continuous process of self-renewal and updating of the system. This again requires professionals of very high merit and competence capable of self-renewal themselves, and keeping the system upto date by organising extension services.

Another dimension of the challenges confronting us, though somewhat different in nature, arising out of the present milieu, is the rising expectations in our developing societies. On account of easy means of communications, Science & Technology has helped up to conquer distance, it no longer serves as a barrier between countries and societies. This, however, poses peculiar problems for developing societies still in the process of development with a yawning gap between the socio-economic situations in developing as against the developed societies. This challenge can only be met through corrective intervention in the attitude of the younger generation through the process of education backed up by socio-economic changes to upgrade our economy fast enough to catch up with the developed societies.

The response to all these basic challenges confronting our society, lies in our ability to harness & utilise the human resource available with us to our best advantage. This, however, does not mean that development of material resources is not considered important. On the contrary, we believe it to be vital for the prosperity of the nation. But we are equally convinced that, that alone will not be sufficient, and that even for their optimal exploitation, development of human resources i.e. producing capable and competent professionals should receive priority.

We believe that it is for this reason that our National Policy on Education lays so much stress on education, as a process for

development of human resource and not merely as a vehicle for transferring skills and traditions from one generation to the other. Therefore, teachers in general and technical teachers in particular, have a vital role to play in this process.

If that be the case, then it is obvious that none other than the most talented in the country should be harnessed and utilised for teaching. This should, however, not be interpreted to mean that good people are not needed in other sectors of the national endeavour. On the contrary, we believe that for the balanced growth of our economy, talent should be equally distributed in all sectors of the economy.

In our report, we have tried to work on this premise & identify factors that will help us to achieve this objective. We sincerely hope that consequentially if our recommendations are accepted it should be possible to attract and retain, fair share of talent for the teaching profession which we believe to be the priority need to meet the challenges of the future.

In conclusion, I would like to place on record my personal gratitude to my distinguished colleagues on the Committee for their wise and invaluable counsel and generosity in sparing so much of their time. The Member Secretary indeed did a yeo-man's job inspite of his many pre-occupations in the Ministry. His personal support and advice in the successful completion of the Report is fully appreciated and acknowledged.

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1. INTRODUCTION

1.1 SETTING UP OF THE NATIONAL EXPERT COMMITTEE

The salary scales of the teachers of technical institutions were last revised with effect from 1.1.1973. The perceptible trend of increasing vacancies in faculty positions in Technical Institutions, since then, with consequent adverse effects on standards of technical education, had been engaging the attention of the Department of Education, Ministry of Education and Culture, for sometime.

Keeping in view the imperative need to reverse this trend and to attract and retain some of the best talent in the country, to the technical institutions for training of competent technical manpower for the future, the then Union Minister of Education, in her capacity as Chairperson of the All India Council for Technical Education (AICTE) set up a National Expert Committee to look into the matter and recommend measures to be taken, particularly in respect of revision of salary structure, qualifications, conditions of service of teachers in Technical Institutions.

1.2 CONSTITUTION OF THE NATIONAL EXPERT COMMITTEE

Through a letter of Ministry of Education and Culture (Department of Education), Government of India reference No.F.6-6-84-T.5 dated 16,10,84, the National Expert Committee for revision of salary scales of teachers of technical institutions was set up. The composition of the Committee was the following :

1. Prof. RN Dogra,
Ex-Chairman, Board of Governors
Indian Institute of Technology,
Kanpur Chairman
2. Prof. VC Kulandaiswamy,
Vice Chancellor
Anna University,
Madras.
3. Shri Abid Hussain,
Ex-Chairman,
Indian Institute of Management,
Bangalore.
4. Shri KN Modi,
Chairman
Modi Industries
Modi Nagar
5. Dr SB Kumta
Director,
Technical Education Gujarat,
Ahmedabad.
6. Prof. PD Kulkarni,
Principal,
Technical Teachers Training Institute,
Chandigarh
7. Prof. NM Swani,
Director,
Indian Institute of Technology,
New Delhi.
8. Prof. PS Rao,
Indian Institute of Technology
Madras.

9. A representative of the Ministry of Finance, Department of Expenditure New Delhi.
10. Shri JD Gupta,
Joint Secretary(Universities)
Ministry of Human Resource Development
New Delhi.
11. Shri SK Handa,
Deputy Educational Adviser (T)
Ministry of Human Resource Development
Shastri Bhawan, New Delhi. Member Secretary

Prof. VC Kulandaiswamy was unable to accept the assignment due to his other commitments and requested that he may be released from its membership. In his place, Dr. K.Gopalan, Vice-Chancellor University of Cochin, was appointed as a member.

1.3 TERMS OF REFERENCE

The terms of reference of the National Expert Committee vide Ministry of Education & Culture (Department of Education), Govt. of India letter No. 6-6/85-T.5 dated 16 October, 1984 were as follows :

- i) "To examine the present structure of emoluments and conditions of service of teachers in engineering colleges, technological institutions and polytechnics.
- ii) To recommend revised salary scales and qualifications for teachers having regard to the necessity of attracting and retaining the best talent, and the linkage of the salary scales with Universities and College teachers"

The list of the various technical institutions covered under the terms of reference within the purview of AICTE is given below :

(a) Professional Education :

- Indian Institutes of Technology
- Indian Institutes of Management
- Technical Teachers Training Institutes
- School of Planning and Architecture(deemed university)
- National Institute for Training in Industrial Engineering
- National Institute of Foundary and Forging Technology
- Regional Engineering Colleges and other Engineering Colleges
- College of Architecture and Town Planning
- Colleges of Management
- Colleges of Applied Art
- Colleges of Pharmacy conducting undergraduate and post graduate programme .

(b) Technician Education

- Polytechnics including Community polytechnics and Women polytechnics running diploma and post diploma programmes advanced technician programme in Engineering, Applied Art, Architecture, Commercial practice, Schools of Engineering and other technician disciplines.
- Colleges of Pharmacy conducting diploma and post diploma programmes only.

The above identified institutions can be placed under two broad classifications (i) institutions training technologists and other professionals (ii) institutions training technicians and advanced technicians.

The Institutions conducting graduate, post graduate courses and other advanced level programmes including teacher training would be considered under professional education and those involved in

diploma, post diploma and other advanced level courses in technician education under technician education classification.

The terms of reference of the committee required specific recommendations only on revised salary scales and qualifications which would enable the technical institutions to attract and retain the best talent. However, to accomplish this task the Committee felt that revision of salary structure, alone, would not do. The service conditions and working environments in competing sectors to teaching, such as the industry, were far superior and that these were certain considerations which would weigh with the young professional entering the job market. Accordingly, in the considered opinion of the Committee, to achieve the objectives of the terms of reference, better, it was necessary to consider a 'Total Compensation Package' comprising the salary scales, service conditions and work environment.

1.4 CO-OPTION OF MEMBERS

The scope of the task entrusted to the Committee definitionally, covered a very wide spectrum extending over many disciplines such as engineering, management, architecture, pharmacy etc. and covered different level of education such as diploma, post diploma, graduate and post graduate education etc. To do justice to this range of interests, involving experts on different aspects of technical education became a necessity. Accordingly, the committee in its early deliberations decided to broaden its base by including expertise from diverse disciplines and also from institutions catering to different levels of technical education than what was available in the primary membership of the Committee.

To do this, the following persons were co-opted in view of their expertise and experience.

Co-opted Members

1. Prof. PJ Madan,
Dhanwanti Kutir,
Makarpura Road,
Baroda.
2. Prof. PD Chaliha,
Vice Chancellor
Agricultural University,
Jorhat, (Assam).
3. Shri Devinder K. Jain,
Secretary, Pharmacy Council of India,
Combined Councils Building, Temple Lane
Kotla Road, New Delhi.
4. Dr. NC Nigam,
Director,
Thapar Institute of Engineering & Technology,
Patiala.
5. Mr. Brune D'Souze,
Director,
School of Planning & Architecture,
New Delhi.
6. Dr. HC Pande,
Director, Birla Institute of Technology,
PO Mesra - 835 215, Ranchi.
7. Shri J. Veera Raghavan,
Adviser (Education Division)
Planning Commission, Yojna Bhawan,
New Delhi.
8. Shri Gurpreet Singh,
Managing Director,
Continental Devices India Ltd.,
C-120, Naraina Industrial Area, New Delhi.
9. Dr. Jagdish Narain,
Secretary,
Association of Indian Universities,
AIU House, Kotla Marg, New Delhi 110 002.
10. Dr. SP Luthra,
Chairman, Northern Regional Committee,
H-7, Maharanibagh, New Delhi - 110 014.

11. Prof. KS Hegde,
Retd. Vice Chancellor,
132, Chamiera Road, Madras 600 035
12. Prof. FN Kapoor,
Director,
Institute of Engg. & Rural Technology,
Allahabad 211 002
13. Shri SG Pamachandra,
SGR Consultants,
94.11 Cross Road, Malleswaram,
Bangalore 560 003
14. Prof. Ramaswamy P. Aiyer,
Director,
Indian Institute of Management, Joka Diamond
Harbour Road, Calcutta 700 027
15. Prof. Ishwar Dayal,
Director,
Indian Institute of Management,
Lucknow (UP)
16. Prof. MV Ranganath,
Programme Director,
Indian Society for Technical Education,
IIT Campus, New Delhi 110 016

1.5

BROAD DEFINITION OF KEY CLASSIFICATION AS USED IN THE REPORT

(a) Technical Education

The expression is used in the report in its broadest sense to include professional education in all disciplines mentioned here-to-fore at both levels i.e. Technician and graduate level.

(b) Professional Education

The term in this report is used in a limited sense to refer only to graduate level education in a particular discipline given in institutions affiliated to the universities or autonomous institutions of that level.

(c) Technician Education

The expression as used in this report refers to all diploma and post diploma level technician education required to train middle level work force for the economy based on skill oriented education.

The purpose is to refer to skill oriented education organised in non-university institutes such as polytechnics and institutions of similar nature. Even though it may be at the tertiary level.

1.6 WORK ORGANISATION OF THE COMMITTEE AND THE METHODOLOGY ADOPTED

In order to fulfil its brief of recommending revised salary scales, service conditions, work environment and qualifications of teachers in technical institutions, the Committee felt it useful to collect information on the prevailing status of teachers of technical institutions from heads of such institutions and the teachers themselves. To develop an inter-sectoral profile with the industry and services, it was felt useful to collect similar information from competing sector of Public Sector Undertakings, Private Sector industries and Government Departments. These sectors were considered as competing sectors to technical education in the limited sense of their being alternate avenues in which a large proportion of the technical professionals went. In addition, information was sought regarding the prevailing status of the following areas in technical institutions.

- Academic environment in the institutions.
- Extent of utilisation of available resources.
- Pursuit of excellence as an objective of the institutions

- Career growth and professional development of the teachers
- Performance appraisal of the system.

The Committee decided to collect the necessary data in connection with the above and various other related issues, through:

- (a) Questionnaires designed to collect the required information in respect of teachers in technical institutions vis-a-vis professionals in the industry and Government Departments.

This was done through three sets of questionnaires one each covering the technical institutions, the teachers and the industry.

- (b) Memoranda received from teachers and from associations of teachers of technical institutions.
- (c) Personal interviews and meetings with the Secretaries and Directors of Technical Education of various States, Heads of Institutions, teachers and representatives of Teachers' Associations, professionals working in Government departments and industry, both private and Public Sector and other eminent educationists etc.

Since the task involved in conducting this survey was anticipated to be extensive and time consuming for the Committee itself to visit the various states, it was further decided to constitute sub-committees at the zonal level to meet the target groups and collect the relevant data for this analysis.

This also helped in involving more people at the different levels and developing a consensus of a wider cross-section of various interest groups concerned with technical education stream. The following four Zonal Sub-Committees, one for each zone were constituted to collect the data with the help of the above tools to analyse the data so obtained and prepare a brief report for the concerned zone.

The composition of the four zonal Sub-Committees is given below :

NORTH ZONE

- | | |
|---------------------------------------------------------------------------------------------------------------|----------|
| 1. Dr. NM Swani
Director,
Indian Institute of Technology,
New Delhi. | Chairman |
| 2. Shri KN Modi,
Chairman,
Modi Industries,
Modi Nagar. | |
| 3. Prof. PD Kulkarni,
Principal,
T T T I Chandigarh | |
| 4. Shri Y. Singh,
Northern Regional Officer
Ministry of Education, 1A Laxmanbagh,
Nawabganj, Kanpur. | Convenor |

SOUTH ZONE

- | | |
|------------------------------------------------------------------------------------------------------|----------|
| 1. Dr.K.Gopalan
Vice Chancellor,
University of Cochin,
Indira Gandhi Campus, Cochin(Kerala) | Chairman |
| 2. Prof. PS Rao,
Professor Civil Engineering,
I I T Madras. | |
| 3. Prof.T.Subbarao,
Principal
T T T I., Madras | |

4. Shri AP Srivastava
Southern Regional Officer
Ministry of Education, 26 Haddows Road,
Nungambakkam, Madras
- Convenor

EAST ZONE

1. Prof. PD Chaliha,
Vice Chancellor
Agricultural University,
Jorhat.
- Chairman
2. Prof. PR Sengupta,
Director,
NE Regional Institute of Science and
Technology, Itanagar, Arunachal Pradesh.
3. Prof. A. Mustafi,
Principal,
TTTI, Block FC, Sector III,
Salt Lake City, Calcutta.
4. The Assistant Educational Adviser(T)
Ministry of Education,
5 Esplanade East, Calcutta 700 069
- Convenor

WEST ZONE

1. Prof. PJ Madan,
Ex-Vice Chancellor,
Baroda University
Baroda.
- Chairman
2. Dr. SB Kumta,
Director Technical Education,
Govt. of Gujarat,
Ahmedabad.
3. Prof. Y. Saran,
Principal,
T T T I Bhopal
4. Shri VN Datta,
Western Regional Officer,
Ministry of Education, Industrial
Assurance Building, Bombay 20.
- Convenor

As can be observed from the listing, the concerned Regional Officer of the Ministry of Education, Government of India, was requested to act as the convenor of the respective Zonal Sub-Committees.

It was also decided that the concerned Technical Teachers' Training Institute of the zone would provide academic and other resource inputs to the Zonal Sub-Committees for collection and analysis of the data and preparation of the Zonal Report.

The Zonal Sub-Committees were also authorised to co-opt any person who could be of help to them in their investigation.

Each Zonal Sub-Committee collected the relevant data through the standardised questionnaires designed and finalised by the National Expert Committee and memoranda received from various institutions, individual teachers and teachers' associations and industries, in private and public sectors.

The Zonal Sub-Committees also conducted meetings and interviews at three or four central locations in the respective states/zones. Each Sub-Committee met approximately 70 to 100 heads of technical institutions, 800 to 900 teachers and their representatives and about 30 to 50 representatives of industries in private and public sectors, in their respective zones before formulating their reports.

The National Expert Committee for revision of salary scales of Teachers of Technical Institutions went about its work at a time when the Fourth Pay Commission Report was due and the report of the Pay Committee appointed by the UGC to review the salary structure of the University teachers was also at an advanced stage of preparation. Accordingly, it was a belief with the Committee

that an early submission of the report would facilitate the Government in taking a comprehensive and integrated view for formulating a rational salary structure for all concerned. This feeling was the underpinning of much of the activities of the Four Sub-Committees referred to above. They completed their tasks by June 1986 and their reports were soon, thereafter, available to the National Expert Committee. The data obtained through these reports was further synthesized in a workshop held at Technical Teachers' Training Institute, Chandigarh in July 1986. One of the notable contributions of this workshop was the emergence of a clear profile of the status of the teachers of technical institutions at the National Level.

The Committee further held a series of meetings with the following groups :

- Directors of Indian Institutes of Technology
- Delegation of ISTE
- Representatives of the Federation of Teachers' Associations of Indian Institutes of Technology.

The Committee also received representations of the following professional organisations and bodies concerned with the technical education in various disciplines.

- Institute of Surveyors.
- Pharmaceutical Association Congress
- All India Management Association
- Architecture Council
- Institute of Architects
- Institution of Engineers
- Catering Council of India

The discussions with the above named groups were also in certain cases followed by submission of memorandum by them to the Committee. The National Expert Committee held twelve meetings

in all in which detailed discussions were held on all aspects of the problem and conclusions reached. The end product was the emergence of a cadre structure and finalisation of the salary scales of different cadres together with the conditions of service and working environment for teachers of technical institutions. The Committee believes that this would help to attract and retain some of the best talent in this country into teaching profession.

1.7 SCOPE OF THE REPORT

According to the terms of reference, the Committee was constituted to review the salary scales and conditions of service of teachers in technical institutions, coming under the purview of AICTE. The terms of reference also required the Committee to explore possible linkages, if any, between the salary structure of teachers of technical institution with those of Universities and affiliated colleges.

The Committee addressed itself to this latter task first and held discussions with a very wide cross-section of teaching community, educational administrators, eminent educationists and technologists to have a clear perception. Since the historicity of the 1972-74 experience linked up technical teacher scales with that of University teachers, it would perhaps help to put the discussions in perspective if the question of this relationship was clarified at this stage of the report.

With the revision in salary scales effected from 1.1.73, technical teachers were placed at par with the university teachers. This was an important departure from the earlier situation of having a salary differential between the two groups of teachers. The pay scales of teachers of technical

institutions had always been higher than those in the university, perhaps in recognition of the fact

- (i) that the training period of the technical teacher has always been longer than his university counterpart
- (ii) that the pay scales of the technical teachers till then had ALWAYS been related to pay scales of the user organisations.

The results of the implementation of the new grades as envisaged from 1.1.1973 have created problems for technical education, including the shortage of teachers in technical institutions. The data generated by the Zonal Sub-Committees of the National Expert Committee for the salary scales of technical teachers make it clear that by 1986 the technical institutions were faced with serious shortage of teachers as reflected by vacancies, being as high as 18 to 29%.

During the discussions the National Expert Committee was informed that at one stage the situation had become so grave that vacancies in faculty positions in technical institutions were up to as high as 50% of the sanctioned strength. Some corrective measures were initiated by the government on the advice of the AICTE by relaxing the minimum qualifications for entry to various cadres in technical institutions. This proved to be a temporary palliative and did not provide any lasting solution.

Interestingly, it is not withstanding the fact, which the National Commission on Teachers (Higher Education) reported as the situation on the choice of the students for technical courses. The National Commission on Teachers (Higher Education) reported that in the order of the choice of the students, technical courses rank 3rd in order of preference. The first two preferences are going to class I Public Services (IAS & IFS)

and medicine respectively. This undergoes a change on the spectrum of choice of the professionals trained by the technical education system. For them teaching in technical institution becomes a very low priority choice.

This is not a difficult situation to explain, as over the years numerical demand of the industrial sector on technical graduates has successively risen. The situation is such, as would warrant a premise to the effect that very often only the rejects from the industrial sector opt for teaching careers in technical institutions. This trend has got not only to be arrested, but reversed in view of the significance, as noted already, that the technical teachers have for generating technical graduates of excellence for the economic development of the country.

The growing numerical demand of the industry on the technical graduates each successive year, is the direct fall out of the planned expansion of the public sector and the various incentives and support mechanisms provided to the growth of the private sector industries. Whereas this is not a matter of regret, the implications for availability of competent teachers in technical institutions is self-evident.

The industry can attract talent as they can afford to pay more being able to link productivity with the pay package of their employees. Granted, that the technical institution cannot compete with the private sector, but if we are anxious, as we must indeed be, to secure for technical education its due share of the best professional talent in the country in the national interest, then the salary scales and career prospects of teachers in technical institutions will have to be made comparable to those in the industry and put on par atleast with the Public Sector Undertakings if not with the private industry.

Accordingly, it is worth noting that the reference point of comparison for teachers of the technical institutions is not parity as teachers with the community of teachers in the university stream but parity with sectors of economy namely the industry where they would have been, if they did not opt for the teaching line. It is, therefore, facetious to seek the linkage between the salary structure of the technical teachers with those in the universities.

Even the supply and demand position in the Technical Education System bears little resemblance to that in the University Education System. In the case of the former, there is a shortfall of manpower, in the latter the manpower supply is abundant.

Accordingly, it is not difficult to reach the conclusion that if the Technical Education System is to continue producing technical manpower of quality and excellence, it will have to be given a salary structure to draw some of the best people to it. And for that, its linkages and parity with the university teachers has to be annulled. The status-quo prevailing before 1973 needs to be restored. This would, also, be the logic of the market forces that are currently prevailing.

It would bear repetition to emphasise that professionals such as engineers and doctors will always fetch more, as their earnings, than the generalists, being in short supply and greater demand. This simple fact has to be recognised, faced and responded to, if the standards of technical education have to be raised to usher the country appropriately into the 21st Century.

2. HISTORICAL BACKGROUND

2.1 OUTLINES OF EARLY HISTORY AND DEVELOPMENT OF TECHNICAL EDUCATION

The formal technical education in India, as we know it today, may be dated back to the mid 19th century. A report by Sir A.P. Mac Donnel, the then Home Secretary to the Government of India, in 1886 entitled "Technical Education in India" offers the earliest account of the nature and scope of training facilities available in the country at that time.

