INDICES

309-1
ANNEXURE
ANNEXURE – I

Q1: FORMAT FOR INSTITUTE INFORMATION

Note: (i) Please verify information provided in sr. no (1) to (5) and make correction if any.
(ii) Please marks (✓) from Sr. No. 6 (except 12) onward to the item you feel that suits your response.

1. NAME OF INSTITUTE:

2. STATE:

3. TYPE OF INSTITUTE:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please(✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Government</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Aided</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Un-aided</td>
<td></td>
</tr>
</tbody>
</table>

4. STATUS OF INSTITUTE: Autonomous

5. FORM OF INSTITUTE:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Please(✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Polytechnic</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Engineering</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>BSF</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>FS</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>University</td>
<td></td>
</tr>
</tbody>
</table>

6. YEARS OF ESTABLISHMENT:

7. FORM OF EDUCATION:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Please (✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Vocational</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Technician</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Degree in engineering</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Diploma</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Ph.D.</td>
<td></td>
</tr>
</tbody>
</table>
8. (A) IS PERMISSION REQUIRE FROM GOVERNMENT AUTHORITIES TO ESTABLISHMENT NEW INSTITUTE? Yes/No

(B) IS PERMISSION REQUIREMENT FROM GOVERNMENT AUTHORITIES TO START NEW PROGRAMME IN INSTITUTE? Yes/No

9. IS THERE FREEDOM TO USE FINANCE OF THE INSTITUTE FOR MATERIAL RESOURCE PROCUREMENT? (INCLUDING MACHINERY and EQUIPMENT) Yes/No

10. ACADEMIC PROGRAMMES OFFERED: Yearly/Semester

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>TITLE OF PROGRAMME</th>
<th>ELIGIBILITY FOR ADMISSION (Entry qualification)</th>
<th>INTAKE CAPACITY (Number)</th>
<th>DURATION IN YEARS</th>
<th>MINIMUM MARKS FOR PASSING (%)</th>
</tr>
</thead>
</table>


11. AGENCIES INVOLVED IN CURRICULUM DEVELOPMENT:
   i) Industries  ii) Teachers  iii) Labour Union  iv) Students  v) Any Other

12. TYPE OF THE CURRICULUM:

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Particular</th>
<th>Please(✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Rigid Pattern and common to all institute in state.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Flexible Pattern and specifically designed at institute level to suit local needs.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Any Other Pl. Specify.</td>
<td></td>
</tr>
</tbody>
</table>

13. EVALUATION SYSTEM: Semester/twice in semester/ Yearly/ Any other(Pl. Specify).
14. FACILITIES FOR STUDENT:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particular</th>
<th>Please(✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Co-curricular Games, Sports, debates,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>discussion, Symposium, Seminar.</td>
<td></td>
</tr>
</tbody>
</table>

15. FACILITIES FOR STAFF:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particular</th>
<th>Please(✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Academic: Meeting, Seminars, discussion, Symposium, Orientation courses,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>refresher course library grant</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Professional: Quality improvement programmes, Orientation courses</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Physical: Independent rooms, personal library, secretarial services.</td>
<td></td>
</tr>
</tbody>
</table>
ANNEXURE – II

Q2: QUESTIONNAIRE FOR HEAD OF ORGANIZATION/ DIRECTOR

Note: Please mark (\checkmark) to the items you feel that suit your response.

PART-(A)
NAME:

DESIGNATION:

NAME OF ORGANIZATION:

STATE:

PART -(B)
1. What is the same of technical/vocational education in the state/country:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please (\checkmark) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>To create technical manpower/technology</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>To provide useful human resource required in user system.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

2. Is permission from higher authorities required to established new institute/start new programmes. Yes/No

3. Which are the categories of technical manpower required in industry:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please (\checkmark) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Craftsman</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Middle level supervisor</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Junior Manager</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Manager</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Researcher</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

4. Are you willing to co-operate with industries. Yes/No
5. What is the nature and extent of interaction with industry?

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>NATURE OF INTERACTION</th>
<th>EXTENT OF INTERACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>A</td>
<td>Industrial visit</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Curriculum Development</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Vocational Training</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>Exchange of staff</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Implant Training</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>Project Work</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>Teacher training</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>Industry based education</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Apprenticeship training</td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

6. What are the expectation of institute from the industry?

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please (✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Curriculum design and implementation</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>On job training for the student (as part of curriculum)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Training of teachers</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Exchange of staff</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Co-operation for learning resources development</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

7. Is feedback is received from industry on quality of passed out students:  Yes/No

8. Is there any guideline /government resolution /memorandum of understanding for industry institute interaction:  Yes/No