The following Four Engineering Colleges are mentioned therein :

- 1) Madras Civil Engineering College, Madras Presidency
(Established 1862)

It consisted of 2 departments :the collegiate and school departments. The collegiate department trained students for employment as graduate engineers and awarded the Bachelor of Civil Engineering degree of the Madras University. These graduates were absorbed in PWD, Local Funds and municipalities of the Madras Presidency. The School Department trained students for subordinate engineering services of these organisations.

- ii) College of Science Poona, Bombay Presidency (Established 1854 as Poona Civil Engg. College)

The provincial government in the Bombay presidency set up this Institution for the purpose of training subordinates for its government departments. The candidates were awarded licentiate of Civil Engineering and were employed by the PWD and other Government Departments both at the Senior and Junior levels.

- iii) Seebapore (Sibpure) College of Calcutta, Bengal Presidency

The year in which this college was founded is not available. However, it was also set up by the provincial government for training engineers and subordinates for government departments of the Bengal Presidency. It was affiliated to the Calcutta University which conferred, on the candidates, the degree of Civil Engineering of the University.

- iv) Thomson Civil Engineering College, Roorkee, Founded 1847

This was founded by Mr. Thomson, the then Lt. General of North Western Provinces for the purpose of supplying the needs of the Public Works Department and survey departments of the Government of India with Assistant Engineers, Overseers and Sub-overseers. Some of the most eminent engineers have been trained in this college which did its own certification.

It is apparent that all the above mentioned institutions were set up by the provincial government of the four presidencies in an effort to train personnel to execute civil engineering works within their jurisdiction.

The next important phase in the development of technical education in India was the appointment of the Indian Universities Commission by Lord Curzon in 1902 under the Chairmanship of Dr.T.Raleigh. The Indian Education Policy resolution was issued by the Governor General on March 11, 1904. It advocated a new approach to the development of technical education in India.

This was followed by another policy statement by the Governor General in 1913 a decade later, stressing the importance of Technical Education. It said :

"No branch of education at present evokes greater public interest than technical and industrial instruction...an Indian Institute of Science designed on a large scale has been established at Bangalore in 1911. The establishment of a Technological Institute for sugar manufacture and leather, for textiles etc at Kanpur has been sanctioned. Industrial schools have been opened in several provinces. "

Altogether, the number of technical and industrial schools had risen by then, to 218 in different states and the number of pupils attending them, to 10535. No attempt had, however, been made to regulate and control standards of technical education. All these institutions were managed by the State Governments and the user agencies viz. Railway etc.

The report of the Technical Education Committee of the Central Advisory Board of Education, 1943 and the Sargent Report, January 1944, however, stressed the need for the development of technical institutions as an integral part of the national system. The Sargent Report went on to say :

"....any scheme for the development of technical instruction as an integral part of a national system must have a two-fold character. It must both form a link between education and industry and it must at the same time receive quite separate consideration as a form of mental training which is especially suited to certain types of intelligence, irrespective of their future occupations".

2.2

ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

It was in response to the challenges of the post war period that the All India Council for Technical Education was set up by Government of India in November, 1945, on the recommendation made by the Central Advisory Board of Education that

"...to stimulate, co-ordinate and control the provision of educational facilities which industrial development in post-war period as well as the existing industry will need, there must be an All India body in supreme charge "

This recommendation arose out of the belief that Technical Education at higher stages could not, in modern time, be effectively organised on a local or provincial basis. The Government recognised the need for a planned and balanced development of Technical Education and considered that, as a preliminary to such a development, a survey by a competent body, of the existing facilities and probable post-war requirements was necessary and decided that the All India Council for Technical Education itself be assigned the task of this survey and advice.

A sub-committee of the Council was asked to prepare a status report on facilities available for technical education. The report submitted by the Sub-Committee contains considerable data in respect of names and locations of institutions, physical

facilities available therein, student intake etc. But as it contains no reference to salary scales or the cadre structures, this report is not relevant to our investigation.

Prior to the setting up of the All India Council for Technical Education in 1945, the technical institutions were run on private and/or provincial basis to meet the requirements of a particular industry or province. The salary scales and the status of the teachers in these institutions varied from state to state and even from institution to institution in the same state but were generally related to salary scales of the state Public Works Departments which managed these institutions.

2.3 COMMITTEES CONSTITUTED BY AICTE

2.3.1 Review of Salary Scales 1950

On assuming responsibility, the AICTE addressed itself to the crucial problems of laying down norms of facilities, academic structure, salary scales for teachers with a view to regulate standards of technical education. The earlier Committee appointed by it to carry out a survey of facilities for technical education available in the country had shown that while some infrastructure for it had been created in the country it was going to be neither adequate for the needs of the developing economy nor was it controlled, regulated or managed in a manner to produce professionals of the standard needed by it.

As a first priority, it therefore, decided to appoint another sub-committee in January 1950 to examine the question of suitable Cadre Structure and Salary Scales for instructional staff of technical institutions so that the standards of education could be controlled and raised to meet the needs of the economy. The Sub-Committee examined all aspects of this problem and submitted to the AICTE its report on 24-25 July 1950. The AICTE accepted

the recommendations of the Sub-Committee with the following cadre structure and salary scales. These recommendations were accepted by the Government and the States were asked to implement them.

Cadre Structure	Salary Scales
(a) Professor	Rs.1000-50-1250 plus personal allowance depending upon the eminence of the person appointed.
(b) Assoc. Professor	Rs.800-1000
(c) Reader	Rs.600-1000
(d) Lecturer	Rs.300-25-600-EB-25-750
(e) Instructor	Rs.250-25-350

This formed the basis of the first attempt to regulate, control and manage technical education system at the national level, in order to have uniformity in respect of cadre structure and salary scales.

2.3.2 Review of Salary Scales in 1958

By the late 50 s, a broad industrial base had already begun to emerge in the country and the demand for competent technical personnel had started to grow. The salary scales of teachers of technical institutions recommended in 1950 were no longer valid and able to attract meritorious and talented professionals to teaching. As a consequence, there was already an acute shortage of competent teachers in technical institutions in the country with a consequent fall in standards warranting an urgent review of the salary scales.

The Association of Principals of Technical Institutions brought to the notice of the Council in 1958, the then serious shortage of teachers in Technical Institutions and made suitable recommendations to overcome the problem. The Council, at its 11th meeting held on 24.3.1958, endorsed the recommendations of the Association of Principals and suggested immediate action in respect of the following :

i) Salary Scales

1. Degree and Post-Graduate Institutions

(a) Technical Institutions should be divided into two categories for the purpose of pay scales - Class 'A' institutions where the main emphasis is on post-graduate courses and research and Class 'B' institutions which conduct degree and even a limited number of post-graduate courses. The Ministry of Education and Scientific Research, in consultation with the All India Council for Technical Education and the University Grants Commission should determine the categorisation of the institutions.

(b) The salary scales in these institutions should be as follows :

Designation of Post	Salary scales for Institutions in	
	Class A	Class B
Director/Principal	2000-2500	1300-60-1600 100-1800
Professor(Sr.Scale)	1600-100-1800	--
Professor(Ord.Scale)	1000-50-1500	1000-50-1500
Assistant Professor	600-40-1000-50/2 1150	600-40-1000-50/ 2-1150
Lecturer	350-350-380-380-30- 590-EB-30-770-40-850	350-350-380-380- 30-590-EB-30-770- 40-850
Workshop Superintendent	600-40-1000-50/2-	600-40-1000-50/2 1150

The number of posts in the senior and ordinary scales for Professors should be determined from time to time.

** Ordinarily there would be no post of Senior Professor in a Class 'B' institution. However, having regard to the personal eminence of a member of the staff, a post of Professor in the senior scale may be created in a Class 'B' institution also. Also the number of posts in the Senior and Ordinary scales for Professors should be determined from time to time.

(c) For the purpose of salary scales, all existing posts of Associate Professors should be regarded as Professors in ordinary scale and the post of readers regarded as Assistant Professors.

2. Diploma Institutions

(a) The salary scales in these institutions should be as follows:

Designation of Post	Salary Scale
Principal	800-40-100-50-1250
Head of the Deptt. & Lecturer-in-Charge	600-40-1000
Lecturer	350-350-380-380-30-590 EB-30-770-40-850
Workshop Superintendent	350-350-380-380-30-590- EB-30-770-40-850
Senior Instructor	260-10-300-15-450-25/2 500
Junior Instructor	160-10-300

ii) The Central Government considered the recommendations of the Council and decided that the salary scales of teachers of technical institutions conducting first degree courses and diploma courses should be improved as shown below :

(a) Engineering Colleges and other technical Institutions conducting first degree courses in engineering/ technology.

Principal	The salary scale should be the same as for the Chief Engineer PWD of the State Government concerned.
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Professor	The salary scale should be the same as for the Superintending Engineer, PWD of the State Government concerned.
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Assistant Professor & Workshop Supdt.	Rs.600-40-1000-50/2-1150
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Lecturer	Rs.350-350-380-380-30-590-EB 30-770-40-850
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(b) Polytechnic conducting diploma courses :

Principal	Rs.800-40-1000-50-1250
Head of Deptt.	Rs.600-40-1000
Lecturer & Workshop Supdt.	Rs.350-350-380-380-30-590-EB 30-770-40-850
Senior Instructor	Rs.260-10-300-15-450-25/2-500
Junior Instructor	Rs.160-10-300

It may be noted that the Central Government did not accept the recommendations of the council in toto, in respect of Engineering Colleges and other technical institutions conducting first degree courses in engineering/technology. For the posts of Professor

and above, the Central Government decided to maintain parity with the top functionaries in the PWDs of the States concerned.

These scales of pay were, however, found to be inadequate by 1963-64, 5 years later when expansion of the technical education system was being undertaken at apex level. The Union Government, therefore, following the report of the Second Pay Commission revised the salary scales of the teachers in the Regional Engineering Colleges and Indian Institute of Technology in 1963-64. These revised pay scales, however, were not applied to other engineering colleges and polytechnics who continued to be governed by the prevalent scales of pay introduced in 1958.

It is also to be noted that upto 1972 the salary scales of teachers in technical institutions were linked with the user organisations and not with the university cadres and it was, therefore, possible to draw upon competent professionals to the teaching institutions.

2.3.3 Review of salary scales in 1972-74

The next revision of salary scales of technical teachers did not take place till 1972-74, almost a decade and a half later. This was too long a period and the review had, therefore, assumed some urgency. The matter came up for discussion before the Council at its meeting held in May 1972. The revision of salary scales of Central Government employees and those of University teachers had also become overdue and the Government had already initiated action by appointing the Third Pay Commission and the UGC Pay Committee. This preemptive action lead to the AICTE deciding to defer the consideration of this matter and to await the findings of the Committee appointed by the UGC for the revision of salary scales of teachers in universities and affiliated colleges. In May 1974, the Council noted the revised salary scales announced by the Central Government as per the UGC recommendations. It was

proposed that the same be made applicable also to teachers in Engineering Colleges and polytechnics under the purview of AICTE.

An Expert Committee headed by Dr. Nag Chaudhary was appointed by the Council to examine the proposals in all its aspects and make suitable recommendations. The terms of reference of this Committee was, however, limited to make recommendations as to how the UGC salary scales could be made applicable to the technical institutions and to suggest qualifications and experience requirements of the teachers of technical institutions to be eligible for these scales. The Committee could not, therefore, take cognisance of two very important emerging factors. Firstly that the industry had emerged as the competing sector for technical education and this sector was expanding very rapidly and secondly that there had always been a differential in pay scales of professional teachers on account of their longer duration of training before entry into the profession.

In pursuance of the recommendations of this committee, the UGC salary scales were made applicable to the technical institutions. These were as follows :

Engineering Colléges

Principal	-
Sr. Professor/ Professor	1500-60-1800-100-2000-125/ 2-2500
Assistant Professor	1200-50-1300-60-1900
Lecturer	700-40-1100-50-1600

Polytechnics

Principal	1500-60-1800-100-2000-125/2- 2500
Head of the Deptt.	1200-50-1300-60-1900
Lecturers	700-40-1100-50-1300 Assess -50-1600

The number of cadres were also simultaneously reduced from four to three in the case of Engineering Colleges and from three to two in the case of Diploma Institutions.

The Central Government accepted the recommendations of the Council in respect of Engineering Colleges and other Technological Institutions but did not accept the same in respect of polytechnics. The following scales were implemented by the Central Government for the Polytechnics

Principal	-
Head of Deptt.	1100-50-1600
Lecturer	700-40-900-EB-1100-50-1300

Many of the State Governments delayed the acceptance of these recommendations for various reasons mainly lack of funds.

The results of the implementation of the UGC salary scales for the engineering colleges have been disastrous for technical education as has been argued elsewhere in the report. Whereas, earlier, the teachers of Engineering Colleges were getting pay scales higher than those of the teachers of Universities and Affiliated Colleges, being linked with the pay scales of the user organisations, as indeed they should be, with the revision of scales in 1973, they were brought on par with the Universities.

2.4

SOME OTHER IMPORTANT COMMISSIONS AND COMMITTEES

The broad trend of the development of technical education in India would not be clearly appreciated without a reference to the report of atleast one Commission and two committees which, though they do not directly bear upon the salary scales etc of technical teachers with which the present investigation is concerned, but have had a considerable impact on the Development of technical education as a whole in the country. These would be National Education Commission, 1964-66, Damodaran Committee 1970-71 and Madan Committee 1972.

2.4.1 National Education Commission 1964-66

The National Education Commission was set up by the Government of India in 1964 to review the situation in respect of Education as a whole in the country and advise. All reviews prior to it had been confined to different aspects/sectors of education and lacked the perspective for a National Policy. This Commission for the first time was asked to look at all sectors of education. It submitted its report in 1966 which formed the basis of the national policy on education of 1968.

Though the main focus of the National Education Commission was on general education with particular emphasis on the content and process of education, yet it was equally seized of the importance of technical education as a potent tool for national development. It, therefore, laid stress on the development of technical education as a priority area for the first time. To help achieve this, the Commission held the view that induction of competent professionals to technical education by providing suitable incentives was inescapable.

2.4.2 Damodaran Committee 1970-71

This Committee is of significance as the first committee set up to review technician education system in India and make suitable recommendations for its re-organisation and development. Unluckily the committee's recommendations have never got fully implemented for various reasons and technicians education has suffered as a result.

Lack of finance mobilisation and creation of resource infrastructure for curriculum development and teaching materials etc have been cited as the prime reasons for its

non-implementation. However, equally important is the inability to induct into the system competent faculty - inadequate salary structure of the system playing a significant role in causing this - which could provide the kind of leadership it needed. This has prevented technician education from acquiring its own character and personality to play a complementary role to professional education.

2.4.3 Madan Committee - 1972

This Committee was appointed by AICTE to examine the problems of cadre structure for technical institutions at a time when the revision of the salary scales of teachers in technical institutions was in the offing. It was felt that perhaps this would be an opportune time also to review the cadre structure in technical education.

There had been considerable diversity in this respect between different states and institutions within the same state both in professional as well as in technician education. This was considered administratively incorrect and professionally unsound. The Committee was asked to look into this matter and advise the Council with a view to standardising the cadre structure as much as possible. The Committee was perhaps influenced by the multiplicity of cadres in technical education system compared to the simpler model prevalent in the universities with only three stages/levels. The Committee maintained that as the job description of all categories of teachers was the same it would perhaps be logical to reduce the number of cadres to the same as the universities, namely three for Engineering Colleges and only two for the polytechnics.

The Central Government accepted these recommendations for the Engineering Colleges. In the case of polytechnics, it introduced some modifications. Most of the State Governments have since accepted the recommendations in principle and have implemented or are in the process of implementation.

With the emergence of the industrial sector, however, having a large number of cadre positions as the competing sector attracting the young professional, the present structure perhaps calls for a review.



AREAS OF CONCERN

3.1 HUMAN RESOURCE CRITICAL FOR DEVELOPMENT

The primary role of any educational system is to contribute to the socio-economic change in society by developing its human resource. The productivity of any economy depends largely on the productive and organisational skills of the people rather than its material resources alone. The development of human resource in general and in higher and technical education in particular is, therefore, the key to the prosperity of any country.

3.2 PIVOTAL ROLE OF TECHNICAL EDUCATION

The new dimension of education which seeks to make it an integral part of the national development process casts great responsibility on technical education which is the main vehicle of social and economic transformation desired by the community. The role of the technical education, therefore, assumes great significance. Its function is not only to impart knowledge and skills but also to influence student attitudes and equip the future generation

adequately to face the challenges ahead of them in the developmental process.

3.3 INFRASTRUCTURE OF TECHNICAL EDUCATION - PRESENT STATUS

Being perceptive of this role of education in general and technical education in particular, in the socio-economic transformation desired by the society, the Government of India laid great emphasis on the development of technical education as a tool for national development. A massive programme of expansion of technical education was, therefore, undertaken at all levels from the very beginning. The growth of technical institutions and technical manpower is shown in Tables 3.1 and 3.2.

Table 3.1 Growth of Technical Institutions and Technical Manpower

Year	No. of Degree level Institutions	Total Intake	No. of Diploma level Institutions	Total Intake
1947-48	38	2940	53	3670
1954-55	59	5468	59	8313
1960-61	102	13824	195	25501
1968-69	136	23415	280	46712
1975-76	152	24920	291	44769
1983-84	161	26009	385	59299

Table 3.2 Growth of Technical Manpower

Year	Approximate stock of Graduates	Diploma Holders
1955	34,000	-
1960	58,000	-
1965	95,000	-
1970	1,65,000	-
1975	2,29,000	-
1977	2,37,368	3,48,462
1982	2,92,238	4,34,934
1985	3,61,000	5,21,000

During the last three decades, a wide network of technical institutions offering different types of programmes, have been established. More than 1000 ITIs with an annual capacity of about 2,50,000 for craftsmen training, about 400 polytechnics with an annual intake capacity of 60,000 students for technician training, about 160 degree level institutions with an annual intake capacity of 26,000 students and about 70 centres of post graduate programme, admitting annually 6000 students have been established. Besides, these there are more than 30 University Centres (including IIMs) offering courses at the Masters and Doctorate level in Business Administration and Industrial Management with an admission capacity of about 1250.

3.4 VACANCIES AT THE NATIONAL LEVEL

The phenomenal expansion of infrastructure development at graduate and technician education level and the promotion of post-graduate education and research during the successive Five Year Plans, is an achievement of which, the technical

education can justly be proud of. Yet one of the basic problems, that of faculty support in our technical education system remains unresolved. It is apparent that the quality of Technical Education can only be as good as the quality of teachers inducted into the system. Therefore, some of the best minds have not only to be drawn to teaching but retained there. As of now the Technical Education System is unable to attract and retain talented engineers, technologists, and managers in the teaching profession.

The information generated through four Zonal-Sub-Committees of the National Expert Committee shows that on the average 18% - 26% and 22% - 29% of the posts are unfilled in the professional and technician education institutions respectively. Table No. 3.3 gives average percentage vacancies at various levels in the technical institutions.

Table 3.3 Average Percentage vacancies at various levels

Sr. No.	Cadre	Average percentage of vacancy	
		Professional Education Institutions	Technician Education Institutions
1.	Lecturer	26.03%	21.59
2.	Sr.Lecturer/HOD	-	28.90
3.	Asstt. Professor	22.49%	-
4.	Assoc.Prof./Professor	18.37%	-
5.	Principal(Polytechnics)	-	25.64%

3.5 STAGNATION

In the existing academic structure, there are only four cadre positions in Professional Education Institutions and three in

Technician Education Institutions. The small number of cadre positions in Technical Institutions retards the rate of Career growth of teachers resulting in their large scale stagnation and frustration.

The information generated by the Zonal Sub-Committees shows that the rate of career growth of teachers in technical institutions is rather slow resulting in large scale stagnation at various levels. It may be observed from Table 3.4 that more than 42% of teachers in Professional Education and nearly 50% in Technician Education Institutions have been at the same level for the last 8 years or more.

Table 3.4 Percentage of Teachers remaining at the same level for periods greater than 5 years

S.No.	*Period of Stagnation	Percentage of Teachers stagnating	
		Professional Education Institutions	Technician Education Institutions
1.	> 5 years	57.09	65.66
2.	> 8 years	42.11	49.03
3.	> 10 years	32.87	36.60
4.	> 15 years	18.24	22.92

*(Period of stagnation refers to the number of years spent by the teachers at a particular cadre position not necessarily at the top of the scale)

3.6 PAY SCALES PRIOR TO 1974 AND AFTER

Of the various factors that are responsible for the large scale vacancies of teachers in technical institutions and the acute stagnation in the profession indicated above, salary scales of teachers stand out as the most important single factor.

The AICTE has always been conscious of this crucial factor

and has been, since its inception, periodically taking stock of the situation and apprising the Government of the situation. In pursuance of these recommendations the Central Government has been formulating scheme for the revision of salary scales of technical teacher to keep them up to date, from time to time.

As mentioned already in the last chapter dealing with the historical background the first attempt at standardising the minimum facilities and faculty support in all technical institutions including the salary scales etc. were made in 1950 by the AICTE. On the basis of these recommendations the Government adopted the following scales of pay in Technical Institutions.

These scales were made applicable from 1950 and are given in Table 3.5.

Table 3.5 Salary Scales of Teachers of Engineering Colleges (AICTE) and Universities (UGC) in 1950.

Sr.No.	Cadre	<u>Salary Scales of Teachers in</u>	
		<u>Engineering Colleges</u>	<u>Universities</u>
1.	Instructor	250-25-350	-
2.	Lecturer	300-25-600-EB- 25-750	200-10-350
3.	Sr. Lecturer	-	250-25-500
4.	Reader	600-1100	400-25-600
5.	Assoc. Professor	800-1000	-
6.	Professor	1000-50-1250 plus personal allowance depending upon the eminence of the person appointed	600-40-1000

This was logically followed by a review after a period of nine years in 1958.

The pay scales made applicable in 1958 are given below in Table 3.6.

Table 3.6 Salary Scales of Teachers of Engineering Colleges (AICTE) and Universities (UGC) in 1958.

Sr. No.	Cadre	Salary Scales of Teachers in	
		Engineering Colleges	Universities
1.	Lecturer	350-350-380-380-30-590 EB-30-770-40-850	250-500
2.	Asstt.Prof./ Reader	600-40-1000-50/2-1150	500-800
3.	Professors	1100-50-1500	800-1200
4.	Sr. Professor	1300-60-1600	-
5.	Principal	1800-100-2000-125/2-2250	-

These tables also give the comparable salary scales in the Universities at those points of time.

It is to be noted that the salary scales in the technical institutions, during both these reviews were higher than those in the Universities though they may have been somewhat lower than those in the industry. However, as the demand of the industry at that time was limited and the salary scales of teachers in technical institutions were still comparable to the user organisations, the technical institutions continued to attract sufficient number of competent and talented individuals into the teaching profession.

This policy was, however, abandoned in the next review in 1972-74, when the salary scales of teachers in Technical Institutions were brought at par with those in the universities as pointed out already in Chapter 2. The reasons for this complete reversal of policy are not available now after so many years, but it would appear that it was

prompted by the recommendation of the UGC Committee for uniform scales in all institutions at the University level, disregarding the fact that it could have a disastrous effect on the availability of teachers in technical institutions as has been confirmed by subsequent events. The consequences of this change in policy were, perhaps, not fully appreciated at the time.

This view was accepted by Government and the UGC Salary scales were adopted for Engineering Colleges and Technological Institutions with effect from 1.1.1973. For the teachers of polytechnics, the Central Government did not accept the recommendations made by the AICTE Committee and they were given replacement scales as recommended by the 3rd Pay Commission.

The revised UGC scales adopted for the Engineering Colleges and Technological Institutions are given in Table 3.7 along with the pay scales in the Universities.

Table 3.7 Salary Scales of Teachers of Engineering Colleges (AICTE) and Universities (UGC) in 1973

Sr.No.	Cadre	Salary Scales of Teachers in	
		Engineering Colleges	Universities
1.	Lecturer	700-40-1100-50-1600	700-40-1100-50-1600
2.	Asstt.Prof./Reader	1200-50-1300-60-1900	1200-50-1300-60-1900
3.	Professor	1500-60-1800-100- 2000-125/2-2500	1500-60-1800-100- 2000-125/2-2500
4.	Professor of Eminence	-	Rs.3000/- fixed
5.	Principal	2250-125-2-2750	

3.7 DEVELOPMENT OF PUBLIC SECTOR AND ITS EMERGENCE AS THE MAIN COMPETING SECTION

To appreciate what this change in salary structure in technical

education, did to the directions in which the technical graduates headed, the general trend of the economy has to be kept in mind, as a backdrop. After independence, the Government of India laid great stress on the development and growth of the public sector, in order to achieve rapid industrialisation of our predominantly agricultural economy. By the late 50 s a number of Public Sector Undertakings had been established and the demand for technical manpower for this sector was poised to grow at an exponential rate. The total investment in the Public sector today is more than Rs.40,000 crores and these undertakings have emerged as the main competing sector, offering employment opportunities to professionals trained by the technical education system as borne out by data presented in para 4.2 Chapter IV.

3.8

ENHANCED QUALIFICATIONS AT THE ENTRY LEVEL OF TECHNICAL INSTITUTIONS IN 1973

Prior to 1973 when the University Grants Commission scales were adopted for Engineering Colleges and Technological Institutions, the qualification at entry to the post of Lecturer was a First Class Bachelor's Degree with consistently good academic record.

In 1973 the qualification at the entry level to the system was enhanced to a Master's degree in the relevant area. A Master's Degree Programme takes a minimum of 3 to 4 semesters after graduation. A bright graduate is not willing to undergo a Master's Degree programme unless he is assured substantially better career prospects thereafter. As the teaching profession was unable to provide such prospects, the first choice of the talented fresh graduates was to seek an entry into the public sector or any other industry and public services leaving technical education as his last option. The enhanced qualifications at entry level without commensurate compensation and weightage in service conditions have, therefore, not been able to achieve the objective of inducting the most competent and talented individuals into the system presumably hoped for. On the contrary it has been totally counter productive.

3.9 ATTRACTING AND RETAINING TALENTED PROFESSIONALS

Though the technical education system is meeting the demands of the industry, both public and private sectors in terms of producing the required technical manpower, the system itself is starving of proper inputs into it. It is indeed a paradox that the system which is expected to provide the most critical human resource for the economic development of the country, itself suffers from the lack of it.

It is to the credit of the technical education system that inspite of being denied what most people would consider as minimum support facilities, it has produced technical manpower in large numbers for the economic development of the country. However, this situation is bound to progressively deteriorate if the present conditions and inter-sectoral parities are permitted to continue.

In order to attract talented and competent professionals the system must respond to the emerging situation & trends by

- i) Relating the 'Total Compensation Package' comprising of salary scales, service conditions, work environment etc. of teachers in technical institutions to the sectors where their alternate employment would be possible. The reference datum for them, therefore, would be the industrial sector.
- ii) Inducting technical personnel with distinguished record at the Bachelor's Degree level and arrange for their post-graduate training according to the needs of the system.
- iii) Accepting responsibility for inservice training for their own staff as is done by all organisations.

This would consist of post-graduate education, R&D activities, professional experience and acquisition

of communication skills according to the needs of the institutions.

Options are limited and the technical education system will not be able to set the distortions right unless there is a shared perception of the problems outlined above and a determined attempt to solve them.



सत्यमेव जयते

4. PRESENT STATUS OF TEACHERS OF TECHNICAL INSTITUTIONS BASED
ON DATA COLLECTED BY ZONAL SUB-COMMITTEES

In order to evolve a rational policy for attracting and retaining competent and talented professionals to teaching in technical institutions, the Committee considered it necessary to determine the present status of teachers in technical institutions in respect of their salary scales, conditions of service and work environment vis-a-vis the professionals in other competing sectors. As indicated earlier the relevant data was collected through the four Zonal Sub-Committees using the following tools

- Responses to questionnaires received from institutions, teachers and industry.
- Memoranda from various institutions and teachers' Associations.
- Discussions and personal interviews with the Secretaries, Directors of Technical Education, Heads of Technical Institutions, Teachers' Associations and representatives of industry/Government Departments.

The present status of the teachers of technical institutions was determined by analysing and synthesising this data collected by the Zonal Sub-Committees. The present status is discussed under

the following main heads.

- Institutional environment including career development of teachers
- Salary scales vis-a-vis the Public Sector Undertakings
- Work Environment and Service Conditions.

4.1 INSTITUTIONAL ENVIRONMENT

The survey conducted by the National Expert Committee covered the various facets of the Institutional Environment viz. level of vacancies at various positions, stagnation of teachers and facilities available for professional development of teachers etc.

1) Vacancies at various levels

The data collected by the Committee revealed a large percentage of vacancies at various levels in the technical institutions both professional education institutions and the technician education institutions. On the average, it is observed that 18-26% of the posts in professional education and 22-29% of the posts in the Technician education institutions are lying vacant. Table 4.1 shows the average percentage vacancies in the technical institutions.

Table 4.1 Average % vacancy at various levels in Professional and Technician Education Institutions

Sr.No.	Cadre	Average %age vacancy	
		Professional Education Institutions	Technician Education Institutions
1.	Below Lecturer	-	19.55
2.	Lecturer	26.03	21.59
3.	Sr.Lecturer/HOD	-	28.90
4.	Asstt.Prof/Reader	22.49	-
5.	Assoc.Professor/ Professor	18.37	-

The above table brings out the fact that the technical institutions are not able to attract and retain competent and talented professionals in teaching. The various reasons for this state of affairs have been discussed in Chapter III.

ii) Slow rate of career growth resulting in stagnation of teachers

The data shows that the rate of career growth of teachers in technical institutions is poor which results in stagnation at various levels and hence leads to frustration. It may be observed from Table 4.2 that more than 42% of teachers in professional education and about 50% of teachers in Technician Education Institutions remain at the same level for 8 years or more.

Table 4.2 Percentage of Teachers remaining at the same level for more than 5 years

Sr. No	*Period of Stagnation	<u>Percentage of Teachers stagnating</u>	
		Professional Education Institutions	Technician Education Institutions
1.	> 5 years	57.09	65.56
2.	> 8 years	42.11	49.03
3.	> 10 years	32.87	36.60
4.	> 15 years	18.24	22.92

*(Period of stagnation refers to the numbers of years spent by a teacher at a particular cadre position not necessarily at the top of the salary scales)

The fact that the career growth of teachers of technical institutions is slow, is brought out by another set of statistics collected by the Committee. In the technical institutions, a teacher on an average takes nearly 24 years to reach the top cadre viz. that of Professor whereas in the Public Sector Undertakings a professional takes only 18 years or less to reach the highest cadre position.

In the Central Public Services, the career growth is even more rapid. Within a service span of approximately 16 years, the IAS officers are able to reach the super-time scale after getting three promotions, whereas the teachers are able to get only one promotion even though they possess higher qualifications than their counter parts both in public services and public sector .

Table 4.3 depicts the average experience of teachers of technical institutions and professionals in Public Sector Undertakings, at various levels.

Table 4.3 Average experience of Teachers in Technical Institutions and Professionals in Public Sector Undertakings

S.No.	Level/Cadre	Average Experience in Years	
		Teachers in Technical Institutions	Professionals in Public Sector Undertakings
1.	Top level (Principal/Professor/ General Manager)	23.7	17.44
2.	Middle level (Asstt.Prof./HOD/ Dy.Manager)	15.37	10.48
3.	Bottom Level (Lecturer/Engineer/ Asstt.Manager)	7.99	4.77

The slow rate of career growth in the teaching career is due to two reasons i.e. lesser number of cadre positions and inflexible staff structure. The total number of cadre positions in Professional Education is four and in Technician Education Institutions it is three, whereas in Public Sector Undertakings the number of cadre positions varies from 7 to 10. The professionals

in the Public Sector Undertakings spend only 4 to 5 years in a particular cadre position as compared to more than 8 to 10 years, a teacher spends in the same position.

Rigid staff structure also forces a teacher to remain at the same cadre position, simply because there is no vacancy at a higher level, although he may be very talented and may be in a position and fully qualified to undertake the responsibility of the next higher position. The institutions find themselves helpless and cannot reward outstanding talent and thus lose the talented individuals to industry.

iii) Professional Development of Teachers

The large number of vacancies in the technical institutions and absence of leave and training reserve lead to inability of the institutions to sponsor teachers for various Professional development programmes like the Quality Improvement Programme and other short and long term courses. On the other hand, it is vital for a teacher to remain up to date if he has to fulfil his role satisfactorily. This is yet another factor dissuading meritorious people from joining teaching.

Table 4.4 shows the percentage of teachers sponsored by the technical institutions for the Quality Improvement Programmes.

Table 4.4 Percentage of Teachers of Technical Institutions sponsored for Quality Improvement Programmes

S.No.	% of faculty sponsored by the Institutions	
	Professional Education Institutions	Technician Education Institutions
1	7.69	18.02

It would appear as though the responsibility for professional education and training programmes for teachers, including provision of adequate training and leave reserve, must rest on the system.

4.2 SALARY SCALES

Considerable amount of disparity exists in salary scales being offered to young engineering graduates entering the job market. Before attempting to rationalize the salary scales of technical teachers, the Committee felt that it would be useful if information regarding employment pattern sectorwise of the young engineering graduates graduating from the Universities each year was available.

The Institute of Applied Manpower Research (IAMR) had carried out a sectorwise study of employment distribution of engineering graduates who had passed out in 1982.

The results of this study are given in Table 4.5

Table 4.5 Statewise percentage distribution of employed engineering graduates who passed out in 1982 by Sector of Employment

S.No.	State from which obtained Degree	Central Govt.	State Govt. & Local Bodies	Public Sector Under-takings	Private Sector Under-takings	Others
1.	Andhra Pradesh	7.3	13.1	42.2	30.0	7.4
2.	Assam	0.5	57.5	38.0	4.0	-
3.	Bihar	6.5	12.2	47.1	27.7	6.4
4.	Gujarat	2.0	38.0	15.2	34.5	10.3
5.	Haryana	6.25	8.75	27.5	51.25	6.25
6.	J & K	7.4	50.6	13.6	24.7	3.7
7.	Maharashtra	3.1	19.8	14.8	56.9	5.4
8.	Orissa	1.3	42.8	34.2	19.1	2.6
9.	Punjab	8.7	31.3	20.0	35.3	4.7
10.	Tripura	-	72.7	15.2	12.1	-
11.	Tamil Nadu	8.7	20.4	22.2	41.5	7.2
12.	U.P.	3.8	16.3	25.5	46.6	14.8
13.	West Bengal	5.0	6.9	37.6	39.4	11.1
14.	Chandigarh	7.2	15.2	34.8	39.9	2.9
15.	Delhi	2.7	7.2	31.93	51.38	6.95
16.	Karnataka	5.6	23.0	18.1	41.7	11.61
National Average		5.2	22.4	27.6	37.7	7.1

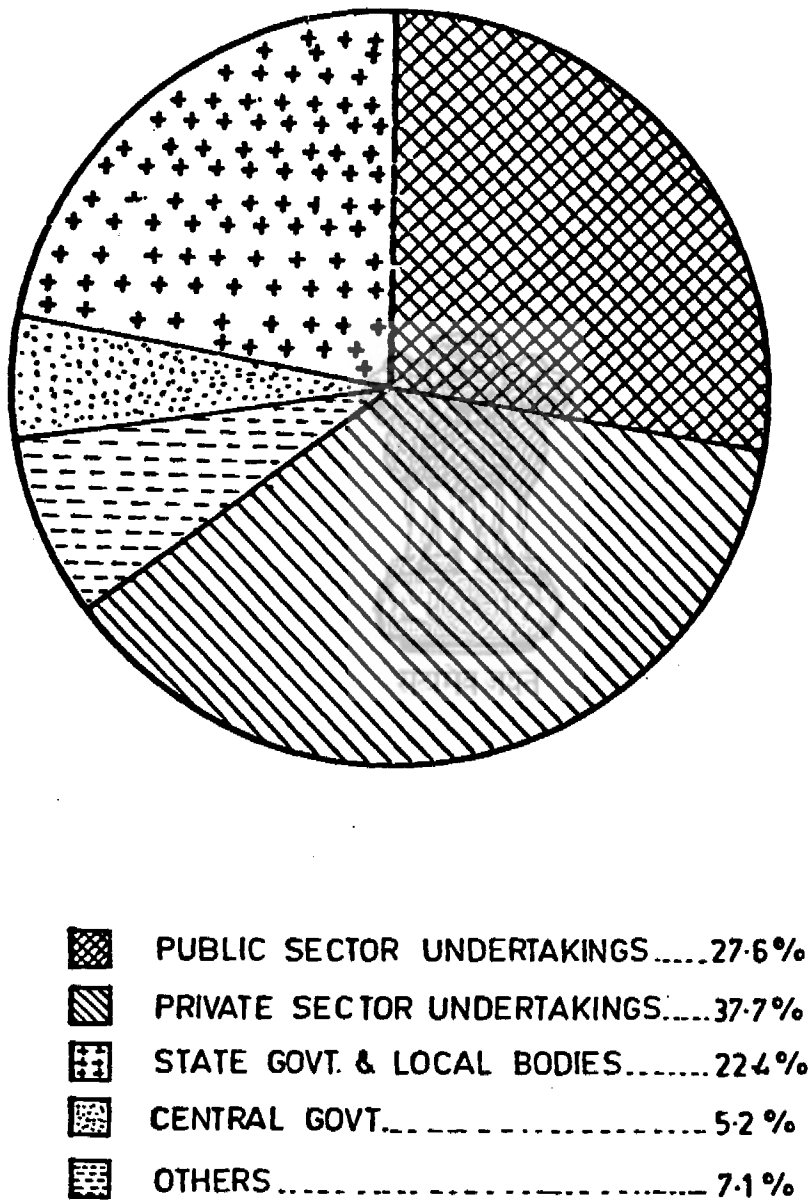


Fig.4.1: Distribution of Employed Engg. Graduates

These results have been graphically represented in figure 4.1

It will be observed from the figure that 65.3% (27.6% + 37.7%) of the graduates opted for the industrial sector, 27.6% (22.4% + 5.2%) for the Government departments and only a part of 7.1% opted for the teaching in Technical Institutions. It may therefore, be concluded from the study that the industrial sector attracts almost 2/3rd of the fresh engineering graduates. We cannot hope to compete with the private sector for obvious reasons as mentioned already. If we have to secure for technical institutions a fair share of competent professionals, public sector emerges as the major competing sector for the technical institutions.

It was therefore, decided to collect data in respect of salary scales of professionals working in Public Sector along with corresponding data for teachers in technical institutions. Similar data was also collected for teachers in the universities and officers in Central Public Services (IAS & IFS).

A comparison of the existing salary scales in technical institutions, and the public sector is given in Table 4.6.

Table 4.6 Comparative statement of salary scales of Technical Institutions and Public Sector Undertakings

S No.	Professional Education Institutions		Industry/Public Sector undertakings		
	Cadre	Salary scales	Cadre	Average total emoluments at minimum of scale	Average emoluments of teachers as a percentag of average emoluments of profes- sional
1.	Lecturer	700-1600 (1855)	Dy. Engrs/ Executive Engr/Asstt. Manager	(2285)	81.18%
2.	Asstt. Professor	1200-1900 (2792)	Sr. Engr/ Project Engr/ Dy. Manager/ Manager	(3429)	81.42%
3.	Professors	1500-2500 (3138)	Chief Engr/ Dy. Genl. Mgr/ Genl. Mgr	(5071)	65.51%

Note: The amount indicated within parentheses indicates the average total emoluments at minimum of scale.

It may be observed that the existing salary scales of teachers of technical institutions are far lower (65% to 80%) than those in the Public Sector although the teachers are required to possess higher qualifications for entering the teaching profession. This disparity in salary scales is responsible for making the teaching profession in technical institutions un-attractive.

A similar dismal picture emerges from Table 4.7 which gives the comparison of salary scales in technical institutions and the Central Public Services. It may be observed that the salary scales of teachers are again far lower than those in the Central Public Services.

Table 4.7 Comparative statement of salary scales of Technical Institutions and Central Public Services

S No.	Central Public Services (IAS & IFS)			Technical Institutions		
	Cadre Position	Salary Scale	Approx. exp. before attaining the cadre	Cadre Position	Salary Scale	Approx. exp. before attaining the cadre
1.	Junior Time Scale	700-1300 (1900-2900)	-	Lecturer	700-1600 (1900-3440)	-
2.	Senior Time Scale	1200-2000 (2840-4140)	4 yrs	Asstt. Professor	1200-1900 (2840-3937)	10-12 yrs
3.	Selection Grade	2000-2250 (4140-4567)	15 yrs			
4.	Super Time Scale	2500-2750 (5155-5465)	16 yrs	Professor	1500-2500 (3170-5155)	17-20 yrs
5.	Addl. Secretary	3000 (5950)	-			
6.	Secretary	3500 (6500)	-			

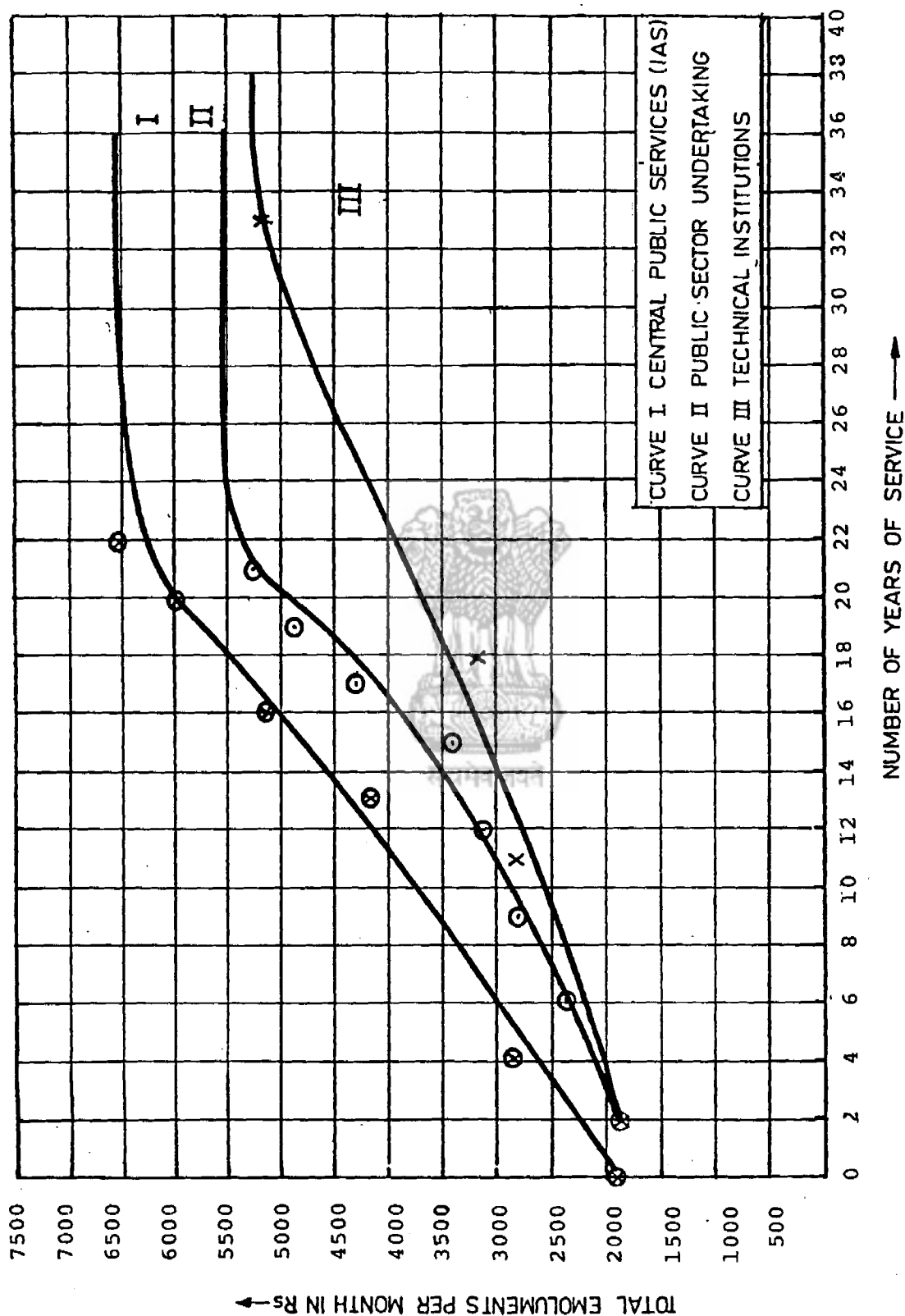


Fig.4.2 Graph showing Total Emoluments in Rupees per Month vs. No. of Years of Service in respect of Central Public Services (IAS), Public Sector Undertakings and Technical Institutions.