9. Is there review of the curriculums:
   If yes, how frequently is it reviewed:
   Every year/ every three years/every five years/any other

10. What procedure is adopted for curriculum review:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please(✓) here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>By discussing among faculty members</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Feed back from industry</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Feed back from passouts</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>
Is there any mechanism/system established for taking feedback on examination result:  Yes/No

If yes, at what level:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please (✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Institute level</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>State level</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Department level</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

11. Is "Quality Assurance" in Technical education system is established the state:  Yes/No

If Yes, please mention one or two measures:

12. Is there any separate department taking care for curriculum implementation:  Yes/No

If Yes, please mention one or two measures:

13. Is there any separate department taking care for curriculum implementation:  Yes/No

If yes at which level:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please (✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Institute level</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>State level</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

14. Do you agree that talent is not attracted to teaching technical professions:  Yes/No

If yes, what could be possible reason(s):

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please (✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pay scale are not attractive</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Teacher does not get opportunities of exposure to industry</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Due to absence of institute industry interaction people from these agencies can not change roles</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Exchange of staff</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>
15. What are your suggestion for quality improvement in technical education.
ANNEXURE - III

Q.3: QUESTIONNAIRE FOR INDUSTARY PERSONNEL/INTERVIEW SCHEDULE

NOTE: Please mark (√) to the items you feel that suits your response.

PART-(A)
NAME:

DESIGNATION:

NAME OF ORGANISATION:

CATEGORY OF INDUSTRY:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Please (√) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Large scale</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Medium scale</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Small scale</td>
<td></td>
</tr>
</tbody>
</table>

PART-(B)

1. Is there any separate establishment/section/department for training in industry: Yes/No

2. What is the expenditure involved on training in last three years:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>INCOME</th>
<th>EXPENDITURE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RECURRING</td>
</tr>
<tr>
<td>1995-96</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1996-97</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997-98</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. What is the training cost per student/trainee? Rs.

4. Is there any need assessment system for training the employee/Trainee student: Yes/No

5. What is the curriculum Design process for industry base training of Student? (Pl. Write your response in the space provided)
6. What are the category of technical manpower required in industry:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Please (✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Craftsman</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Middle level</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Junior Manager</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Manager</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Researcher and Development</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

7. List various training programmes conducted in your industry during the current year (Please mention year ______)

<table>
<thead>
<tr>
<th>SR. NO.</th>
<th>TITLE OF PROGRAMME</th>
<th>CATEGORY OF BENEFICIARY</th>
<th>DURATION INVOLVED</th>
<th>COST IN LACS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8. Are you willing to co-operate with institute? 
   Yes/No

9. Does the government provide any facility against arranging students training in industry? 
   Yes/No

10. Is there any guidelines/Government resolution/ Memorandum of understanding for co-operation of industry and technical institutes in education? 
    Yes/No
15. **What are the diversified areas in which training needed?**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Please (✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Automation</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Computer based machines</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Information technology</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Total quality management</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Communication</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

16. **What are your suggestions for improving the technical education in India?**

________________________________________________________________________
________________________________________________________________________
ANNEXURE - IV

Q4: QUESTIONNAIRE FOR FACULTY MEMBERS

Note: Please marks (✓) to the item you feel that suits your response.

1. NAME

2. EDUCATIONAL QUALIFICATION: B.E./M.E./M.Tech./M.Sc./M.A./Ph.D.

3. WHICH AGENCIES ARE INVOLVED IN CURRICULUM DEVELOPMENT PROCESS

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Please (✓) here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Teacher</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Student</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Industry</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Passouts students</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Curriculum Development experts</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Labour Union</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

4. DO YOU PERSONALLY INVOLVED IN THE CURRICULUM DEVELOPMENT PROCESS? Yes/No

IF YES, AT WHAT LEVEL,

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particulars</th>
<th>Please (✓) here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Collection of Data</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Analysis of Data</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Curriculum Design</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Content Design</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

5. ARE DIFFERENT TEACHING METHODS ADOPTED IN CLASS? Yes/No

6. WHICH TEACHING METHODS ARE ADOPTED IN CLASSROOM?

<table>
<thead>
<tr>
<th>Sr. No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
</tbody>
</table>
7. WHICH TYPE OF STUDENT EVALUATION IS DONE IN THE INSTITUTE?