The total monthly emoluments with respect to the number of years of service mentioned in Table 4.6 and 4.7 are depicted graphically In Fig. 4.2 in respect of Central Public Services (IAS), Public Sector Undertakings and Technical Institutions.

It may be observed from Fig. 4.2 that while the total emoluments at start are the same, the increase in the total emoluments is the highest for Central Public Services (IAS) followed by the Public Sector Undertakings. The rate of increase of monthly emoluments over the years for Technical Institutions is the lowest. Hence the cumulative earnings over the total working life span are the highest for the Central Public Services (IAS) and lowest for Technical Institutions. No wonder, the meritorious choose Public Services or Public Sector Undertakings for their future careers in preference to teaching.

4.3 WORK ENVIRONMENT AND SERVICE CONDITIONS

The Public Sector Undertakings not only offer attractive salary scales but also provide excellent work environment and service conditions. At the threshold of their careers, the fresh graduates find the 'Total Compensation Package' offered by the Public Sector Undertakings to be far more attractive than what is offered by the technical institutions wherein the fringe benefits and perquisites are conspicuous by their absence. As a consequence, the teaching profession in the technical education is unable to attract talented professionals into the system. Some of the major gaps in the work environment and service conditions are in respect of :

- i) Housing
- ii) Medical Facilities
- iii) Sabbatical Leave
- iv) Group Insurance
- v) Leave Travel Concession
- vi) Conveyance Allowance
- vii) Participation in National & International Conferences.

These have been discussed separately in the following paragraphs.

i) Housing

Housing is one of the basic necessities of life and renting a house, according to the needs and the status of the teacher, is very expensive. Public Sector Undertakings take recourse to leasing if company accommodation is short or not available. According to the data collected by the Committee, 87.22% of the Public Sector Undertakings provide accommodation to 50% or more of their officers, whereas only 33% of Professional Education and 6% of Technician Education Institutions provide housing to 50% or more of their teachers.

Table 4.8 gives the average percentage of Technical Institutions and Public Sector Undertakings providing Housing to their teachers/officers.

Table 4.8 Average percentage of Technical Institutions and Public Sector Undertakings providing Housing

S.No.	Faculty/ Officials provided with Housing	Professional Education Institutions	Technician Education Institutions	Public Sector Undertakings
1.	50%	32.85% (Range 9.1% to 61.2%)	6.28%	87.72%
2.	25% to 50%	24.78% (Range 9.1% to 40.0%)	10.98%	N.A.
3.	25%	42.37% (Range 10% to 81.8%)	82.75%	N.A.

In the Central Public Services too, although there is shortage of housing, the officers are allotted houses on priority basis from the general pool and as such the availability

of housing is far better as compared to that in the technical institutions.

ii) Medical Facilities

After housing, the next most important need of the employees, whether they be teachers of technical institutions or officers in Public Sector Undertakings, is, the medical care for them and their families. Here again the facilities provided to teachers of technical institutions are woefully inadequate. Only about 37% of the Professional Education and 7% of Technician Education Institutions have full time medical officer and general medical facilities as compared to 80% of the Public Sector Undertakings.

Table 4.9 shows the percentage of technical institutions and Public Sector Undertakings providing such facilities.

Table 4.9 Percentage of Institutions and Public Sector Undertakings providing full-time Medical Officer and General Medical Facilities

S.No.	Type of Medical Facility	Percentage of Institutions providing Medical Facilities		Percentage of Public Sector Undertakings Providing Medical Facilities
		Professional Education Institutions	Technician Education Institutions	
1.	Full time Medical Officer & General Medical Facilities	36.5%	7.25%	79.92%

The position regarding reimbursement of medical expenses including medicines is even worse. Whereas almost 100% of the Public Sector Undertakings provide full/part

reimbursement of medical expenses. Committee noted with concern that 50.65% of Professional Education Institutes and 62.36% of Technician Education Institutions do not provide for any reimbursement of medical expenses, whatsoever.

Table 4.10 shows the extent of medical reimbursement in technical institutions and Public Sector Undertakings.

Table 4.10 Extent of Reimbursement of Medical Expenses

S.No.	Extent of reimbursement	<u>Percentage of Institutions providing reimbursement</u>		Percentage of Public Sector undertakings providing reimbursement.
		Professional Education Institutions	Technician Education Institutions	
1.	Full/Part reimbursement	49.35%	37.64%	98.70%
2.	No reimbursement	50.65%	62.36%	1.30%

In case of Central Government Officers, their medical needs are fully covered by the CGHS and other schemes. Where such facilities are not available, full reimbursement of medical expenses (under MRS) including medical consultation is allowed. In any case, the purchase of medicines etc. are fully reimbursed.

iii) Sabbatical Leave

Provision of Sabbatical Leave for teachers of Technical Education for continuous upgradation of knowledge and skills, is vital and an accepted fact all over the world. However, this facility is denied to most of the teachers of technical institutions as shown by the survey.

Whereas nearly 30% of Professional Education Institutions extend the facility of sabbatical leave to the teachers, only 6% of Technician Education Institutions provide this facility. This is shown in Table 4.11.

Table 4.11 Percentage of Technical Institutions providing Sabbatical Leave to Teachers

S.No.	% of Institutions providing professional Education Institutions	Sabbatical Leave Technician Education Institutions
1.	30.17	5.68 (Range 0-22.72)

iv) Group Insurance

The Life Insurance Corporation provides the facilities of life insurance to groups of employees at very nominal rates of premia. Whereas a large percentage (nearly 82%) of the Public Sector Undertakings provide this facility to their officers, only 17% to 24% of technical institutions provide this facility to the teachers. Many of the undertakings even pay the premia for their employees whereas none of the technical institutions do so.

Table 4.12 shows the percentage of Institutions and Public Sector Undertakings providing facilities of Group Insurance Scheme to their employees.

Table 4.12 Percentage of Institutions and Public Sector Undertakings providing Group Insurance Scheme

S.No.	Percentage of Institutions		Percentage of Public Sector Undertakings
	Professional Education Institutions	Technician Education Institutions	
1.	16.94%	24.07%	81.55%

Central Government Employees' Group Insurance Scheme, which is a contributory scheme having an insurance component as well as a savings component, is available to all the Central Government employee who may opt for the scheme if they wish to.

v) Leave Travel Concession

The Central Government and many of the State Governments provide LTC facilities to their employees both for home-town and for anywhere in the country. Nearly 80% of the Public Sector Undertakings extend this facility to their officers whereas only 40% of the technical institutions do so. Table 4.13 shows percentage of technical institutions/public sector undertakings providing Leave Travel Concession facilities to their teachers/Officers.

Table 4.13 Percentage of Technical Institutions/Public Sector Undertakings providing Leave Travel Concession (LTC)

S.No.	Leave Travel Concession	Percentage of Technical Institutions		Percentage of Public Sector Undertakings
		Professional Education Institutions	Technician Education Institutions	
1.	To Home Town	46.77%	45.99%	80.90%
2.	To anywhere in the country	34.47%	33.28%	74.35%

vi) Conveyance Allowance

The data shows that while 83% of Public Sector Undertakings pay conveyance allowance to their officers, none of the technical institutions provide this facility to the teachers. Table 4.14 shows the percentage of Teachers/Officers receiving conveyance allowance.

Table 4.14 Percentage of Teachers/Officers receiving conveyance Allowance

S.No.	<u>Teachers receiving Conveyance Allowance</u>		Officers in Public Sector Undertakings receiving conveyance allowance
	Professional Education Institutions	Technician Education Institutions	
1.	NIL	NIL	83.12%

The role of teachers in technical institutions also involves interaction with the user system and the society and as such they need to be provided with transport facilities as provided by other organisations.

vii) Participation in National and Inter-national conferences

Participation in National and International Conferences is one of the most important professional activities which broadens the horizon of knowledge of the teacher and contributes to his effective teaching. But most technical institutions do not provide the necessary financial support to enable the teacher to participate in such conferences, as is evident from the data collected by the Committee.

Percentage of technical institutions paying TA/DA to teachers for presenting papers in National and International conferences is given in Table 4.15.

Table 4.15 Percentage of Technical Institutions paying TA/DA to teachers for presenting papers in National and International Conferences

S.No.	Type of Conference	Extent of payment of TA/DA	% of institutions paying TA/DA to teachers for presenting papers in National & International conferences	
			Professional Education Institutions	Technician Education Institutions
1.	National	Full Payment	43.50 (Range 0-91.67)	14.67
		Partial Payment	31.85 (Range 0-85)	9.17
		Nil Payment	24.65 (Range 8.33-38.87)	76.16
2.	International	Full Payment	21.50 (Range 0-58.33)	3.85
		Partial Payment	39.25 (Range 8.33-73.7)	2.91
		Nil Payment	39.25	93.24

4.4 CASE FOR BETTER PAY SCALES, SERVICE CONDITIONS AND WORK ENVIRONMENT

From the foregoing statistical data, it is evident that the present status of the teachers in technical institutions as determined in terms of salary scales, service conditions and

work environment is very poor. This has rendered it as the last choice of the bright and talented graduates.

During interviews with alumni of IITs and other Engineering Colleges, the two main reasons cited by the meritorious graduates for not opting for the teaching profession were low salary scales and slow rate of career growth leading to stagnation at various levels. Recruitment of faculty from among graduates other than the most talented will adversely affect the quality of technical manpower produced, which in turn will inhibit the technological and socio-economic advancement and development of the country. The need to improve pay scales and by implication the status of teachers of technical institutions, therefore, can hardly be over emphasised.

Similar sentiment has been echoed by the National Education Policy document as quoted below and accepted by the Nation.

" The status of the teacher reflects the socio-cultural ethos of a society, it is said that no people can rise above the level of its teachers. The Government and the community should endeavour to create conditions which will help motivate and inspire teachers on constructive and creative lines.

The pay and service conditions of teachers have to be commensurate with their social and professional responsibilities and with the need to attract talent to the profession. "

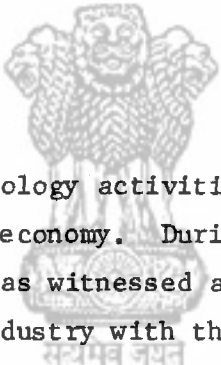
In addition to the lower salary scales, the long period of stagnation at various levels leads to frustration and acts as a major deterrent in attracting and retaining talented professionals to the technical institutions. The cadre structure therefore needs to be re-designed so as to ensure a faster rate of career growth for the teachers of technical institutions.

In order to retain bright and talented professionals in the system, improved pay scales alone would not suffice. The 'Total Compensation Package' comprising pay scales, service conditions and work environment of teachers should be improved considerably to enable them to give their best to the profession.



5. CHALLENGES OF THE TECHNICAL EDUCATION SYSTEM - PRESENT AND FUTURE

5.1 PRESENT CHALLENGES



Engineering and technology activities contribute nearly 35% towards the national economy. During the period after independence, India has witnessed a phenomenal expansion and diversification of industry with the establishment of a large number of large, medium and small scale industries in several sectors of production and manufacturing. This expansion and development has been sustained by the supply of trained technical and managerial manpower at the level of designers and researchers, technologists and supervisory personnel by the technical education system.

The scenario in the world of technology is in a dynamic state with rapid and continuous introduction of new and changing technologies. To keep pace with such rapid advancement in technology, the country would need to have high quality manpower with technical and managerial capabilities in the decades ahead.

5.1.1 Technical Manpower Needs

i) Infrastructure Development

Industrial Development under any situation has to be built on a strong base of infrastructural development in the areas of energy, transport and communication. Along with the phenomenal increase in the quantum of electrical power generated from hydro and thermal sources, the energy sector has made rapid strides by tapping nuclear energy and developing alternate and renewable sources of energy. The transport and communication facilities have also expanded to keep pace with rapid economic and industrial development. However, much is still required to be done in these and other sectors. The technical education system is meeting the manpower needs of the infrastructure sector by diversifying its courses and programmes and modernising the curricula to match the requirements.

ii) Industrial Development

The establishment of large and medium scale industries in the private and the public sectors has called for a continuous supply of competent professionally trained manpower to plan, organise and monitor their growth and development. Institutions like the Indian Institutes of Technology, Indian Institutes of Management and National Institute for Training in Industrial Engineering provide comprehensive facilities to impart Industrial and Management Education at the highest level and foster the development of suitable corporate management systems in the Indian context. But these facilities will need to be expanded considerably to meet the needs of our future development programmes.

iii) Service Sector

Professionally trained manpower is required in several consumer and service sectors like marketing, banking, publicity, entertainment, office management, health, hoteliering, tourism etc. The technical education system has introduced several diversified courses such as Commercial Practice, Pharmacy, Hotel Management, Applied Art etc. to prepare professionally trained manpower for this sector. Yet, a lot still remains to be achieved.

5.1.2 R and D

Revolutionary changes are being witnessed in industry due to several innovations in the offing in science and technology. Evidence of these changes is already there in the advancement being made in artificial materials, instant communications, remote sensing and developing non-conventional energy sources. High technologies are emerging in areas like microbiology, telecommunications, space technology, robotics, laser technology and ocean engineering.

Technical Institutions of higher learning have started to diversify by offering programmes in the high technology and frontier areas and are also offering extension and consultancy services to solve the varied problems faced by the industry in these areas. But much more needs to be done in frontier areas and to keep pace with the rapid advancements.

5.1.3 Expansion and Diversification

Considerable expansion and diversification is taking place in the infrastructural, industrial and service sectors due to rapid rate of growth of knowledge and consequent obsolescence. This

expansion and diversification requires the supply of re-trained technical personnel in ever increasing numbers possessing enhanced competencies to perform their functions effectively and efficiently.

5.1.4 High Degree of Quality Control

A large number of ancillary units are coming up in the industrial sector. These units are producing components required by large and medium scale production and manufacturing industries. The success of the ancillary industry is contingent upon their adherence to strict quality control measures.

The customer of Indian industrial products has been critical of their quality. The export market being highly competitive, unless a high degree of quality control is achieved, the industry will not be able to ensure a good market for its products abroad. The Technical Education System has to address itself to meeting this challenge.

5.1.5 Continuing Education and Training of Technical Personnel

Removal of obsolescence, modernisation of existing technologies and introduction of high technologies are creating constant pressures on the technical education system to update, train and retrain the existing personnel manning the industry at different levels. This is being carried out by organising formal and non-formal programmes by the various technical institutions on a continuing basis depending upon competencies built up in these institutions but much more will have to be done to meet the needs of the economy.

5.2 NEW CHALLENGES TO BE FACED BY THE TECHNICAL EDUCATION SYSTEM

While the technical education system has been trying to meet the demands of manpower development in various sectors, research and

development in high technology and frontier areas and continuing education and training and retraining of a spectrum of industrial personnel, it is now facing a number of new challenges in the context of accelerated national development efforts.

5.2.1 Industrial Self-Reliance

In the competitive world of high technology it is becoming increasingly difficult and counter-productive to depend purely on borrowed technology. Whereas science is universal, technology has to be indigenous and location specific. The borrowed technology has often to be adapted to suit local conditions. All this requires a very high quality of technical manpower and a much greater and sustained effort in the area of research and development. It is, therefore, imperative for a developing country like India to build a strong R&D base with adequate research and development capability in the high technology areas, so that it can realise the cherished goal of industrial self-reliance and self-sufficiency which is crucial for the economic survival and growth of the country.

5.2.2 Import Substitution

Initially, all developing countries need to borrow technology in order to rapidly industrialise their predominantly agricultural economies. However, the cost of acquiring this technology is usually very high and spares for such equipment may not be readily available in the foreign markets as and when needed. This is more critical in the case of up-to-date technologies and defence. Import substitution will, therefore, be one of the most important goals of industrial development in the coming decades. Towards this end, the technical institutions will need to organise and undertake appropriate R and D work on priority basis.

5.2.3 Entrepreneurship Development

There is a growing awareness that the technically trained personnel, instead of looking exclusively to the government and organised sectors for employment should consider starting their own industrial units. This would give expression to their creativity and also generate employment potential. The technical institutions will need to design suitable courses and curriculum to promote entrepreneurship.

5.2.4 Rural Development

The government is committed to rural development in the areas of agriculture and cottage and craft-based industries for raising the levels of productivity, generation of income, providing employment opportunities and improving the quality of life. This can be realised through modernisation of rural industry by generating, adapting, adopting, updating and transferring technology appropriate to agriculture, live stock and forestry based industries.

Research, development and training of manpower for achieving a break-through in this important sector will be one of the top priorities for the technical education system. The higher institutes of technology, the community polytechnics and management institutes will have to contribute to the development of this unorganised sector in a significant way.

5.2.5 Unemployed Masses, Women and Weaker Sections

A large number of youth and adults in the country are unemployed for want of employable skills in them and a large number of them live below the poverty line. There is a lot to be done in the direction of improving productive skills for income generating capacity and life style of these people.

Women, constituting about 50 percent of the population, have to be brought into the main stream of national activity by raising their productivity levels. Further, the needs of the physically handicapped, disadvantaged, minority and other ethnic groups for acquiring productive skills to enable them to participate in national development efforts have to be catered to.

The technical education system will be called upon to provide appropriate inputs in the various formal and non-formal vocational education programmes at different levels to cater to the needs of the above target groups.

5.3 CHALLENGE OF EMERGING TECHNOLOGIES

The technical education system has to provide education relevant to the country's needs and the challenges of emerging technologies. It should also focus on inter-disciplinary research and needs of emerging areas on problems of central concern to industry and opportunities for education and training in the expanding areas of engineering and technology. Giving effect to the bold and new directions in the field of technology and research in engineering and management education will place challenging demands on the technical education system.

The fast technological changes and the emergence of new technologies will require the technical education system to constantly update the curricula, modernise the resources and facilities, diversify the courses and programmes and enhance research facilities in high technology areas. The teacher in the system will be required to continuously update and upgrade his skill and knowledge with reference to the emerging trends in his area of specialisation, relevant industrial practices, pedagogical skills and man-management techniques.

5.4

FUTURE DEMANDS ON THE TECHNICAL EDUCATION SYSTEMS

The future technical education system will be required to offer a variety of programmes, full time and part-time, formal and non-formal, at different levels over a wide range of diversified and inter-disciplinary areas. The research activities will be related to the development of high technologies and inter-disciplinary efforts in emerging technologies together with research in pedagogical areas like development of instructional resources and media, appropriate delivery system etc. These trends will place new demands on the teachers in technical institutions. They will need to have competencies in the methodologies of curriculum development, applications of educational technology in instructional processes and carrying out research in their discipline and inter-disciplinary areas.

For optimal results in the development process it will be essential to inter-link management and engineering. The technical education system will need to cater to the requirements of management education in the non-corporate and under-managed sectors, by offering suitable educational programmes separately at different levels as well as by incorporating these elements into other programmes. In this context, the relevant extract from the 'National Policy on Education - 1986' is given below :

"In order to increase the relevance of management education, particularly in the non-corporate and under-managed sectors, the management education system will study and document the Indian experience and create a body of knowledge and specific educational programmes suited to these sectors ".

The technical education system will be required to meet all these new challenges posed by national development through appropriate R and D efforts, training for entrepreneurship development and mounting a variety of programmes, both formal and non-formal at different levels to cater to the societal

pressures for imparting productive skills to unemployed youth, adults, women and weaker sections of society.