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Please (✓) here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Formative Evaluation</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Summative Evaluation</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Formative and Summative Evaluation</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

8. ARE YOU WILLING TO INTERACT WITH INDUSTRY? Yes/No

9. WHAT IS THE NATURE AND EXTENT OF INTERACTION WITH INDUSTRY?
   PLEASE MARK (✓) IN APPROPRIATE COLUMN.

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Nature of Interaction</th>
<th>Extent of Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Industrial Visit</td>
<td>Excellent</td>
</tr>
<tr>
<td>b</td>
<td>Curriculum Development</td>
<td>Good</td>
</tr>
<tr>
<td>c</td>
<td>Implant Training</td>
<td>Poor</td>
</tr>
<tr>
<td>d</td>
<td>Vocational training</td>
<td></td>
</tr>
<tr>
<td>e</td>
<td>Exchange of staff</td>
<td></td>
</tr>
<tr>
<td>f</td>
<td>Project Work</td>
<td></td>
</tr>
<tr>
<td>g</td>
<td>Teachers training</td>
<td></td>
</tr>
<tr>
<td>h</td>
<td>Industry based education</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(sandwich pattern)</td>
<td></td>
</tr>
<tr>
<td>i</td>
<td>Apprenticeship training</td>
<td></td>
</tr>
<tr>
<td>j</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

10. WHAT ARE THE EXPECTATION OF INSTITUTE FROM INDUSTRY?

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Please (✓) here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Curriculum Design and implementation</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>On the job training for the student (as part of curriculum)</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Teachers training</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Co-operation for learning resources development</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

11. DO YOU GET RESPONSE FROM THE INDUSTRY? Yes/No
12. LIST THE COMMITTEES IN WHICH YOU ARE INVOLVED AS CHAIRMAN OR MEMBER?
   i)
   ii)
   iii)

13. IS LEARNING RESOURCE MATERIAL AVAILABLE IN THE INSTITUTE? Yes/No

14. IS LEARNING RESOURCE MATERIAL/EQUIPMENT ARE MADE EASILY AVAILABLE BY THE INSTITUTE? Yes/No

17. IS LEARNING RESOURCE MATERIAL DEVELOPED IN THE INSTITUTE? Yes/No
   If Yes, list major category.

18. ARE SUFFICIENT RESOURCES AVAILABLE IN THE INSTITUTE FOR EFFECTIVE TEACHING-LEARNING PROCESS? Yes/No

19. IS FEEDBACK MECHANISM ESTABLISHED? Yes/No
   If yes, AT WHICH LEVEL

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particulars</th>
<th>Please(✓) here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Departmental level</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Institute level</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>State level</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

18. IS FEEDBACK GIVEN TO STUDENT ON THEIR ASSESSMENT? Yes/No

IF YES, WHAT IS THE TYPE OF FEEDBACK:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particulars</th>
<th>Please (✓) here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Filling learning gaps</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Additional input</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Tutorials</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>
19. WHETHER SUFFICIENT BOOKS ARE AVAILABLE IN THE LIBRARY? Yes/No

20. WHETHER THERE IS FREE ACCESS TO STUDENT IN LIBRARY? Yes/No

21. IS "QUALITY ASSURANCE" IN TECHNICAL EDUCATION SYSTEM IS ESTABLISHED IN THE INSTITUTE? Yes/No

If yes, Please mention one or two

<table>
<thead>
<tr>
<th>Sr. No</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

22. WHAT MEASURES ARE TAKEN FOR "QUALITY ASSURANCE" AT INPUT (STUDENT), PROCESS (T-L PROCESS) AND OUTPUT (PASSOUTS)

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
</tbody>
</table>

23. WHAT IS THE LEVEL OF LEARNING ATTITUDE OF STUDENTS TOWARDS LEARN?

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particulars</th>
<th>Please (✓) here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Medium</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Low</td>
<td></td>
</tr>
</tbody>
</table>

24. IS CO-CURRICULUM ACTIVITIES ARE CONDUCTED FOR PERSONALITY DEVELOPMENT OF STUDENTS? Yes/No
25. FACILITIES FOR STAFF

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particulars</th>
<th>Please (✓) here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Academic: Meetings, Seminars, Discussions, orientation courses, Refresher courses, Library grants</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Professional: Quality improvement programmes, Orientation courses</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Physical: Independent rooms, personal library, secretarial services.</td>
<td></td>
</tr>
</tbody>
</table>

26. WHICH TRAINING PROGRAMME(S) YOU HAVE ATTENDED IN THE LAST THREE YEARS:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>TITLE OF PROGRAMME</th>
<th>DURATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

27. IS THERE ANY SEPARATE DEPARTMENT TAKING CARE FOR CURRICULUM IMPLEMENTATION?  
Yes/No

If yes, who takes the care of curriculum implementation:

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particulars</th>
<th>Please (✓) here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Departmental level</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Institute level</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>State level</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

28. WHAT IS YOUR ROLE IN CO-CURRICULUM ACTIVITIES?
   i)   
   ii)  
   iii)
29. **DO YOU AGREE THAT TALENT IS NOT ATTRACTED TO TEACHING TECHNICAL PROFESSION?**

Yes/No

If yes, what could be possible reason(s):

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please (✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Pay scale are not attractive</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Teacher does not get opportunities of exposure to industry</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Due to absence of institute industry interaction people from these agencies can not change roles</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Exchange of staff</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

30. **WHAT ARE YOUR SUGGESTIONS FOR QUALITY IMPROVEMENT IN TECHNICAL EDUCATION.**

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

326
ANNEXURE - V

Q5: QUESTIONNAIRE FOR STUDENT

Note: Please mark (√) to the items you feel that suit your response.

1. NAME :

2. ACADEMIC YEAR: FIRST /SECOND/THIRD/FOURTH

3. NAME OF PROGRAMME: VOCATIONAL/DIPLOMA/DEGREE/POST-GRADUATE/Ph.D.:

4. NAME OF DISCIPLINE:

5. NAME OF INSTITUTE:

6. STATE:

7. WHY YOU HAVE OPTED FOR ENGINEERING EDUCATION?

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please(√) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Own interest</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Due to job potential in the market</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Wish of parent</td>
<td></td>
</tr>
</tbody>
</table>

8. IS THE PROGRAMME SELECTED BY YOU USEFUL IN PROFESSIONAL LIFE/WORK LIFE/INDUSTRY?

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please(√) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>To greater extent</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>To some extent</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Not so useful</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Aptitude in Engineering</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

9. ARE YOU INVOLVED IN CURRICULUM DEVELOPMENT PROCESS? Yes/No

10. ARE CURRICULUM OBJECTIVES CLEAR TO YOU? Yes/No

11. IS SCOPE TO SELECT COURSES OF YOUR OWN CHOICE? Yes/No
12. ARE YOU PROVIDE OPPORTUNITIES TO VISIT INDUSTRIES? Yes/No

12. WHAT IS THE NATURE AND EXTENT OF INTERACTION WITH INDUSTRY?
PLEASE MARK (✓) IN APPROPRIATE COLUMN.

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Nature of Interaction</th>
<th>Extent of Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>a</td>
<td>Industrial Visit</td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Lecture by industrial person</td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>Industrial training</td>
<td></td>
</tr>
<tr>
<td>d</td>
<td>Project Work</td>
<td></td>
</tr>
<tr>
<td>e</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Lecture method (Chalk and Talk)</td>
</tr>
<tr>
<td>2.</td>
<td>By using overhead projector, Slides</td>
</tr>
<tr>
<td>3.</td>
<td>Demonstration</td>
</tr>
<tr>
<td>4.</td>
<td>Group Discussion</td>
</tr>
<tr>
<td>5.</td>
<td>Question Answer Session</td>
</tr>
<tr>
<td>6.</td>
<td>Seminar</td>
</tr>
<tr>
<td>7.</td>
<td>Any other</td>
</tr>
</tbody>
</table>

14. DO YOU GET RESPONSE FROM THE INDUSTRY: Yes/No

15. ARE ANY TEACHING TECHNIQUES USED BY TEACHERS IN THE CLASS?
If yes, which teaching methods are used?

16. DO YOU ENJOY WORKING IN LABORATORIES/WORK SHOP? Yes/No

   If no, Why?
   i) 
   ii) 
   iii) 

17. ARE YOU BEING ASSESSED ON YOUR WORK PROGRESSIVELY? Yes/No

20. DO YOU RECEIVE FEEDBACK ON YOUR PROGRESS IN THE EXAMINATION/WORK? Yes/No
19. ARE SUFFICIENT BOOKS AVAILABLE IN THE LIBRARY? Yes/No

20. IS THERE OPEN ASSESS TO LIBRARY? Yes/No

21. WHAT FACILITIES DO YOU GET IN THE INSTITUTE?

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please(✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Co-curriculum: Games, Sports, debates, discussions, Symposiums, Seminars, Exhibition, Visits.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Financial Assistance</td>
<td></td>
</tr>
</tbody>
</table>

22. HOW ARE STUDENT ENCOURAGED FOR BETTER PERFORMANCE OR THEIR TALENTS ARE RECOGNIZED?

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Particular</th>
<th>Please (✓) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>By giving prizes in college functions</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>By giving scholarship</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>By giving merit certificate</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>By giving cash awards</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

23. WHAT ARE YOUR SUGGESTION FOR QUALITY IMPROVEMENT IN TECHNICAL EDUCATION.

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________

___________________________________________________________________________
ANNEXURE – VI

Q.1 Format für Auskunft des Institutes Zeichen:

1) Bitte beweisen die Auskunft, die in die reihen No. (1)bis (5) versorgt sind und verbessern sie wonotigist.