5.5 MULTIPLE ROLES OF THE TECHNICAL TEACHER IN FUTURE SCENARIO

The Technical Education System has been meeting the present challenge of expansion and development of the country's economy and is gearing to meet the challenging demands of the future. The teacher being the king-pin of the Technical Education System will be called upon to play the following multiple roles in the future scenario indicated above :

- Besides being the only vehicle of professional knowledge and skills for the future generation, the teacher has to monitor and evaluate the entire process for effecting innovations and changes.
- To avoid obsolescence in a world of fast changing knowledge, he has to remain himself and keep his students up-to-date.
- Acting as a change agent for introducing innovations in curricula, instructional delivery systems and inter-disciplinary research to meet the new challenges in the coming decades and emerging areas.
- Providing leadership in formal and non-formal educational programmes for the rural masses, un-employed youth and adults, women and weaker sections of society.

The production of such high quality technical manpower needed for these purposes would very much depend upon the quality, competence and character of teachers inducted into the system. The multiple roles that the teacher would have to play in technical institutions indicated in this chapter would require him to have talents, techniques and temperament of a high order relating to his

professional work. Teacher, thus, is the most vital human resource for development in our socio-economic system. In the words of Dr. S. Radhakrishnan

"Teachers' place in society is of vital importance. He acts as the pivot for the transmission of intellectual traditions and technical skills from one generation to another. He not only guides the individual but also (so to say), the destiny of the nation."

Nothing would be more important, therefore, than securing a significant supply of high quality recruits to the profession and providing them with the best possible professional preparation and creating satisfactory conditions of work in which they would be able to give their best to the students and the profession.

If the system fails to optimize the conditions that would draw the best of professionals to teaching, products of technical institutions would be unequal to the new challenges in the coming decades, reiterated above.

6. IDENTIFICATION OF BASIC ISSUES

6.1 CRITERIA FOR EVOLVING A RATIONAL PERSONNEL POLICY

A rational personnel policy for balanced growth and development of the country should ensure that talented and capable professionals are made available in all sectors of the economy. Attempts have been made lately to reduce the differential in the starting salary in different critical sectors but it still persists. On the other hand, there is a wide disparity in the salary at the highest cadre positions. This certainly cannot be justified if we accept the premise that competent and good people are needed in all sectors of the economy for its balanced growth.

The career profiles in various sectors are also very different. In the case of Public Sector Undertakings, the number of cadre positions is large thus ensuring a faster rate of career growth. Even in the case of Central Public Services (like IAS, IFS, and IPS) the promotions are quite rapid. According to data collected by the National Commission on Teachers (Higher Education), only 15-24% of the officers are in the lower cadres. Whereas in technical institutions the statistics collected by the Zonal Committees indicate a stagnation period of 15 years for nearly 35% of the teachers.

The far from satisfactory status of the teachers of technical institutions in respect of their salary scales, service conditions and work environment has been highlighted by the data collected by the Committee through the four Zonal Sub-Committees and has been discussed in Chapter II and IV. It may be observed that the existing salary scales and the career profiles offered by the technical institutions compare very poorly with other sectors and are grossly inadequate.

Hence there is need to identify and adopt a salary policy consistent with the demand of the times that would provide for reasonable salary scales, service conditions and work environment in technical institutions. This alone will attract talent of the calibre needed, in adequate numbers, to teaching in these institutions.

6.2 BASIC ISSUES

The Committee having examined and deliberated on this problem in detail has come to the conclusion that consistent with the logic of the circumstances, already outlined, in the earlier part of the report, the following basic issues emerge solution to which would help in evolving such a policy.

Further, the solution of these issues will also serve, the much needed purpose, of enhancing the status of teachers of technical institutions in the society in keeping with their contribution and the stated intentions of the Govt. in the National Education Policy.

The basic issues as identified by the Committee are as follows

- (i) The total financial package of teachers should be made attractive so that the best available talent is attracted and retained in the teaching profession, in technical institutions.
- (ii) The revised salary scales should be commensurate with the job requirements, level of responsibility, qualification level and experience requirements for various posts.

- (iii) The revised Total Compensation Package should compare favourably with that offered in the Public Services and the Public Sector which are the competing sectors for the Technical Education.
- (iv) In the public sector undertakings the number of cadre positions are much greater resulting in much faster career growth. The career profile of the teachers must be improved to provide the necessary incentives to the most talented individuals, who need to be inducted into the system.
- (v) Necessary support system for Professional development of the technical teachers must be created within the technical education system.

6.3 SOME ADDITIONAL ISSUES

In addition to the above five basic issues directly related to the total compensation package and the career profile of the teachers, there are some additional issues affecting the system that would require to be solved before an acceptable policy in the interest of technical education can emerge.

6.3.1 Types of Technical Institutions

As has been noted earlier, Technical Institutions may be broadly categorised into two classifications Professional Education Institutions and Technician Education Institutions. While the majority of Professional Education Institutions run undergraduate programmes in engineering, technology etc., increasing number of institutions will need to conduct post-graduate and advanced programmes including teacher training in the future to meet the needs of our economy.

Likewise, whereas majority of Technician Education Institutions offer generalised diploma programmes in engineering, technology etc., some institution also conduct advanced level technician courses and post diploma programmes. The demand for such programmes

will also increase in the near future because of the technological requirements of the economy.

Both categories of technical institutions are equally important and the competence needs of teachers in both types is equally high, though of a different kind. The cadre structure should, therefore, be so designed as to attract equally competent professionals to suite the requirements of various programmes offered by both these types of technical institutions.

6.3.2 Entry at Undergraduate level

The Government Departments and the industry, both private and public sector, select their officers as probationers from amongst the graduates of the technical institutions their entry qualifications being Bachelor's Degree in relevant field. The selected candidates undergo a tailor-made training programme to suit the specific needs of the organisations. These organisations are able to tap the best talent because graduates at that point of time are looking for suitable job opportunities rather than opt for further studies to improve their qualifications, particularly when it neither improves their pay package nor their career prospects. The existing entry qualifications to the technical institutions being a Master Degree in the relevant field, the best amongst the fresh graduates are lost to the teaching profession. It is therefore, necessary to evolve a personnel policy whereby bright and talented engineers, technologists and managers are inducted into the system from amongst the fresh graduates who may then be specifically trained by the system to meet the requirements of the teaching profession.

6.3.3 Flexibility in Cadre Structure

The existing staff structure in the technical institutions is rigid as the number of cadre positions at various levels is fixed. The number of posts at various levels are arrived at on the basis of a

prescribed ratio having hardly any rationality. This rigidity in the cadre structure adversely affects the rate of career growth of teachers. The Cadre structure should, therefore, be flexible in that the outstanding teachers possessing required qualifications and experience should not be denied promotion merely because of non-availability of sanctioned posts.

6.4 STRATEGY FOR IMPROVEMENT

As has been noted earlier perhaps the most significant of all the measures enumerated in para 6.2 for attracting and retaining the best available talent in the Technical Education System is improving the 'Total Compensation Package' of teachers comprising of their salary scales, service conditions and work environment. Having considered this problem in detail the Committee took the view that in formulating the detailed recommendations in this respect in Chapter 7, the following guide lines may be of some help.

6.4.1 Salary Scales

Salary structure of a technical teacher should be commensurate with his high qualifications, longer preservice training period and extremely challenging job requirements and his contribution in the developmental process. It should be comparable to that obtaining in other competing sectors.

6.4.2 Service Conditions

The service conditions of teachers of technical institutions such as leave rules and ITC, retirement benefits, medical benefits, deputation rules etc., must be made favourable and attractive enough as existing in public sector to create conditions conducive to his better performance as a teacher.

6.4.3 Work Environment

The work environment of the teachers must be improved adequately by providing housing, academic support, staff and secretarial facilities, office space, communication facilities, books/journals allowances, quality improvement programmes, group insurance adequate travelling allowances etc. A conducive work environment will enable a teacher to perform the various roles assigned to him efficiently and effectively.

6.4.4 Attractive Career Pattern

The present cadre structure has created a high level of stagnation and frustration among the teachers in technical institutions and it is impressive that the number of cadre positions in technical institutions should be suitably increased to provide a reasonable rate of career growth for maintaining a sense of achievement and satisfaction amongst the teachers.

The cadre structure should be flexible to provide for unstructured progression of highly talented individuals with proven experience and attainment. This will greatly enhance the acceptability of a teaching career in technical institutions by a number of highly talented professionals who may otherwise be lost to the teaching profession.

6.4.5 Opportunities for Professional Development

Opportunities for individuals to develop themselves professionally must be adequately provided. Financial and policy support should be extended to enable the individuals to participate in continuous updating and upgrading programmes.

6.5 ADVERSE CONSEQUENCES OF NOT PROVIDING A BETTER DEAL TO TECHNICAL TEACHERS

Presently, the technical institutions are facing an acute shortage of teachers. The position is likely to worsen in the coming years if the status of the teachers comprising salary scales, service conditions, and work environment is not considerably improved. The adverse consequences of not providing a better deal to the teachers will be as under

(i) Deterioration of Standards

The system will continue to recruit a disproportionately large number of mediocre professionals who are unable to find employment elsewhere, in the industrial or service sectors. Recruitment of faculty other than the most talented will adversely affect the quality of technical manpower produced at all levels.

(ii) Retarded Socio-economic Development

The technical manpower produced by the technical institutions contributes to productivity, quality, and growth of industries in the country. As the quality of technical manpower produced in the country will be adversely affected by inducting mediocre professionals as teachers, it will inhibit the technological and socio-economic advancement and development of the country.

7. RECOMMENDATIONS

That the "status" of the teacher in respect of his emoluments, service conditions and work environment has to be improved if we wish to attract the meritorious to the teaching profession, has been fully established in preceding chapters of our report. This view is shared equally by the Govt. and the Nation. The National Policy Document on Education States :

" The pay and service conditions of teachers have to be commensurate with their social and professional responsibility and with the need to attract talent to the profession ."

Sentiments such as "Teaching is a noble profession "no longer enthuse the younger generation faced with a competitive world in which status of a person increasingly depends upon the quantum of monetary compensation that the society is prepared to grant him for his function. If the contribution of the technical teacher is vital to the development process, which indeed it is, as also argued in this report, then there is no reason why he should not be adequately compensated for his

contribution commensurate with his responsibility in the society.

The Committee, following an identifiable scientific method, spelt out clearly in earlier chapters, has finalised the following set of recommendations in respect of cadre structure, salary scales, service conditions and work environment of teachers of technical institutions which if implemented should help to attract and retain the talented to the teaching profession.

7.1 CADRE STRUCTURE

The cadre structure in technical institutions is perhaps one of the most important components affecting the technical education system. Formerly the cadre structure in technical institutions comprised of a minimum of five stages, which were reduced at the time of the last revision in 1974 to four in the case of Professional Education and to three in Technician Education institutions. सत्यमेव जयते

The existing cadre structure neither satisfies the requirements of the job roles of teachers at various levels as indicated elsewhere in the report, nor does it find favour with meritorious and talented individuals desirous of making teaching their career.

The Committee examined the issue in detail and reached the conclusion that besides the probationary lecturer, the number of cadre positions in technical education should be increased to atleast five in case of Professional Education and to four in case of Technician Education Institutions in response to the perceptions indicated above. The details of the recommended cadre structure are given below

A. Cadre Structure for Programmes conducted by Professional Education Institutions

Post-graduate/Advanced Programmes
including teacher training

Under-Graduate
Programmes

1. Asstt. Professor
2. Assoc. Professor
3. Professor
4. Professor (Sr.Scale)
5. Director

0. Probationary Lecturer
1. Lecturer
2. Asstt. Professor
3. Assoc. Professor
4. Professor
5. Principal

B. Cadre Structure for Programmes conducted by Technician Education Institutions

Post Diploma Programmes

Diploma Programmes

0. Probationary Lecturer
1. Lecturer
2. Lecturer (Selection Grade)
3. Sr. Lecturer
4. Professor
5. Principal

0. Probationary Lecturer
1. Lecturer
2. Lecturer (Selection Grade)
3. Sr. Lecturer
4. Principal

The above cadre structure in Technical Institutions pertains to the various types of programmes conducted by the Technical Education System and not to any institutional categorisation. All technical institutions would have a mix of various types of programmes depending upon the individual emphasis of each institution. The total number of faculty positions in the institution would be determined by prescribed staff/student ratio for various categories of programmes. The present ratios of 1:8 and 1:4 for undergraduate and advanced programmes

programmes have worked satisfactorily so far and should be adhered to. In the case of Technician Education, it is recommended that the ratios should be 1:10 and 1:8 for generalised diploma and post diploma programmes respectively. The teachers recruited by the institution would have to jointly shoulder the responsibility of conducting all the programmes offered by the institution. The number of faculty positions against each cadre will have to be determined by the individual needs of each institution. The flexibility in the academic structure of the Technical Education System is needed to enable it to respond to the rapid advancement, of late, in new and emerging areas of technology and to enable each institution to grow according to its own developmental needs and potential.

7.1.1 Additional Cadres

Two additional cadres of Associate Professor and Professor (Sr.Scale) have been proposed for the under-graduate and post-graduate programmes conducted by Professional Education Institutions, and Lecturer (Selection Grade), Sr.Lecturer and Professor in the diploma and post-diploma programmes conducted by Technician Education Institutions.

7.1.2 Fixed-term Appointments

In addition to the cadre positions indicated above, the Committee recommends that technical institutions may engage outstanding professionals from the industry or the profession on Fixed term appointment basis for conducting specific programmes/courses and assignments. This would greatly enhance the interaction between the profession and the institutions for their mutual benefit.

7.1.3 Award of National Professorships

It is also proposed to make provision for the award of National Professorships in the post-graduate/advanced programmes in Professional Education Institutions to Professors who have shown outstanding merit in their field of work at the national level. This would be as a recognition of their distinguished work and

not a regular cadre position. These positions would therefore be limited in number. The selection for such awards shall be done at the national level. The All India Council for Technical Education may evolve a suitable mechanism for such awards.

7.1.4 Cadre Positions Different from Faculty Cadres

In some institutions there exist separate cadres for Research and Development in addition to Faculty Cadres. The Committee feels that the Institutions may decide on the parity of these cadres with the corresponding faculty cadre positions according to the needs of the institutions.

7.1.5 Salient Features of the Academic Structure

The salient features of the academic structure are given in the following paragraphs

i) All India qualifying Examination at Entry

The Committee recommends that professionals should be inducted into the system with a 1st Class Bachelor's Degree in the relevant field and the responsibility of their further training should be taken by the system.

As there would be variation in the standards of technical institutions, the Committee proposes that an All India Qualifying Examination (like GATE) should be held for inducting the fresh graduates. Various technical institutions have their own selection procedures and will select, through open selection procedures based on merit, talented graduates from among those who have qualified the All India Examination and appoint them as Probationary Lecturers.

ii) Induction of Teachers of Humanities and Applied Sciences

In case of teachers of Humanities and Applied Sciences, the entry will be directly at the level of Lecturer with Doctorate in the relevant field, through open selection procedures based on merit.

iii) Lateral Entry

Although the cadre structure has been designed to induct teachers with a Ist Class Bachelor's Degree in the relevant field as Probationary Lecturers and then providing suitable training to equip them for the teacher's role by the system itself, there may be talented professionals fulfilling the qualifications needed for the higher cadre posts in the institutions, who may wish to take up teaching as a career. All teaching positions being open selection posts, such individuals who possess the requisite qualifications would be eligible to apply for these posts and enter the system laterally at all stages. However, the lateral entrants would have to undergo the prescribed pedagogical and industrial/professional training, if not done earlier.

iv) Basic Education and Training Programme for Probationary Lecturers

The Committee recommends that the Probationary Lecturers both in professional and technician education institutions shall be required to complete prescribed three years basic education and training programme to equip them to embark on a teaching career.

For the professional education institutions, this programme will consist of subject matter development leading to a Master's Degree, 1 year professional exposure and upto 6 months pedagogical training.

The programme for technician education institutions will be similar in content but the subject matter development leading to a Master's Degree or equivalent, should be designed specifically to meet the needs of the technician education i.e. problem based rather than concept and research oriented as in the professional education institutions.

It would be an advantage if all these programmes are modular in nature to afford necessary flexibility in the choice of the special subjects by the teachers according to their needs and choices.

On Successful completion of the prescribed basic education and training programme, the probationary Lecturers will be confirmed as Lecturers in the system.

v) Advanced Education and Training Programme for Lecturers

During their tenure as Lecturers they would be required to undergo an advanced education and training programme of 2 to 3 years duration leading to Doctorate or equivalent. This programme will prepare them for their future role in research and development in disciplinary and trans-disciplinary areas including education and management of education and development of new programmes in professional and educational fields. The advanced training programme for technician education institutions

though structurally the same, will be different in concept as compared to professional education institutions. These programmes will have to be evolved and need to be specially designed to meet the needs of the technician education institutions. The Technical Teachers' Training Institutes may be asked to design appropriate programmes in consultation with other suitable advanced level institutions identified for the purpose. These programmes should preferably be organised on a modular basis to provide sufficient flexibility for the teachers to make a suitable choice of courses and time.

vi) Modular Pedagogical Programme

All lateral entrants including Humanities and Applied Science Teachers joining directly as Lecturers would be required to successfully complete the prescribed pedagogical training programme of suitable duration within a period of 3 years of their selection, if not done earlier.

vii) Training needs in New and Emerging Areas

Apex institutions such as IITs and IIMs and Technical Teachers' Training Institutes etc. should generally focus on the training needs of teachers in new and emerging areas in Science and Technology whereas the other selected technical institutions should mainly conduct programmes in conventional areas of which there would be ample demand for in-service training programmes.

The Committee would also like to emphasise the urgent need of organising and conducting short-term courses to meet the training and re-training needs of the system. This aspect has been rightly stressed in the National Education Policy.

viii) Career Growth

a) Staff Structure

At present the staff structure in technical institutions is rigid in that the number of cadre positions at various levels is fixed. This adversely affects the career prospects of teachers. Many brilliant teachers are often denied promotion due to non-availability of sanctioned posts not withstanding their fulfilling the requisite educational and experience requirements. As such, the Committee has recommended a flexible staff structure wherein the number of posts at various levels may be decided by the institution to suit its specific requirements, subject to the total number of posts not exceeding the number sanctioned on the basis of prescribed staff-student ratio.

b) Increased Cadre Positions

The number of cadre positions have been increased to five each for post-graduate, advanced level, under-graduate and post-diploma programmes and to four for diploma programmes. For programmes conducted by Professional Education Institutions, the additional cadre position of Associate Professor has been introduced to prevent the scale of Professor becoming too long and to fulfil the specific job requirements and level of responsibility at this stage.

The cadre position of Professor (Sr.Scale) and award of National Professorship for Post-graduate and advanced level programmes, have been introduced to accord recognition to outstanding teachers at the institute and national levels, respectively. The additional cadre positions for the programmes conducted by Technician Education Institutions have been introduced to cater to the specific job requirements and levels of responsibility at various stages.

The flexibility in the staff structure and the increased number of cadre positions would ensure a faster rate of career growth for teachers of technical institutions.

c) Pursuit of Excellence

The proposed cadre structure envisages filling of all posts through Open Selection for ensuring professional excellence. While our present Selection Procedures have served the system reasonably well, it can not be said that they are free from any kind of subjectivity. We assess the candidate on his research publications and a short interview which is hardly adequate for assessing his potential as a teacher. While research is important, the teacher has many other roles to fulfil. Without any data base of his performance in these roles, assessment of his true potential as a teacher is very much handicapped leading to subjective selection.

Pursuit of excellence would require greater objectivity being built into our selection procedures. The Committee has considered this matter in detail and has come to the conclusion

that in order to achieve that, it will be essential to make available to the Selection Committees, comprehensive Data Base concerning performance of the teacher in his various roles. For this purpose, it will be necessary to evolve a comprehensive system of teacher evaluation suggested in Chapter 8 which should constitute the central feature of our Technical Education System.

d) Unstructured Progression

The cadre structure also provides avenues for unstructured progression by relaxing the minimum prescribed experience requirements by two years, for teachers of proven capability having outstanding performance record and excellent appraisal reports to their credit. This will provide a faster rate of career growth to the outstanding teachers.

7.2 SALARY SCALES

The committee is convinced that attractive salary scales linked to satisfactory career profiles are not a concession for mitigating the frustration prevalent amongst the teaching community but an investment in human resources. Ability and competence of teachers will be a key factor in sustaining the dynamics of academic excellence and the capacity of institutions to function as instruments of socio-economic change. It is, therefore, essential to induct competent and talented professionals into the teaching profession in technical institutions.

The entry qualifications and education and training for professionals inducted into the professional and technician education institutions being the same, it is logical that comparable salary scales should be made applicable for both these types of technical institutions. Difference in their salary scales in the past has led to the situation where technician education has been deprived of competent people who could have imparted a distinctive character to technician education as per requirements of the economy.

The details of salary scales for various cadres are given below :

A. Professional Education Institutions

	Post-graduate/advanced Programmes including teacher training	Under-graduate Programme
0. Probationary Lecturer	-	2200-75-2800
1. Lecturer	-	2800-100-3500 125-4500
2. Asstt. Professor	3700-125-4700 150-5300	3700-125-4700- 150-5300
3. Assoc. Professor	4500-150-6300	4500-150-6300
4. Professor	5100-150-6300- 200-7300	5100-150-6300 200-7300
5. Professor (Sr. Scale)	6700-7500	
Principal (Undergraduate programme)		7300/- fixed.
6. Director	8000/- fixed	

NOTE: 1. National Professor will be paid Rs. 8000/- or above.

2. Heads of Institutions will be provided free furnished accomodation.

3. The scales mentioned above have P.A component merged upto 1.4.1986 (608 points).

B. Technician Education Institutions

	Post Diploma	Diploma Programmes
0. Probationary Lecturer	2200-75-2800	2200-75-2800
1. Lecturer	2800-100-3500 125-4500	2800-100-3500 125-4500
2. Lecturer (Sr. Scale)	3700-125-4700 150-5300	3700-125-4700 150-5300
3. Sr. Lecturer	4500-150-6300	4500-150-6300
4. Professor/ Principal (Diploma Programme)	5100-150-6300 200-6700	6500/- fixed
5. Principal	7000/- fixed	

Note 1. Heads of Institutions will be provided free furnished accommodation.

2. The scales mentioned above have DA component merged upto 1.4.1986 (608 points)

The salary scale for probationary Lecturer at entry into the system has been proposed to be fixed at 2200-75-2800. This scale is the same as offered in the Public Services and is comparable to that offered in the Public Sector Undertakings. The highest salary scale has been proposed to be fixed at Rs.8,000/- on the basis that the salary at the highest level at exit point should be nearly four times the salary at entry point. A similar recommendation has been made by the National Commission on Teachers (II). The salary scales for the intermediate cadre positions have been proposed to suit the specific needs of the technical education system and there can be no possible direct comparison with the intermediate levels in Public Sector Undertakings or the Public Services because the needs of every system in matters of detail will be different.

The cadre structure for the various types of programmes conducted by technician and professional education institutions has been designed on the basis of an average tenure of 8 to 10 years for the different cadre positions. The cadre structure allows for inter-institutional mobility and provides a faster channel of career growth for teachers with outstanding performance and consistently good appraisal reports. The eligibility for selections to positions of higher responsibility will depend upon prescribed performance levels under the performance appraisal scheme. Basic and advanced level education and training programmes have been in-built into the structure to enable the teachers to perform their roles effectively and efficiently. Provision has also been made for training and re-training of teachers in new and emerging areas to enable them to respond to the advancements and changes in technology and meet the requirements of the user system. The details of the recommended Cadre Structure and revised salary scales are given in Table 7.1

7.3 SERVICE CONDITIONS AND WORK ENVIRONMENT

While pay package is given paramount importance by the fresh graduates in deciding upon the choice of a career, service conditions and work environment also play an important role in making this decision.

The Committee is convinced that for effectively fulfilling the basic aim of attracting and retaining talented persons to the teaching profession, revision of salary scales alone will not suffice and it would be necessary to make specific recommendations to improve service conditions and work environment of the teachers. The Committee, having considered the service conditions and work environment in the technical institutions and the Public Sector Undertakings, makes the following recommendations.

7.3.1 Service Conditions

Well defined conditions of service will help both teachers and employers in having realistic expectations of each other.

This aspect is further emphasised in view of the need for a comprehensive performance appraisal system in technical institutions. The major service conditions are given below :

(i) Terms and conditions of Service

At the time of recruitment, the appointment letter issued by the Institution and its acceptance by the teacher constitutes a contract between the teacher and the institution. The appointment letter should, however, be more specific and incorporate the following salient terms and conditions of service.

- Period of appointment and mode of confirmation.
- Salary scales and allowances
- Mandatory Professional training and retraining, both pre-service and in-service.
- Mandatory performance appraisal system.
- Job description
- Resignation from and termination of service
- Retirement and pre-mature retirement
- Disciplinary procedure

The appointment letter should also state that the service rules of the Institution as framed from time to time would be applicable.

(ii) Leave Rules and Leave Travel Concession

At present, rules for various kinds of leave vary from one institution to another and from one state to another.

The Committee recommends that all types of leave such as Casual Leave, Earned Leave, Medical Leave, Extra-ordinary leave, Maternity Leave, Detention Leave, Encashment of Leave during services etc. should be uniformly made available to all technical institutions as per leave rules of the Central Universities.

The Committee has noted with concern that presently facilities of Study Leave, Sabbatical Leave and Academic Leave are provided only in a very few technical institutions. Technician Education Institutions, in particular, have been deprived of this facility. The Committee recommends that rules for study leave, sabbatical leave and Academic Leave should be uniformly made applicable to all technical institutions as per rules of the Central Universities.

(iii) Age of Superannuation

In view of the proposed career growth pattern for teachers, a great deal of time, effort and material resources will be invested in training and re-training the teachers. In order to fully utilise this investment in human resources, the Committee recommends that age of superannuation should be raised to 62 years. This would provide a working life span of approximately 40 years for the teachers since they would be inducted into the system with a Bachelor's Degree at the age of 22 years. Upon retirement, teachers may be re-employed if needed by the technical institutions to utilise their special services for a period of three years under a separate contract. The Committee is not in favour of giving extensions.

iv) Retirement Benefits

Majority of the Government run Technical Institutions offer General Provident Fund-cum-Pension-cum-Gratuity scheme to the teachers. A small percentage of such institutions offer a choice of two schemes to the teachers namely, General Provident Fund-cum-Pension-cum-Gratuity and Contributory Provident Fund-cum-Gratuity Scheme. These institutions seek the option of teachers for any one of the above schemes. The Committee recommends that all technical institutions should offer a choice of the aforesaid two schemes to the teachers with contributory Provident Fund at 10% as in the Central Universities. The teachers may be given the option to choose anyone of the two schemes.

However, if some private institutions are not in a position to offer the benefit of pension scheme, such institutions should provide atleast as a minimum Contributory Provident Fund-cum-Gratuity Scheme with Contributory Provident Fund at 10% to the teachers, as in Central Universities.

v) Medical Benefits

While Central Government Services and the Public Sector Undertakings provide full facilities of medical care to their employees, the teachers of most technical institutions seem to be unfairly placed. The Committee recommends provision of a full time Medical Officer and General Medical Facilities on the campus for technical institutions which have a fairly large component of their staff and students living on the campus. For other technical institutions a visiting Medical Officer may be appointed on a part-time basis.

The Committee has noted with concern that many technical institutions do not provide any reimbursement of medical expenses incurred by the teachers. The Committee recommends full reimbursement of medical expenses incurred by the teachers on themselves and their families as per the Central Government rules. These rules should be uniformly followed by all technical institutions.

The Committee further recommends that the possibility of introducing medical insurance scheme of nationalised General Insurance Companies for teachers of technical Institutions may also be explored. The scheme would provide a flexibility to the teacher regarding the extent of coverage required by him for self and family. The Committee also recommends that adequate post-retirement medical benefits should be extended to teachers of all technical institutions and in this respect, Central Government rules may be followed.

vi) Work-load of Teachers

Apart from the self-study by the teacher at home his institutional work load is 40 hours per week for performing the various roles assigned to him such as class-room teaching, laboratory instruction, tutorials and seminars, research and development, development of print and non-print instructional resources, development of laboratories and workshops, examination and student evaluation, administration and management at department and institution level, extra curricular activities of the student etc. The Committee, However, recommends that out of this total work load the actual contact time with the student should not be less than 180 - 200 days in order to provide greater interaction with the students.

vii) Vacations

The National Policy on Education 1986 has laid great stress on the training and retraining of faculty members to upgrade Technical Education. It states

"Teachers will have multiple roles to perform teaching, research, development of learning resource material, extension, and managing the institution.

Initial and in-service training will be made mandatory for faculty members and adequate training reserves will be provided. Staff Development Programmes will be integrated at the State, and coordinated at Regional and National levels."

The Committee feels that the teachers should be required to use this period of student vacations as a self-renewal period. The Committee, further recommends that this uninterrupted period of two months should be utilised by the institutions to upgrade their teachers by organising suitable training and retraining programmes and undertake other development work such as preparation of resource materials and development of laboratories etc. The institutions could further utilize this period to sponsor their teachers to the various short term courses and training programmes being organized by other institutions.

This would place the teaching faculty on par with their counter parts in the public sector. Their entitlement to leave would then be the same i.e. 30 days earned leave every year as in these organisations.

viii) Mobility within the System

The Committee considers mobility of teachers between one technical institution and another to be advantageous.

This would encourage the cross fertilization of the varied experiences of different institutions.

In order to promote mobility of teachers within the system, the Committee recommends that the period of service of a teacher in several technical institutions should be added for the purpose of all service benefits. Lack of this facility serves as a disincentive to mobility.

ix) Deputation rules for short and long term appointments

Similarly, the committee considers the exchange of teachers on a short or long term basis between different institutions would be of considered value from the point of view of exchange of experience to promote excellence.

The Committee, therefore, recommends that each technical institution should be required to have clearly defined deputation rules for short and long term appointment of teachers. The Committee feels that these provisions should be more liberal in the interest of upgrading technical education.

x) TA/DA

Teachers experience great difficulty when they proceed on official tours because of non-availability of suitable accommodation. Often they have to stay in hotel for which the expenditure incurred is not fully reimbursed. The Government should, therefore, encourage the construction of guest houses for teachers at Central locations in all major cities, in the country.

The Committee further recommends that TA/DA to teachers of all Technical Institutions should be paid as per Central

Government Rules. In special circumstances, teachers should be reimbursed the actual hotel expenses incurred by them.

In respect of local journeys the actual expenditure incurred by teachers on conveyance should be reimbursed as a right and not as a favour.

xi) Rules for settlement of grievances

The rules of settlement of grievances should be framed by all technical institutions and the teacher should be provided with a copy of these rules.

7.3.2 Work Environment

In order to optimally utilise the investment made in the recruitment and training of talented professionals induced into the profession in technical institutions, it will be necessary to ensure that the work environment provided for them is such as will motivate the teachers to give of their best to the students and the profession. The Committee, therefore, makes the following recommendations in this regard.

i) Housing

Housing is a major factor which determines the standard of material life. It assumes particular importance for teachers since it is essential for them to study at home and prepare for their lectures/seminars etc. For teachers of technical institutions, ideally 100% housing should be available on the campus but because of the financial constraints this may not be possible. The Committee recommends

- a) Housing on campus must be provided to atleast 50% of the faculty.

- b) The Government may create a House Building Fund for giving loans at nominal rate of interest to the institutions for construction of housing on the campus.
- c) The teachers may be encouraged to build their own house in local colonies and house building loans at nominal rate of interest should be given to the teachers for this purpose.
- d) The institution may acquire suitable accommodation on Institutional lease and provide it to the teachers. The house rent for this hired accommodation may be charged at the same rate as for campus housing.
- e) The institution should pay house rent allowance upto 30% to reimburse the teachers adequately for renting suitable accommodation where accommodation is not provided by the institution. The Committee feels that alternatives (b) & (c) are worth pursuing in the long interest of the teachers.

ii) Conveyance Advance

Teachers in technical institutions must interact with the industry and other user system organisations to make teaching/research more meaningful. A conveyance advance on nominal rate of interest should be given to the teachers for purchase of a vehicle. An advance for the purchase of a Car may be allowed to teachers of the cadre of Associate Professor/Sr. Lecturer and above and an advance for a two-wheeler may be allowed to other teachers.

iii) Conveyance Facility

The role of teachers in technical institutions involves inter-action with the user and the society. The institutions should, therefore, provide staff cars for this purpose.

When such facilities are not provided by the institutions, teachers should be reimbursed the expenses incurred by them towards local journeys for such interaction fully without any administrative impediments.

iv) Office Space

Teachers of the level of Assistant Professor/Lecturer Selection Grade and above should be provided with well furnished single rooms for their academic/research work and interaction with the students. Other faculty should be provided with well furnished rooms for academic work which may be shared with another colleague.

v) Communication Facilities

Teachers in technical institutions must interact with industry and other organisations for functioning effectively and efficiently. Adequate communication facilities should be provided to teachers as given below

- a) Internal telephones/inter-com facilities at office should be provided to all teachers.
- b) External Telephone through a central institutional exchange should be provided to teachers of the level of Assoc. Professor/Lecturer (SG)
- c) Independent external telephone at office and at residence must be provided to the faculty of the level of Professor and above.

vi) Secretarial Facilities

The faculty must be provided with necessary secretarial assistance to give of their best to the students and to contribute effectively to the profession. All departments

should be provided with atleast one Stenographer and one typist. In addition, departments undertaking post-graduate work should be provided with one Stenographer for every five faculty members.

To further strengthen these central facilities, adequate duplicating and reprographic facilities should be provided in the institutions/departments.

vii) Resource Centre/Library Facilities

Libraries should be strengthened with text-books reference books and journals in the relevant fields. Adequate Audio/visual aids and equipment should be provided for use by the teachers.

Duplicating and reprographic facilities must also be provided in the Resource Centre/Library.

viii) Books/Technical Journals Allowance

The teachers should be reimbursed the cost of books/technical journals that the teacher buys to the extent of Rs.1,000/-p.a. Books and Journals have become very expensive and beyond the reach of poor teachers. Yet they are their most important tools for excellence and for remaining up-to-date.

ix) Membership of Professional Bodies

Teachers in technical institutions must remain up-to-date in their areas of specialisation and must interact professionally with their peers in the profession, and should therefore, become members of National and International Professional societies.

Teachers should be encouraged to become members of such societies. However, membership fee of International Professional Societies is quite high. The teachers may contribute 25% of the membership fee and the institutions should bear the balance amount for atleast one International Society.

x) Participation in National/International Conferences and Seminars

To provide for professional development and excellence it is essential that teachers participate in National and International Conferences and seminars to interact with their peers outside their own environment.

The Institutions should reimburse the expenses for registration and TA/DA to the teachers for presenting a paper in one National Conference every year and one International Conference every three years.

TA/DA for International Conferences should be paid to the teachers as per the Central Government rules.

x1) Facility for education of Teachers' Children

- (a) Schooling facilities should be provided to the teachers children by giving them higher priority for admission to the Central Schools and other Government Schools.
- (b) A subsidy for tuition fee Rs.50/- P.M. per child, for two children should be paid to all teachers.
- (c) A yearly subsidy for purchase of books Rs.120/- per child for secondary/higher secondary classes and Rs.50/- per child for other classes should be paid to all teachers. The Fourth Pay Commission has also made a similar recommendation for the Central Public Services.

xii) Group Insurance

- (a) Group insurance scheme should be introduced in all technical institutions to provide protection to the teachers against professional hazards in the pursuit of their duties. Premium charged by the Life Insurance Corporation of India for this scheme should be borne by the institution.
- (b) Group Saving-Linked Insurance Scheme should be encouraged for teachers. The Institution should bear the nominal premium meant to cover death/disability and the rest of the premium should be paid by the individual teachers.

The Committee is convinced that unless a proper work environment is provided to the teachers they will find it difficult to give of their best to the profession. However, in view of the resource constraints, the Government may have to prioritise the various items listed under work environment. The Committee proposes that in each case, the Government may appoint a separate working group to examine the matter and fix priorities within the available resources.

7.4 QUALIFICATIONS AND EXPERIENCE REQUIREMENTS FOR VARIOUS POSTS IN TECHNICAL EDUCATION SYSTEM

As discussed earlier under 7.2, a revised cadre structure has been evolved for attracting competent and talented professionals to teaching in technical institutions. The Committee examined the qualifications and experience requirements necessary for the various cadre positions commensurate with the job requirements and responsibility at various levels. The recommendations of the Committee in respect of qualifications and experience requirements for various cadre positions in professional as well as Technician Education Institutions are given in Table 7.2 and 7.3.

**TABLE 7.2 ACADEMIC STRUCTURE AND CAREER PROFILE INCLUDING QUALIFICATIONS AND EXPERIENCE REQUIREMENTS
FOR POSTS IN TECHNICAL EDUCATION SYSTEM**

PROFESSIONAL EDUCATION INSTITUTIONS

S.No.	Cadre	Job Description	Qualification and Experience
1.	Probationary Lecturer	<ul style="list-style-type: none"> - Education & Training in subject matter leading to Master's Degree - Industrial Training - Pedagogical Training 	<ul style="list-style-type: none"> i) Ist Class Bachelor's Degree ii) Qualifying in All India Examination (such as GATE or equivalent) and iii) Selected through the prescribed selection procedures.
2.	Lecturer	<ul style="list-style-type: none"> - Teaching(Tutorials and Seminars at Under-graduate level) - Students assessment and evaluation - Instruction in Laboratory - Assisting in consultancy & R&D services - Developing resource materials - Co-curricular and extra curricular activities - Assisting in departmental administration 	<p>Qualification same as for Probationary Lecturer + successful completion of prescribed 3 years education and training as Probationary Lecturer leading to Master's Degree</p> <p>OR</p> <p>Master's Degree + 1 year experience in Industry teaching/research</p> <p>Note: The prescribed 3 years education & training will consist of :</p> <ul style="list-style-type: none"> i) 1 year industrial training ii) 6 months pedagogical programme iii) 1½ years Master's Degree programme

S.No.	Cadre	Job Description	Qualifications & Experience
3.	Assistant Professor	<ul style="list-style-type: none"> - Teaching under-graduate courses including laboratory work and assisting in some post-graduate courses - Personal research activities - Liaison with industry - Participation in consultancy projects and extension services - Participation in Curriculum Development activities and developing resource materials. - Assistance in planning and administration at Departmental level - Continuing education activities - Student counselling and interaction - Co-curricular and extra curricular activities. 	<p>i) Master's Degree + successful completion of 3 years' education and training programme as Lecturer leading to Doctorate Degree</p> <p>ii) 8 years distinguished experience as Lecturer including the period of training</p> <p>OR</p> <p>i) Doctorate or Master's Degree with recognised professional work of high standard equivalent to Doctorate</p> <p>ii) 8 years distinguished experience in teaching/industry/research as a Lecturer or at equivalent level with at least one year industrial experience.</p>
4.	Associate Professor	<ul style="list-style-type: none"> - Teaching and evaluation of post-Graduate and under-graduate courses - Research Activities and research guidance - Leading consultancy projects and extension services 	<p>i) Doctorate or Master's Degree with recognised Professional work of high standard equivalent to Doctorate</p> <p>ii) 14 years distinguished experience in teaching/industry/research out of which minimum 6 years must be as Asstt. Professor or equivalent</p> <p>iii) Demonstrated ability of research and research guidance or equivalent performance in the profession.</p>

S.No.	Cadre	Job Description	Qualifications & Experience
		<ul style="list-style-type: none"> - Curriculum Development and developing resource materials - Innovation in teaching, laboratory work and instructional materials - Continuing Education activities - Academic and administrative planning and development work at Departmental level and assisting at Institutional level - Student counselling and inter-action - Co-curricular and extra curricular activities 	
5.	Professor	<ul style="list-style-type: none"> - Providing leadership in both Post-graduate and Under-graduate courses in relevant field of specialisation. - Research & research guidance - Consultancy Services - Policy planning, monitoring, evaluation and promotional activities both at Departmental and Institutional level - Curriculum Development and developing resource materials 	<ul style="list-style-type: none"> i) Doctorate or Master's Degree with recognised professional work of high standard equivalent to Doctorate. ii) 18 years distinguished experience in teaching/industry/research out of which at least 10 years must be as Asstt. Professor and above or equivalent level.

S.No.	Cadre	Job Description	Qualifications & Experience
6.	Professor (Sr. Scale)	- Design and Development of new programmes	<p>i) Doctorate with distinguished work recognised at National/International level or Master's Degree with recognised professional work of high standard recognised at National/International level equivalent to Doctorate</p> <p>ii) 27 years distinguished experience in teaching/industry/research out of which at least 8 years must be as Professor or equivalent level.</p> <p>iii) Recognised research contribution in relevant field at the National level or equivalent performance in the profession.</p>
		- Continuing education activities	
		- Interaction with industry and society.	
		- Student counselling and interaction	
		- Administration both at Department and Institutional levels.	
		- Providing academic leadership in the total educational process	
		- Leading research groups	
		- Research and research guidance at Doctorate and Post-Doctorate level.	
		- Policy planning, design and development of new programmes in emerging and other areas.	
		- Assisting in management of the Institution including monitoring and evaluation of the educational process.	
		- Interaction with industry and policy making at Regional/National level.	
		- Student interaction and student affairs	

S.No.	Cadre	Job Description	Qualification & Experience
		- Continuing Education activities.	
7.	National Professor (It is a recognition for outstanding contribution in teaching/research at the national level)	<ul style="list-style-type: none"> - Same as Professor (Sr.Scale) - Continue to work in his recognised field at the highest level 	<ul style="list-style-type: none"> i) Same as for Professor (Sr.Scale) ii) Recognised contribution at the National and International level
8.	Principal/Director	<ul style="list-style-type: none"> - Academic and administrative management of the institution - Policy planning and providing academic and administrative leadership - Monitoring and evaluation of academic and research activities. - Promotion of industry-institution interaction and R&D work - Providing consultancy services - Participation in policy planning at the Regional/National level for development of technical education. 	Same as for Professor (Sr.Scale)

NOTE:- i) Doctorate work will be considered as 3 years research experience for the purpose of total experience.