2) Bitte marken (✓) von reihen No.8 zu dem Punkte, des sie fehlen passt/passt ihre Antwort

1) Name des Institutes

2) Staat

3) Type des Institutes: Regie/gehilftet/un-gehilftet

4) Status des Institution: Autonom

5) Forme des Institutes: Polytechnik/Technick/BFSS'FS/Universitat

6) Jahre des Einsetzen

7) Forme des Ausbildings: beruflich/Technisch/grad in Technisch/ Diplom/ Doktorwurde

8) A) ob Erlaubvis von Regierungs Autoritat fordert, um eine neue Institute zu einsetzen

Ja/Nein

B) eine neue programme in eine bestehende Institut

Ja/Nein

9) Bestimmung des personals von:

1) Lokale Institutionale komitee

2) Kommittee bestimmt von die Regierung

3) Andere
10) Gesamte Einkommen und Ausgabe in der letzten drei Jahren von der Institut

<table>
<thead>
<tr>
<th>Jahr</th>
<th>Einkommen</th>
<th>Ausgabe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994-95</td>
<td>wieder</td>
<td>nicht</td>
</tr>
<tr>
<td>1995-96</td>
<td>kehrend</td>
<td>wieder</td>
</tr>
<tr>
<td>1996-97</td>
<td>kehrende</td>
<td></td>
</tr>
</tbody>
</table>

11) Gibt es freiheit, die Finanz des Institutes für werkstoff Fahigkeit beschaffung zu

Benutzen

Ja/Nein

12) Welche/ Was für eine Organisation Struktur haben sie? / Hat ihre Institut?

1)  
2)  
3)  

Gelegenheiten/ Angebote

13) Akademische Programme:

Jährlich/ semester

<table>
<thead>
<tr>
<th>Nummer</th>
<th>Titel</th>
<th>Namen</th>
<th>Eignung für Aufnahme</th>
<th>Dauer</th>
<th>Minimum Punkte des programs</th>
<th>die Zulassung kapazität</th>
<th>für die Fahigkeit</th>
<th>Bestellung</th>
</tr>
</thead>
</table>

14) Agenturen, die in der Entwicklung des lehrplans verwickelt sind

i) Industrie

ii) Lehren

iii) Gewerkschaften

iv) Studenten

v) Andere

15) Type des lehrplans

i) Streng Muster (B.T.E. (? ) Muster)

ii) Flexibel muster (Institutionale Muster)

iii) Andere

16) Eintritts geld/ Gebühren
17) Prufungs Gebuhren: DM

18) System der Auswertungs: semester/zweimal un semester/Jahrlich Andere

19) Ergebnissen sind innere/schon erklart: Zwei wochen/uier wochen nach der prufung/Andere ------

20) Gibt es einige Bedurfnisse Einschatzungs system?

(Die potenzielle programmen, erforderlich fur Benutzer system bestimmen)

21) Gelegenheiten fur die studenten

   i) In dem lehrplan/inklusiv der lehrplan: Spiel (en); sport treiben; Debatten, Diskussionen, symposion, seminaren

   ii) Finanzielle Hilfe: Darlegungen, Beesuchen

22) Gelegenheiten fur das personal:

   i) Akademisch: Begegnungen, seminaren, Diskussionen,Orientierungs Fortbildungs kurse, Bucherei Beihilfe.

   ii) Beruflich: Qualitats Verbesserungs Programm, Orientierungs Kurse.

   iii) Physikalisch: Selbststandigen Zimmern, Private Biicherei, Sekratarische Bedignungen.  Ja/Nein

23) Was/wie ist die Ausbildungs oder Erziehungs Befahigung, fordert, ein lehrer zu werden?

   i) Diplom

   ii) Grad/ausgezeichnete Performane in das wichtige Thema

   iii) Hat schon Neister Prufung gemacht (Grdduierte)
iv) Doktorwurde (Dokter Arbeit) Ph.D

v) Andere Fakultaten

24) 1st die Ausbildung in der "Lehrsmethode" wesentlich ein lehrer zu werden?  Ja/Nein