Sr.No.	Cadre	Job Description	Qualification and Experience
			<p>ii) The selected candidates directly for the posts of lecturer and above shall be required to successfully complete the prescribed pedagogical training programme and industrial training within a period of 2 - 3 years of their selection if not done earlier.</p> <p>iii) Distinguished experience shall be based on consistently good appraisal reports</p> <p>A candidate will be eligible to apply for a post if in addition to the Educational Qualifications and Experience requirements he also fulfills the prescribed performance level based on his appraisal reports.</p> <p>iv) For the posts of Assistance Professor and above in Professional Education Institutions, relaxation of two years in the prescribed experience may be allowed to outstanding individuals having consistently good appraisal reports.</p> <p>v) Assessment of work at National/International level will be assessed by a competent Committee.</p>

TABLE 7.3 ACADEMIC STRUCTURE AND CAREER PROFILE INCLUDING QUALIFICATIONS AND EXPERIENCE REQUIREMENTS FOR POSTS IN TECHNICAL EDUCATION SYSTEM

TECHNICIAN EDUCATION INSTITUTIONS

S.No.	Cadre	Job Description	Qualifications & Experience
1.	Probationary Lecturer	<ul style="list-style-type: none"> - Education & Training in subject matter leading to Master's Degree or equivalent. - Industrial Training - Pedagogical Training 	<ul style="list-style-type: none"> i) 1st Class Bachelor's Degree ii) Qualifying in All India Examination (such as GATE or equivalent) iii) Selected through the prescribed selection procedure
2.	Lecturer	<ul style="list-style-type: none"> - Teaching Diploma Courses including Lectures & tutorials. - Planning and implementation of instruction in Laboratory - Student assessment and evaluation - Developing resource materials - Assisting in extension services to the industry and community - Assisting in continuing education activities - Co-curricular and extra-curricular activities - Student counselling 	<p>Qualifications same as Probationary Lecturer + *Successful completion of 3 years prescribed Education and Training programme leading to Master's Degree or equivalent level</p> <p align="center">OR</p> <ul style="list-style-type: none"> i) Master's Degree or equivalent ii) 1 year experience in Industry <p>NOTE: * The prescribed 3 years education & Training shall consist of :</p> <ul style="list-style-type: none"> i) 1 year industrial training ii) 1½ years specially designed subject matter development leading to Master's Degree or equivalent level. i) ½ year pedagogical training.

S.No.	Cadre	Job Description	Qualifications & Experience
3.	Lecturer (Selection Grade)	<ul style="list-style-type: none"> - Teaching Diploma and Post diploma courses (Lecturers & Tutorials) - Design and development of laboratory instruction - Student assessment & Evaluation - Innovations in instruction - Developing resource materials and assisting in curriculum development - R&D work in industrial problems & projects and assisting in extension services to the community - Continuing education activities - Co-curricular and extra curricular activities - Assisting in Deptt. Administration - Student counselling 	<p>i) Master's Degree or equivalent + successful completion of 3 years education and specially designed training programme equivalent to Doctorate level or technician education oriented Doctorate</p> <p>ii) 10 years distinguished experience as Lecturer including the period of education and training under (i) above</p> <p>OR</p> <p>i) Master's Degree or equivalent with demonstrated ability in industry oriented R&D problems and consultancy equivalent to the Doctorate level or technician education oriented Doctorate</p> <p>ii) 10 years distinguished experience in teaching/industry/research at the level of lecturer, out of which 2 years must be in industry/field.</p>
4.	Sr.Lecturer	<ul style="list-style-type: none"> - Providing leadership in teaching of Diploma and Post Diploma courses in the department - Organising R&D work in industrial problems & projects 	<p>i) Master's Degree or equivalent with demonstrated ability in industry oriented R&D problems and consultancy equivalent to Doctorate level of technician education oriented doctorate.</p>

S.No.	Job Description	Qualification & Experience
5. Professor	<ul style="list-style-type: none"> - Consultancy & extension work for industry & the community - Departmental Administration - Assisting in the administration of the Institution - Publication of technical papers - Curriculum Development and development of Resource materials - Innovations in technician education & evaluation - Continuing education activities - Public relations and interaction with the community - Student counselling and student interaction 	<p>ii) 14 years distinguished experience in teaching/industry/research out of which 10 years must be as Lecturer and above or equivalent. Experience of 2 years in industry/field is essential.</p> <p>i) Master's Degree or equivalent with demonstrated ability in industry oriented R&D problems and consultancy equivalent to Doctorate level or technician education oriented Doctorate.</p>

S.No.	Cadre	Job Description	Qualifications & Experience
		<ul style="list-style-type: none"> - Organising and coordinating R&D in Industrial problems and projects - Consultancy and extension work for industry and community - Departmental Administration including monitoring and evaluation of academic programmes - Assisting in administration of the Institution - Publication of technical papers - Curriculum Development and Development of Instructional Resources - Policy planning and developing new programmes in emerging and other areas in the Institution - Assisting in policy planning for technician education at State, Regional and National Level - R&D and innovations in technician education and evaluation - Public Relations and Interaction with the community - Student counselling and student interaction. 	<ul style="list-style-type: none"> ii) 18 years distinguished experience in teaching/industry/research out of which 10 years must be as Sr. Lecturer (Existing scale) & above or equivalent level. Experience of 2 years in industry/field is essential iii) Recognised experience in industry oriented R&D or equivalent performance in the profession.

S.No.	Cadre	Job Description	Qualifications and Experience
6.	Principal	<ul style="list-style-type: none"> - Academic and administrative management of the Institution - Providing academic and administrative leadership - Promotion of industry-institution collaboration and industry oriented R&D. - Monitoring and evaluation of academic activities in the Institutions - Public Relations and interaction with community - Organising and Co-ordinating consultancy services - Participating in policy and system planning at State, Regional and National Levels for development of Technician Education - Promoting and Co-ordinating continuing education activities. 	Qualifications and experience same as Professor

NOTE:

- i) The selected candidates for the posts of Lecturer and above shall be required to successfully complete the prescribed pedagogical training programme and industrial training within a period of 2-3 years of their selection if not done earlier.

Sr.No.	Cadre	Job Description	Qualifications and Experience
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- ii) Distinguished experience shall be based on consistently good appraisal reports.

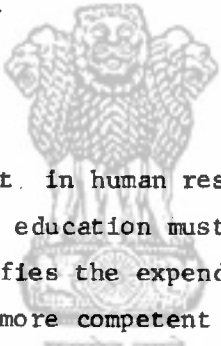
A candidate will be eligible to apply for a post if in addition to the Educational Qualifications and Experience requirements he also fulfills the prescribed performance level based on his appraisal reports.

- iii) Qualifications in lieu of longer experience and experience in lieu of higher qualifications may be relaxed by competent authority, in case suitable candidates with prescribed qualifications/experience are not available.

- iv) For the posts of Lecturer (Selection Grade) and above in Technical Education Institutions relaxation of two years in the prescribed experience may be allowed to outstanding individuals having consistently good appraisal reports.

8. PERFORMANCE APPRAISAL

8.1 NEED



Large scale investment in human resources such as is being proposed in technical education must ensure that the return from this investment justifies the expenditure. If this expenditure helps in producing a more competent and better trained professional the return on the investment will be more than justified with increase in the productivity of the economy.

Consequently while devising changes in the system for attracting and retaining the most meritorious professional to teaching, it must be ensured that having done so the teacher is able to give of his best to the student and the system works efficiently, effectively and economically. This would require positive monitoring and continuous evaluation of the system as a whole including its basic unit - the teacher.

The National Policy on Education, recognising the need of an evaluation system states

"A system of teacher evaluation - open participative and data-based - will be created and reasonable opportunities of promotion to higher grades provided. Norms of accountability will be laid down with incentives for good performance and disincentives for non-performance".

8.2 PERFORMANCE EVALUATION

Towards this end it will be necessary to evolve a comprehensive system of performance evaluation at the following four levels viz:

- i) Institution Evaluation
- ii) Programme/Course Evaluation
- iii) Teacher Evaluation
- iv) Student Evaluation

The system of evaluation would be concerned with both formative and summative evaluation.

The formative or continuous evaluation would be carried out at the development and implementation stages. This would assess the attainment of intermediate targets and remove constraints and bottlenecks, if any, for smooth and optimal functioning of the system.

The summative evaluation would be undertaken upon completion of a terminal stage. This would also ascertain attainment of objectives/targets both qualitatively and quantitatively. This would assess causes, if any, in terms of inputs, resources, processes and their management, for any shortcomings in the functioning of the system/institutions programmes and resource personnel. Further it would provide data base for corrective future actions and provide policy support for the remedy in planning and developing new systems.

The evaluation system will not only help in improving the performance of the individual and its system at various levels by suitable corrective action but also provide the management with a continuous feed-back regarding the quality of education being imparted and the impact of innovations and changes introduced from time to time.

The National Education Policy statement '86 uses three adjectives to describe the evaluation system namely open, participative and data based. The evaluation system becomes open when the components to be evaluated are provided with clearly defined objectives and indicators of performance regarding the achievement of objectives with suitable criteria for measuring performance. Especially in teacher evaluation it is essential that he knows the job roles which he is expected to perform alongwith the weightage or emphasis for each role.

The evaluation becomes participative when the indicators of good performance and criteria for assessing performance are evolved in consultation with the user-system at various levels, namely, the teacher, the heads of department (for programme evaluation) and the head of the institution Principal/Director (for institutional evaluation). If these are evolved in active collaboration with the components of the user-system, it also promotes the credibility of the evaluation and helps to introduce accountability in the system.

However the most important aspect of a successful evaluation system is to ensure that it is fully data-based. Often evaluation attempts have failed because no systematic efforts were made for scientific data-collection, consolidation, analysis.

Systematic and scientific data-collection has to go through the following stages :

- Preparation of tools for observing the performance of the components of the system and eliciting the necessary information with optional efficiency.
- Consolidation of the data collected into a total framework for the evaluation.
- Analysis of the data based on acceptable criteria to indicate the level of performance.

For success and acceptance of evaluation at any level, it is essential to have :

- i) Objectives statements of expected performance goals
- ii) Definition of criteria and specific indicators of attainment of objectives.
- iii) Procedures for observing the indicators and applying the criteria

Since the transfer of knowledge and skills to learners is the main purpose of programmes/courses conducted by the institutions, student evaluation (assessment of student performance) is one of the important components of evaluation at all levels mentioned above.

Also evaluation of institutions, programmes and courses, teachers and students are not independent of one another. They form an integrated system of evaluation with each evaluation forming a data base for evaluation at the next higher stage. For instance, evaluation data obtained from various programmes with assessment of its facilities, resources and interaction amongst departments and outside agencies constituting the environment would lead to institutional evaluation. Similarly evaluation data regarding inputs, process and product at the course level would facilitate programme evaluation.

Evaluation of teachers performance should necessarily emanate from data/assessment of course performance etc. Introduction of any system of performance appraisal must therefore be viewed in an integrated and wholistic manner at all the four levels and not as a piecemeal exercise.

8.3 ACCOUNTABILITY

Accountability refers to the moral, ethical and contractual obligation of individuals and institutions to achieve the objectives and targets assigned/set for them in the most efficient, effective and economical way. For its successful implementation, individuals and institutions must be aware of their immediate and long term objectives and the significance of their contribution in the overall national development and be accountable for it.

The concept of accountability not only relates to the fulfilment of the roles the teacher is assigned by its institution but also performing them economically and efficiently. Career development of a teacher thus gets closely linked or based on his performance and accountability at each stage through incentives and disincentives built into the system.

While accountability is generally considered to be to an external entity, like an individual being accountable to the institution and institution to the society, a vital requirement is an intrinsic consciousness of the individuals/institutions of their responsibility and the need to discharge their duties with integrity, efficiency and economy. Any performance appraisal to check adherence to accountability norms will be successful only if this intrinsic consciousness is developed and nurtured.

This can be facilitated by awareness of one's performance against

expectations and providing academic, administrative and financial autonomy within a certain framework, freedom to individuals/ institutions to set their goals and decide upon action plans within an overall policy framework, flexibility of action to suit changing circumstances, support to innovation and experimentation, and management/government support.

Any attempt to introduce or ensure accountability must be based on the principle that any component of the educational system, be it students, faculty or institute, should be held responsible only for those educational outcomes that it can directly affect by its own actions or decisions. Thus delegation of necessary authority, or providing autonomy to the required extent, is crucial to introducing accountability.

Often persons working at different levels aspire for authority and autonomy to the fullest extent upto their own level and do not wish to delegate authority or autonomy to people working under them. This upsets the functioning of the system at the lower level and does not promote accountability. This delicate balance between authority and autonomy at all levels is, therefore, very important in ensuring the success of measures to introduce accountability at various levels in the system.

8.4 PERFORMANCE APPRAISAL SYSTEM

A detailed performance appraisal system will have to be worked out by institutions to suit local needs and conditions. The evaluation system and strategies should be so designed that those being evaluated develop faith in the fairness and objectivity of the system. They should perceive it as a developmental activity and not as a control mechanism and participate whole-heartedly in the evaluation process. The following description provides only an overall framework of the system.

8.4.1 Methods of Evaluation

The Ministry of Human Resource Development has recognised the need to evolve a feasible appraisal system. It states in the National Policy on Education, 1986 - Programme of Action :

"The AICTE will evolve feasible staff appraisal system incorporating necessary norms for accountability. This will be finalised through extensive consultations with the State Governments, DTEs, Institutions, Professional Bodies and teachers' representatives ".

A combination of techniques would need to be evolved for evaluation of institutions, programmes/courses and teachers. Detailed planning would be needed to obtain adequate and useful data for this purpose. It is also essential that appropriate weightages for various aspects, should be evolved in consultation with the teachers and made known to them. At present, the technical education system, does not possess sufficient experience of an open, participative and data-based appraisal system. As such the appraisal system will need to be reviewed and refined over a period of time, in the light of experience gained. A few guidelines for evaluation of institutions, programmes/courses and teachers are briefly outlined in the following paragraphs :

1) Institution Evaluation

Institutional performance should be viewed with a long-term perspective. Evaluation reports may be compiled for an institution every seven years, keeping in mind the projections of growth and consolidation plans of the institution. Periodic reports giving details of planned targets achieved during the period under report, meetings and interviews with the teachers, observation of institutional resources and activities assessment of the end product-the students, opinions

of user systems and outside professionals, and assessment by student groups are some of the methods which individually and in combination may be used for evaluation of institutions.

Institutional evaluation should focus on its input, resources, curriculum and management processes and its output, alongwith its interaction with the environment. Information or data for evaluation is obtained from the Institute and the environment through reports, questionnaires and interviews/observations.

The Committee recommends that the AICTE should appoint Evaluation Committee to evaluate the performance of technical institutions every seven years. The Institutions should prepare detailed annual progress reports of their achievement vis-a-vis the planned programmes and targets. These reports would provide the data-base to the Evaluation Committees for assessment of the Institutions' performance. The evaluation committees may also make use of other methods of evaluation reports of the institutions. The AICTE should form a Monitoring Committee at the National level to monitor the appraisal system for the institutions, programme/course and teacher evaluation. Similar monitoring committee will need to be formed at the State level also.

ii) Programme/Course Evaluation

It may be possible to evaluate a programme or a course for its effectiveness and efficiency once in a period of 3 to 5 years so that modifications or correctives are planned to make it more effective. Such an

evaluation leads to identification of gaps in curriculum, syllabus or teaching aids etc. The data base for programme/course evaluation may be obtained through quarterly and annual reports, meetings and interviews with co-ordinators and other teachers involved in the programme, observation of programme activities, external assessment of the product, and opinions of user system and the students.

Programmes/course evaluation should look into the aspects of planning, implementation and outcomes using students, faculty, management and employers as the source of information. The techniques to be used are : evaluation of student performance, questionnaires, reports and interview/observations.

The committee recommends that course evaluation should be done at the end of each course to evaluate its impact and take decisions regarding correctives, if needed, before the course is repeated. Programme evaluation should be undertaken every 3 to 5 years depending upon the scope and duration of the programme. The departments in the technical institutions should prepare annual progress reports in respect of the programmes undertaken by them in order to provide the necessary data-base for evaluation. The work of course and programme evaluation should be entrusted to a Programme Evaluation Committee formed by the institution.

iii) Teacher Evaluation

Teacher being the most important and basic unit comprising an educational system, its appraisal would necessarily

involve indirectly the appraisal of this important component. Evaluation of the teacher in the discharge of his various roles, therefore, assumes greater significance and must be a regular and rigorous process for its upgradation.

Meticulous record must be maintained of his performance against the assigned roles not only to assess the process, but also to promote excellence by rewarding outstanding performance. Properly maintained records would assist the teacher, with a brilliant record, for a faster career growth. The evaluation may be carried out every year through self-evaluation against a planned work schedule, peer evaluation and student feedback and reports of Heads of Department/Institution.

Teacher Evaluation must focus on instructional effectiveness research and development (subject matter and pedagogical including instructional material development), Co-curricular activities, contributions to development of department/institute, consultancy creative and innovative efforts and professional development.

The Committee recommends that :

- (a) Every teacher should be required to prepare an agreed work schddule between himself and the authorities of the institute stating therein his programme of activities for the academic year, in respect of the various roles assigned to him by the department/institution. At the end of the year, the teacher should submit an annual report detailing

the progress achieved in respect of the various activities included in the work schedule. The teacher should also indicate the constraints and bottlenecks faced by him in performing these activities.

- (b) Course evaluation by the students could provide a valuable feed-back in respect of the academic programme and its presentation. A carefully designed student assessment proforma could provide relevant feed-back concerning student attitude towards the teaching-learning process, course content and quality and effectiveness of the presentation. The student evaluation of the course and the presentation has to be taken with utmost caution. It requires considerable analytical competence and judgement to be a useful guide.
- (c) Peer evaluation may be used for obtaining feed-back in respect of academic programmes and teacher performance including the aspect of interpersonal relationship.

The performance of the teacher should be evaluated every year by an internal committee set up by the institution. This committee should evaluate the teacher's performance in his various roles based on his work schedule and the progress report submitted by him, student performance in course taught, feedback obtained through student reaction and peer evaluation, and the annual report by the Head of the Department.

- (d) To further reduce the element of subjectivity, the annual assessment of teachers should be reviewed periodically by an external committee say once in 3 years on the basis of the reports of previous three years and other data and personal interview with the teacher.
- (e) The results of the teacher's appraisal should be made available to him to enable him to improve his performance where needed.
- (f) Teacher evaluation must also lead to identification of his training requirements.
- (g) Teachers demonstrating high degree of commitment and competence and who have shown outstanding performance should be suitably rewarded by additional increments or promotion to higher levels of responsibility.
- (h) There should also be public recognition of good teachers in the form of National Professorship etc.

8.5

PERSPECTIVES FOR A RESULT ORIENTED EVALUATION

There is, in general, a prejudice against any appraisal system for reasons of apprehension. It is therefore, essential that impressions about the punitive nature of evaluation are removed at the outset. The focus of evaluation should be not to disprove or prove but to improve.

The outcome of evaluation should be used to

- Assess gaps in the components of the system and remove the same through policy and resource support.
- Identify training needs and provide need-based training programmes for resource personnel.
- Provide a climate for better performance and pursuit of excellence.
- Facilities resource provision-generation and optimise utilization.
- Promote self-development for removing deficiencies and achieving better performance.
- Gather data for corrective action in planning and developing future systems.

The performance appraisal system would provide a comprehensive data-base for decision making and accountability. The appraisal system must form the cornerstone of the technical education system.

8.6 STRATEGY FOR PERFORMANCE APPRAISAL

In-built in the formative evaluation system must be the methodology for providing regular feedback with suitable corrective measures to improve performance.

Also, the consolidation of data which results from a series of formative evaluation must form an important component of the data-base for summative evaluation. The formative evaluation is normally to be conducted by the agencies within the Institute such as Directors/Principal, Heads of Departments and faculty. In addition to the above, it would be necessary to associate external system-incharge of administration

and management, and other professional agencies for summative evaluation.

The Institutional evaluation will be conducted by national/state level accreditation agencies. As outlined earlier, the report and information will be provided by the institute which will be evaluated by visits, interviews and observations of a special committee set up by the Accreditation Agency. Similarly, programme evaluation should be done at the formative stage by the Head of Department with the help of faculty, under the direction and guidance of the head of the Institution.

It would be necessary to have an external accreditation team consisting of representatives from national/state accreditation agencies, professional bodies and the user-system for summative evaluation of programmes.

The programme evaluation should be built up of a number of course evaluations in the formative stage. The results of programme evaluation at formative stages should be consolidated and supplemented by the observations and interviews of the external accreditation team. For any evaluation to be successful, it must build credibility among personnel of the system at all levels.

The results of the evaluation are to be used to improve the system as a whole by facilitating individuals to overcome their deficiencies and attempts to use evaluation data for punitive purposes only would need to be summarily discouraged. If all this were to be achieved it would go a long way to build mutual confidence and to upgrade the system.

9. IMPLEMENTATION STRATEGY

The Committee has evolved and recommended a complete package of measures in Chapter 7 to bring about the much needed changes in the academic structure, salary scales, service conditions and work environment to attract and retain talented professionals to teaching in technical institutions. It has also suggested some additional measures to be taken to optimise the benefits to be derived from changes in Chapter 8.

For the successful implementation of these measures, a proper implementation strategy must be worked out both for the period of transition as well as on a long term basis. The broad implementation strategy is outlined in this Chapter.

However, the Government of India would need to appoint committees of experts to work out detailed implementation programmes for the various facets of the recommendations and initiate setting up of an infrastructure to monitor the various programmes both at the Central and State levels to derive the optimal benefit out of them.