25) Was fur eine strategie, fur die forderung der Fakultat wird adoptiert?
   i) bei hoheres senioritat
   ii) bei Auswahl
   iii) bei personale verrichtungs schatzung
   iv) keine Forderung
   v) Andere --------

26) Gibt es, fur die gute lehrem, eine vorrorge fur urteilen als Antrieben?  Ja/Nein
Wenn Ja, wie werd es getan oder gemacht?
   i) Offene/Publesche Anerkennung im college Zeremonie/Party
   ii) Geld Preise/Urteil
   iii) Extra Zuwachs
   iv) Andere typen ----

27) Wie werden die studenten ermutigh, enthusiastisch gemacht, um
   eine bessere Erfillung zu zeigen/geben? /wie sind ihre Talenten erkennt?
   i) Mit Preise geben/Zertifikate geben/Pramien in der college Programm
   ii) Mit stipenduem geben
   iii) Mit Verdienst/Merit Zeugnissen
   iv) Mit Geldliche/Bargeld Urteilen v) Andere
ANNEXURE - VII

Q.2 Fragebogen fur den Leiter/Direktor des Institutes/ Organisations?

Zeichen: Bitte marken sie (✓) zu dem Punkten Bitte füllen sie was zu ihrer Responz
posst/was sie richtig glauben.

Teil - A

Name:

Bezeichnung Name der Organisation:

Staat:

Teil - B

1) Was ist das Ziel von der technische oder berufliche Ausbildung in der staat auf dem and?
   i) Technische Arbeits kräfte oder technologist zu machen? ii) Brauchbare Human
   Reichtum, in 'Benutzer System' zu besorgen iii) Ander

2) Wird es erlaubt von höhere autoritate, neue Instituten/neue Programme anzufangen?

3) Wie/ Was ist die Handlungs werte, Ausrustungen und Maschinen zu beschaffen.
   i) Institut fordert: Institut kauft verlangt mit eigenen kapital
   ii) Institut fordert: Staatliche kauff und lieferung
   iii) Staat bestimmt: Reichtum staat liefert Forderung Reichtum Forderungen
   iv) Andere

4) Geben sie die finanzielle Ausgabe im letzten drei Jahren

<table>
<thead>
<tr>
<th>Jahr</th>
<th>Einkommen</th>
<th>Ausgabe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994-95</td>
<td>wieder</td>
<td>Nicht</td>
</tr>
<tr>
<td>1995-96</td>
<td>kehrend</td>
<td>wieder</td>
</tr>
<tr>
<td>1996-97</td>
<td>kehrend/</td>
<td></td>
</tr>
</tbody>
</table>

5) Was ist der Preis/wieviel kostet ein Ausbildungs Programm pro student? Rs/D.M. ----------
6) Wie sind die finanzielle Erforderungen im nächsten fünf jährigen plan/fünf Jahren?

7) Welche sind die verschiedenen Formen der technische und beruf liche ausbildungs
Programme, die in dem Institut/Staaten angeleoten sind?
    a) Institut basiert (die ganze Zeit)
    b) kurze zeit / Teil-zeitig
    c) Distanz - Ausbildung
    d) Wochenende
    e) Industrie - Institut aufbauend/basiert (Sandwich Modell Ausbildung)
    f) Ausleildungs Programme an den Fernsehapparat.
    g) Andere

8) Wieist die Zulassungs Methode? Wert/Merit basis/Eintritts Prufung

9) Was oder wie ist die Eignungs Kriterium fur Zulassung zu den angebotenen Programme
   Nummer      Programme      Eignungs Kriterium

10) Gibt es einige Anmeldungen oder Reservierungen von Platzen fur obere Programme?
      Ja/Nein

11) Gibt es einige Agenturen, die in der Entwicklung des lehrplans verwickelt sind?
    (Benutzers System)
        a) lehrer     b) Industrie    c) Gewerkschaften    d) Studenten
        e) Andere

12) Gibt es eine "Bedurfnisse Einschatzung Zelle", die die potentielle fur anfang des neuen
    Institutes/anfang ein neues Programm, identifiziert und bestimmt damit

13) Nennen sie die Organisation, die die Prufung fuhr?
a) Institut b) Staatliche Kommitte der technische Prüfung
c) Industrielle Teil von der wirtschaft und okonomie
e) Andere

14) Wer führt die Prufungen
   a) lehrer von dem Institute
   b) lehrer von einer anderen Institut
c) Industrielle personen (Leute)
d) Industrielle Wirtschafts Abteilung
e) Komitte von/fur technische Prüfung
   f) Andere

15) Wie/welche sind die Kategorien der Technische Arbeitskraeke, erfordert in Industrie?
   a) Handwerker
   b) Mittelere Schicht/ebene Supervisor
c) Junior Leiter
d) Leiter/Direktor
e) Forscher
   f) Andere

16) Sind sie bereit/willig mit der Industrie zu mitwirken Ja/Nein

17) Wie ist die Natur und weite der Industrie-Institut wechsel wirkung?
   Bitte marken sie (\() in der entsprechenden Spaltung/Saule

<table>
<thead>
<tr>
<th>Nummer</th>
<th>Nature der Weite der Wechselwirkung</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wechselwirkung Prima/Gut/Schledht</td>
</tr>
</tbody>
</table>
a) Industrielle Besuche  
b) Lehrplan Entwicklung  
c) Einwechselsende Ausbildung (Implaut) d) Berufliche Ausbildung  
e) Personnel Austausch  
f) Projekt Werk/Arbeit  
g) Lehrer Ausbildung  
h) Industrie aufbauend/basiert Ausbildung  
i) Apprentice Ausbildung  
j) Andere  

18) Was wird erwartet von der Industrie vom Institut? oder was erwartet das Institut von der Industrie?  
a) Lehrplan Muster und Ausführung  
b) On job/Stellige Ausbildung fur den Studenten (Teil des Lehrplans)  
c) Lehrer Ausbildung  
d) Personnel Austausch  
e) Mitwirken fur die Entwicklung des lernenden reichetums  
f) Andere  

19) Knügen Sie feedback/Ruck koppelung von der Industrie, auf qualitats von der bestehenden studenten? Ja/Nein  

20) Gibt es einige Richtlinien/Regierungs BeschlüB/Memorandum auf verstandnis fur Industrielle Institut wechselwirkung/Interaktion Ja/Nein  

21) 1st/Gibt es ein Rezension/review von dem Lehrplan?  
Wenn ja, wie häufig wird es rezensiert Jahrlich/jide drei jahren/jede fünf jahren/Andere
22) Wie ist das Lehrplan rezensiert?
   Mit diskursiven zwischen Mitgliedern der Fakultät
   Feedback Ruck koppelung von der Industrie
   Ruck koppelung von den bestehenden studenten
   Andere

23) Gibt es einige mechanismus/System festgelegt, für die Ruckkoppelung auf die
   Prufung Ergebnissen? Ja/Nein
   Wenn ja, auf welche ebene:
   i) Institut elene
   ii) Staatliche elene
   iii) Abteilungs elene
   iv) Andere

24) 1st die Qualitats versicherung in in technischer Ausbildung in der staat, festgesetzt? Ja/Nein
   Wenn ja, bitte erwahnen Sie ein/zwei MaBnahmen
   i)________________
   ii)________________

25) 1st das Personnel Entwicklungsplan vorbereitet fur das Institut/staat Ja/Nein

26) Gibt es eine speziale Abteilung, die vom Lehrplan Ausfuhrung sich besorgt?Ja/Nein
   Wenn ja, welche ebene
   i) Institut ebene   ii) Staatliche ebene   iii) Andere

27) Was fur eine Ausbildungs/Erziehungs Befahigung wird fordert, ein Lehrer zu werden?
   i) Diplom/ Diploma mit Lehrer Ausbildung in technischer Erziehung/Ausbildung
ii) Grad in dem Hauptthema

iii) Grad mit Lehrer Ausbildung in technischer Erziehung

iii) Muster Prüfung gemacht iii) Muster Prüfung Grad mit LehreAusbildung in technischer Erziehung

iv) Doktorwurde

iv) Doktoruiirde mit Lehrer Ausbildung in technischer Ausbildung

v) Andere vi) Andere Fiir Personnel (Nicht/Lehrer) Leute

i) Matrikuliert

ii) Student/Under graduate

iii) Graduierte (B.A.) iv) Meister Prüfung

v) Andere

28) Was für strategie wird adoptiert für die Forderung der Fakultät?

a) bei Seniorität

b) bei Auswahl

c) bei der Schatzung der verrichtung

d) keine forderung

e) Andere

29) Sind Sie einverstanden damit, daß, das Talent, nach Lehren technische Berufe nicht erregt ist?

Wenn ja, was konnten die möglichste Grunde sein?

i) Bezahlungen sind unattraktiv

ii) Lehrer bekommt keine gelegenheit für das Aussetzen zu der Industrie?

iii) Wegen der Abwesenheit, die Wechselwirkung zwischen Institut Industrie, Leute von diesen Agenturen können diese Rollen nicht wechseln
iv) Keine freie hand zur Arbeit

v) Andere

30) Was sind ihre Anregungen für das Qualitätsverbesserung in der technischen Ausbildung?
ANNEXURE - VIII

Q.3) Fragebogen für Industrielle Personnel/Unterredungs Plan Note/Zeichen: Bitte markeiren sie (√) zu dem punkte, wenn sie fiuhlen, daß ihre Antwort zu der Frage passt.