9.1 PLACEMENT OF EXISTING TEACHERS IN THE REVISED CADRE STRUCTURE AND SALARY SCALES

With the new academic structure and modified salary scales, the first hurdle to be encountered would be the placement of the existing faculty in the new structure. The Committee recommends the following :

9.1.1 Professional Education Institutions

- i) The teachers working in these institutions as Lecturers in the existing cadres but having less than 8 years experience in this cadre position and drawing basic pay less than Rs.980/- in the existing pay scale may be placed as Lecturers in the new cadre structure.

Teachers holding the post of Lecturers in these institutions in the existing cadre structure having an experience of 8 years or more in this post, and drawing basic pay of Rs.980/- or more in the existing scale would be eligible for being considered for placement as Assistant Professor subject to selection by a Selection Committee appointed for this purpose, including external experts and a nominee of AICTE.

- ii) Teachers holding the post of Assistant Professor in the existing cadre structure but having less than 6 years experience in this cadre position and drawing basic pay less than Rs.1540/- in the existing pay scales may be placed in the new cadre structure as Asstt. Professors.

Teachers holding the post of Asstt. Professor in the existing cadre structure and having a basic pay of Rs.1540/- and above in the existing pay scales and having 6 years or more experience in this cadre position would be eligible

for being considered for placement as Assoc.Professor in the new cadre structure subject to selection by a Selection Committee appointed for this purpose including external experts and a nominee of AICTE.

- iii) Teachers holding the post of Professor in the existing cadre structure but having less than 8 years experience in this cadre position and drawing basic pay less than Rs. 2125/- in the existing pay scales may be placed in the new cadre structure as Professors. Teachers holding the cadre position of Professor in the existing cadre structure where cadre structure for Post-Graduate and advanced programme is applicable and having a basic pay of Rs.2125/- and above and having 8 or more years of experience, in this cadre position would be eligible for being considered for placement as Professor (Sr.Scale) in the new cadre structure subject to selection by a Selection Committee appointed for this purpose including external experts and a nominee of AICTE.

9.1.2 Technician Education Institutions

- 1) Teachers working in these institutions as Lecturers in the existing cadre structure but having less than 10 years experience in this cadre position may be placed as Lecturers in the new cadre structure.

Teachers working as Lecturers in the existing cadre structure and having an experience of 10 years or more in this post would be eligible to be considered for placement as Lecturer (Selection Grade) in the new cadre structure subject to selection by a Selection Committee appointed for this purpose including external experts and a nominee of AICTE.

- ii) The Cadre Structure in some of the Technician Education Institutions is Lecturer, Head of the Department/Sr.Lecturer and Principal (3 cadre structure) while in other Technician Education Institutions the cadre structure is Lecturer, Sr.Lecturer, Head of the Department and Principal (4 cadre structure).
- a) In the institutions where the existing cadres structure is Lecturer, Head of the Department/Sr.Lecturer and Principal (3 cadre structure), the teachers holding the post of HOD/Sr.Lecturer in the existing scale, having less than 8 years experience as HOD/Sr.Lecturer may be placed as Lecturer (Selection Grade) in the new cadre structure. Those teachers who possess 8 or more years of experience in the post of HOD/Sr.Lecturer would be eligible to be considered for placement in the post of Sr.Lecturer (recommended scale) subject to selection by a Selection Committee constituted for the purpose including external experts and a nominee of AICTE.
- b) In the Technician Education Institutions where the existing cadre structure is that of Lecturer, Sr.Lecturer, HOD and Principal (4 cadre structure), teachers holding the post of Sr.Lecturer (existing scale) may be placed in the post of Lecturer (Selection Grade) and the teachers holding the post of HOD may be placed in the post of Sr.Lecturer (recommended scale) in the new cadre structure.
- iii) In the Technician Education Institutions where cadres structure pertaining to Post-Diploma programmes is applicable, the HOD/ Sr.Lecturer with a minimum of 10 years of experience, as HOD/ Sr.Lecturer would be eligible to be considered for placement as Professor subject to selection by a Selection Committee including external experts and a nominee of AICTE.

- iv) Persons holding the post of Principal in the existing technician education institutions may be given new scale of the Principal in the recommended cadre structure.

9.2 ACCREDITATION OF INSTITUTIONS

It will be necessary for AICTE to lay down criteria for Professional and Technician Education Institutions conducting post-graduate and post-diploma programmes respectively, to identify the cadre structure which would be applicable to the types of programmes run by such institutions from time to time.

9.3 FIXATION OF PAY

9.3.1 Basis of Fixation

There are various formulations on the basis of which the fixation of pay in the proposed pay scales may be considered. The Fourth Pay Commission has examined the various suggestions and possibilities in this respect and made certain recommendations. The Committee recommends that the pay of teachers may be fixed in the proposed scale of pay in the following manner based on these recommendations of the Fourth Pay Commission :

For all teachers, an amount representing 20% of basic pay in the existing scale may be added to the "existing emoluments". Pay may thereafter be fixed in the proposed scale at the stage fixed above the emoluments thus computed. If the minimum of proposed scale is more than the amount so arrived at, the pay may be fixed at the minimum of proposed scale. For this purpose, the term "Existing Emoluments" will include the following :

- a) Basic pay in the existing scale
- b) Dearness pay, additional dearness allowance and adhoc dearness allowance appropriate to the basic pay admissible at index average 608 (1.4.1986)
- c) Amount of first and second instalments of interim relief admissible on the basic pay referred to in (a) above.

9.3.2 Bunching of Pay

The salary scales of teachers of technical institutions were last revised more than a decade ago, in 1974. The Committee has found it necessary to adequately improve the salary scales in order to achieve the objectives contained in the "Terms of Reference". As such, bunching of pay of teachers upon fixation in the revised salary scales would be unavoidable.

The Fourth Pay Commission, anticipating the problem of bunching has recommended remedial measures whereby relief is accorded to the employees on the basis of a 5 year interval between the stages of existing pay scales. The Committee feels that in the case of technical education 5 year interval would not offset the problem adequately and recommends that relief should be based on a 3 year interval.

The Committee recommends that the problem of bunching may be remedied in the following manner :

- i) While fixing the pay of teachers in accordance with para 9.2.1 above if it is observed that the pay of teachers drawing pay at more than three consecutive stages in an existing scale, gets bunched that is to say, gets fixed in the revised scale at the same stage, the pay in revised scale of such of these teachers who are drawing pay beyond the first three consecutive stages in the existing scale, may be stepped up to the stage when such bunching

occurs, as under, by grant of increment(s) in the revised scale in the following manner :

- (a) For teachers drawing pay from the 4th upto the 6th stage in the existing stage scale:by one increment.
 - (b) For teachers drawing pay from the 7th upto the 9th stage in the existing scale if there is bunching beyond the 6th stage, by two increments.
 - (c) For teachers drawing pay from the 10th upto the 12th stage in the existing scale if there is bunching beyond the 9th stage:by three increments.
- ii) If by stepping up of the pay, as above, the pay of a teacher gets fixed at a stage in the revised scale which is higher than the stage in the revised scale at which the pay of a teacher who was drawing pay at the next higher stage or stages in the same existing scale is fixed, the pay of the latter may also be stepped up only to the extent by which it falls short of that of the former.
- iii) Where in the fixation of pay under para 9.2.1 above, the pay of a teacher who in the existing scale was drawing immediately before 1.4.1986 more pay than another teacher junior to him in the same cadre, gets fixed in the revised scale at a stage lower than that of such junior, his pay may be stepped up to the same stage in the revised scale as that of the junior.

9.4 INDUCTION OF TEACHERS

As per recommendations of the Committee in Chapter 7, bright and talented professionals possessing a First Class Bachelor's Degree would be inducted into the system and provided with the requisite education and training by the system itself. This would equip the entrants to perform the various roles assigned to them in the technical institutions more effectively and efficiently.

The Committee attaches great importance to post-graduate training and higher qualifications such as Master's and Doctorate Degrees or their equivalent for teachers of technical institutions and hence the system must take this responsibility fully upon itself like most of other organisations. This will also lead to a better inter-facing between the individual and institutional goals. By insisting that the entrants should acquire these qualifications before entering, we lose the most meritorious and the measure becomes counter-productive. The necessary steps to be taken for induction of teachers are detailed below :

9.4.1 Selection at Entry

i) All India Qualifying Examination

It has been recommended that the teachers should be selected as probationary Lecturers with the minimum qualification as a 1st Class Bachelor's Degree in the relevant field. To overcome the variation in the standards of products of technical institutions an All India Qualifying Examination may be held for the candidates. An existing agency like UPSC may conduct such an Examination or the AICTE may be asked to create the necessary infrastructure to hold this examination. Till such facilities are created, the performance of the candidates in an existing qualifying examination (Like GATE) may be

considered equivalent to the proposed examination.

ii) Selection of Probationary Lecturers

Various technical institutions have their own selection procedures and will select, through open selection based on merit, talented graduates from amongst those who have qualified the All India Examination with minimum of 50% marks and appoint them as Probationary Lecturers.

As basic training courses will be compulsory for all new entrants, it would appear necessary that these posts should be outside the quota of the teaching posts determined on the basis of 1:8 or 1:4 ratios for undergraduate and advanced programmes and 1:10 or 1:8 ratios for generalised diploma and post-diploma programmes respectively. This would ensure normal teaching and other institutional activities to proceed unhampered because of the demand for probationary lecturer's training.

iii) Selection of Teachers of Humanities and Applied Sciences

For humanities and applied sciences, the minimum qualification laid down by the Committee for appointment as lecturer is Doctorate in the field. Such teachers will therefore enter the profession as lecturers and will be selected through open selection procedures already specified for lateral entry.

9.4.2 Selection Procedure for Faculty Positions

The committee has recommended that all the posts in both professional and technician education institutions should be open selection posts and the candidates would be selected by a Selection Committee after inviting applications through an open advertisement to ensure excellence.

The merit promotion scheme introduced by the Government of India suffered in its credibility and implementation because of the lack of necessary data base incorporated in it to enable the institutions to properly assess the teachers for merit promotion. This scheme is, therefore, not acceptable from the point of view of pursuit of excellence.

The selection to superior positions by present procedures of interviews by selection committees, also suffers from lack of comprehensive and relevant information about the performance level of candidates appearing before the committees. The Committee's judgement has to be based on a 20 to 30 minutes interview of the candidates which is hardly adequate. The data base obtained through the proposed appraisal system will strengthen the judgement of the selection committees because of the detailed information available about the teacher's performance in his various roles. This would help to build up the credibility of the open selection procedures.

Detailed performance appraisal system therefore needs to be developed for the data base to be made available for the proposed rigorous assessment of the teachers when considering them for promotion. The necessary machinery for the performance appraisal is discussed in Chapter 8.

9.4.3 Open Selection Procedures for Lateral Entry

In addition to the teachers who will be selected at entry as Probationary Lecturers and who will be trained by the system itself, talented professionals with requisite qualification and experience specified for different posts may like to enter the teaching profession at higher levels. The candidates possessing the requisite qualification and experience will be eligible to apply for all the posts. Internal candidates will be considered at par with the above candidates for open selection by the selection committee appointed by the institutions.

9.5 EDUCATION AND TRAINING PROGRAMMES

There are three types of education and training programmes in the system recommended by the Committee:

- i) Basic Education and Training Programme for Probationary Lecturers.
- ii) Advanced Education and Training Programme for Lecturers
- iii) Short-term Education and Training Programmes for Teachers.

9.5.1 Basic Education and Training Programmes

The Committee has recommended a three years Basic Education and Training Programme for the Probationary lecturers. The content of this training would be different for the Professional Education and technician education institutions through the level would be the same.

i) Professional Education Institutions

The three years basic education and training programme for probationary lecturers of professional Education Institutions may be conducted at various technical institutions already conducting quality improvement Programmes (QIPs), Regional Engineering Colleges and other leading technical institutions in the country. In view of the large number of trainees involved, the existing facilities being limited, the Government may have to identify other leading technical institutions which could also conduct this training programme.

These institutions should design an integrated programme providing 1½ years subject matter development leading to a Master's Degree, 1 year professional exposure and 6 months pedagogical training. The existing infrastructure in these

institutions will have to be adequately strengthened for conducting these programmes. A department of educational technology may have to be added in some institutions for this purpose.

(ii) Technician Education Institutions

The three years basic education and training programme for probationary lecturers of Technician Education Institutions may be conducted at Technical Teachers' Training Institutes. However, as there are only four such institutions in the country, additional institutions will have to be established. Regional Engineering Colleges and other leading technical institutions in the country also may be involved in imparting these training programmes.

The Technical Teachers' Training Institutes should design appropriate programmes providing 1½ years subject matter development at the level of Master's Degree, 1 year professional exposure and 6 months pedagogical training. The main thrust of the subject matter programme should be production oriented rather than being science based theory as in the Professional Education.

The infrastructural facilities available in the existing Technical Teachers' Training Institutes and other institutions designated to conduct this training have to be adequately strengthened both in respect of faculty and laboratory facilities to conduct these programmes.

9.5.2 Advanced Education and Training Programme

The Committee has also recommended that the teachers during their tenure as Lecturers should be required to undergo an advanced level education and training programme of 2 to 3 years duration leading to Doctorate Degree or equivalent. They would have by then selected their field of specialisation in the institution depending upon their own aptitude and the needs of the institution. The thrust of the education and training programme for the Lecturers working in Professional Education Institutions would be to prepare them for their future role in research and development in their chosen field whereas the thrust of the programme for the Lecturers in Technician Education Institutions would be on problem-solving in production processes and technology oriented work related to actual industrial and professional practice.

The advanced education and training programmes both for Professional and Technician Education Institutions would be conducted at various technical institutions already conducting Quality Improvement Programmes. Some of the Regional Engineering College, Technical Teachers' Training Institutes and other leading technical institutions may be identified by the Government to conduct these training programmes. The existing infrastructure for teacher training in technical education is inadequate. It will, therefore, have to be both expanded and strengthened if the system has to take the responsibility of educating the training its own teachers.

9.5.3 Training and Leave Reserve

The technical institutions will have to sponsor Lecturers to the three years advanced Education and Training Programme leading to a Doctorate Degree or equivalent.

The Institutions will also need to sponsor teachers to various short term programmes for their further training and re-training so that the teachers remain up-to-date in their relevant field and in new and emerging areas.

For both of these inservice training programmes adequate training and leave reserve would be essential. Experience has shown that there has been considerable resistance to sparing teachers for any training programme due to shortage of staff in the institutions. It would, therefore, be necessary to provide training and leave reserve of at least 10 percent or more of the sanctioned posts. This percentage will have to be determined specifically for the needs of each system. Without such leave reserve the institution will find it difficult to arrange for the inservice training needs which will be large and critical under the changed induction procedures.

9.5.4 Education and Training Programmes for Lateral Entrants to the System

The Committee has recommended that the teachers who are selected directly as Lecturers or above and those who have not undergone pedagogical training earlier in their career will be required to complete this pedagogical training subsequently during a prescribed period of time. This programme should preferably be conducted in suitable module during vacations so that the lateral entrants may be in a position to avail of them.

These pedagogical training programme may be conducted at the Technical Teachers' Training Institutes. The Institutions running Quality Improvement Programmes etc. and the Regional Engineering Colleges and other selected institutions do not have sufficient facilities for this training at present but steps will have to be taken for the facilities to be created at these institutions at an early date.

9.5.5 Short Term Training Programmes

Education and Training Programmes for the teachers should be an on-going continuous process so that their knowledge and skills are continuously updated. The Committee would like to emphasise the urgent need of organising and conducting short-term courses from time to time to meet the training and re-training needs of the system by certain selected institutions.

On account of the importance of this activity for the health of the system it should be closely supervised and monitored by central and state Resource agencies.

9.6 INTRODUCTION OF PERFORMANCE APPRAISAL SYSTEM

The Committee has recommended in Chapter 8 that a comprehensive system of performance evaluation should be introduced in the technical education system at various levels, to improve the performance of the system and provide the management with feed-back regarding the quality of technical education being imparted and the impact of innovations and changes introduced from time to time.

The Government of India will need to issue a specific policy directive that performance appraisal system should be introduced in all technical institutions in order to evaluate the institutions, programmes/courses and the teachers. This would require some additional inputs. Suitable infrastructure will need to be created at the centre as well as in the States for monitoring the introduction and implementation of the performance appraisal system. The Committee has already recommended in Chapter 8 that AICTE should form Expert Committee for evaluating the performance of all technical institutions. The Committee envisages an important role for the AICTE in the evaluation of various programmes/courses run by the technical institutions as also the appraisal, selection and promotion of teachers. The AICTE should, therefore, be suitably strengthened for performing these roles.

9.7 MONITORING THE IMPLEMENTATION OF RECOMMENDATIONS OF THE COMMITTEE

A package of measures has been recommended by the Committee for upgrading the system by inducting competent and talented professionals into the technical institutions. The Committee is convinced that this objective will be achieved only if the recommendations are implemented as a 'Total Package' in all the technical institutions in view of the close inter-relationship between the salary scales, service conditions and the work environment.

This will need constant monitoring at the Centre and the Committee is of the opinion that a special board or cell of the AICTE should be created at the Centre to monitor the implementation of the various recommendations of the Committee as a 'Total Package'. Similar cells would also be needed in the States, for effective monitoring without which attempts at improving the competency of our technical manpower will remain frustrated and unfulfilled.

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9.8 STRATEGY OF FUNDING

The Committee is aware that large scale investment on the part of the Government will be needed for the implementation of the package of measures being suggested for attracting and retaining talented professionals to teaching with the object of training competent manpower needed for our developmental process. The Committee is equally aware that till recently expenditure on education has been viewed as a service and not as an investment in human resource development. The strategy of its funding therefore needs a different approach.

Experience in the past has shown that many worthwhile reforms in education have not been implemented because of lack of

financial support. States by themselves are unable to raise sufficient resources for large scale investment in education as their funding for education is derived generally from revenue receipts which are difficult to augment. Central support for the States to make such large scale investment in education will be necessary if our developmental objectives have to be achieved. This has taken the form of 50 to 100% subsidy in the past for individual projects. Similar sharing pattern will have to be evolved for the future. Alternatively, an interest free loan to the States could be considered to be paid back within a stipulated period of time for investment on education failing which it is feared that implementation of some very worth-while reforms in education may not be ensured.

Funding for large scale investment such as would be needed for education would not be possible without treating it as an investment in Human Resource Development. Such resources could only be raised either from public borrowings from both public and private sectors for long term investment in development of human resources, to be paid back from the increased productivity over a period of time, or by levying a manpower development cost in each developmental projects in the same way as other components such as land, civil works, machinery, raw materials, manufacturing costs etc. Perhaps both these sources could be tapped. Adequate resource mobilisation for education to meet the challenges of the twenty-first century is a challenge in itself that has to be met.

10. ACKNOWLEDGEMENT

National Expert Committee for Revision of Salary Scales of Teachers of Technical Institutions during the course of its investigation had the privilege of interacting with delegations from the various professional societies like

- Indian Society for Technical Education,
- Institution of Engineers,
- Institute of Surveyors,
- Schools of Planning & Architecture,
- All India Management Association,
- Architecture Council,
- Catering Council of India,
- Pharmaceutical Association Congress.

In addition, the Committee held meetings with

- Directors of Indian Institutes of Technology,
- Representatives of the Federation of Teachers Associations of Indian Institutes of Technology

The Committee also interacted through the four Zonal Committees with :

- The State Administrators of Technical Education viz Secretaries and Directors of Technical Education,
- Heads of Technical Institutions both Professional Education and Technician Education,
- Teachers and Teachers' Associations,
- Representatives of Industry & Government Departments,
- Alumni of Engineering Colleges,
- Various other target groups.

Without full co-operation from all the above, the whole exercise could not have been completed successfully. We, therefore, gratefully acknowledge the help of all concerned and the part played by them to clarify issues and provide the necessary data and other inputs for formulating our recommendations.

The stupendous task entailed in the collection and analysis of data could not have been completed without the help of the Zonal Sub-Committees. We, thankfully, acknowledge the help of the Chairmen and Conveners of the Sub-Committees and other members of these Committees who so willingly and generously gave so much of their time. We are particularly thankful to the Principals and the staff of the various Technical Teachers' Training Institutes, without whose active co-operation and support this huge data collection and its analysis could not have been carried out. They also provided the secretariat help for the Zonal Committee of their regions.

The collection of data at the National level, consolidation and synthesis of the data collected by the Zonal Sub-Committees, the preparation of various resource materials for the Committee meetings, the preparation of various data and research documents

for the Report and drafting of the Report was carried out at the Technical Teachers' Training Institute, Chandigarh. The Committee is grateful to the Principal and other staff members of this Institution for the enormous effort put in by them for the completion of this report. We would particularly like to mention the contribution made by Prof BM Dhir & Prof A Juneja who were always willing to extend a helping hand inspite of their other commitments in the institution. The responsibility of collecting and analysing the data and putting it together for discussion by the Committee as well as putting together the final report fell on their shoulders.

Contribution of a similar nature has been made by IIT Delhi and its band of dedicated Professors who helped us in our deliberations and contributed substantially towards the successful completion of this report. The Committee is thankful to both these institutions and their staff for the help rendered by them.

In conclusion the unique part played by the coopted members of the Committee needs to be recognised. But for their help and expertise made available by them to the Committee in their special fields of interest, the analysis of the situation could not have been so decisive and authentic. Their understanding of the educational problems in all the diverse areas with which the Committee was confronted, was most helpful in seeking the final solutions.



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