Teil - A

Name

Besuchung

Kategorie der Industrie: Groß formatig/mittel formatig/ klein formatig/ Staot

Teil -B

1) Wie sind die technische kategorien für die technische Arbeitskrafte, die in der Industrie erforderd wird?
   a) Handwerker   b) Mittelere ebene   c) Tungere/Junior leiter
d) leiter   e) Untersuchung und entwicklung   f) Andere

2) Erreicht die gegenwartige technische Ausbildungs system, die Erforderliche qualitat der Arbeitskrafte?  
   Ja/Nein

3) Wenn nein, was konnten die Ergebnissen sein?
   1) Mehr Nachdruck any Theorie
   2) Kurs ist nicht Not basiert/stutzend
   3) Keine interaktion/wechsel wirkung zwischen dem institut und industrie
   4) Es gibt keine praktische orientierte kursen
   5) Altmodische Infrastruktur
   6) Unfähige/Untuchtige Prufungs system
   7) Andere
4) Sind sie bereit/willig mit dem institut zu mitwirken?

6) Wie ist die Natur und die Weite von Industrie Institut Interaktion Bitte markieren sie (v) in der entsprechender Spaltung, Nummer Natur der Weite der Wechselwirkungs Prima / Gut / Schlecht

a) Industrielle Besuch
b) lehrsplan Entwicklung
c) Implant Ausbildung
d) Berufliche Ausbildung
e) Personnel Austausch
f) Projekt Arbeit
g) Ausbildung den lehrern
h) Industrie aufbauend Ausbildung
i) Andere

7) Gibt es eine besonderer Festsetzung/schnitt/Abteil für Industrielle Ausbildung? Ja/Nein

8) Gibt es ein ‘Bedurfnis Einschätzungs system’ für den Angestellte/den Apprentice student zu Ausbilden

9) Wie ist die ‘lehrsplan Entwurf’ für die industrie baseirt/aufbauend ausbildung für den student?

10) Was ist die Ausgabe, von Ausbildung in den letzten drei Jahren

<table>
<thead>
<tr>
<th>Nummer</th>
<th>Jahr</th>
<th>Ausgabe</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1994-95</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1995-96</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>1996-97</td>
<td></td>
</tr>
</tbody>
</table>
11) Was kostet die Ausbildung/was ist der Ausbildungs Nachteil pro student D.M.

12) Besorgt sich die Regierung, von einigen Gelegenheiten, gegen die Ausbildung den studenten in Industrie zu arrangieren (Z.b Freiheit von der steuer, Finanzielle Hilfeusw)

Ja/Nein

13) Leisten sie die verschiedene Ausbildungs Programme in ihrer Industrie während dem umlaufenden Jahr. (Bitte erwähnen sie das Jahr) Nummer Titel des Programms

Kategorie Dauer Nachteilverwirkelt in Milliarden

14) Was sind die Abwechselenden zone, wo ausbildung notig ist?

1) Automatisierung  2) Komputer maschinen

3) Auskunft Technologie  4) gesamte Qualitats leitung  5) Verbindung

6) Andere

15) Gibt es einige Richtlinien/Regierungs BeschluB/Memorandum auf verstandnis fur mitwirkung von Industrie und technische Instituten in der Ausbildung

Ja/Nein

16) Was/Wie sind die schwierig keiten/erzwingungen in der Industrie, Institut wechsel wirkung

a) Institut fehlen in wechsel wirkung

b) Forderungen von den Institut sind zu viel

c) Keine genug Zeit mit der Industrie

d) Ausbildung ist nicht das Haupt Geschäft

e) Andere

17) Wie sind ihre Anregungen, die qualitat der technische Ausbildung zu verbessern?
ANNEXURE - IX

Q.4) Fragebogen Fur Fakultat Mitgliedern Zeichen: Bitte marken sie (✓) gu dem Punkte, sie fuhlen ihre Antwort papt.

1) Name
2) Ausbildungs/Erziehungs Befahigung
3) Erfahrung
4) Subjekte gelehrt
5) Werkkraft
   i) Lehren / unterrichten
   ii) Praktisch
   iii) Verwaltung
   iv) Co-lehrplan

6) Welche Agenturen, die in der Entwicklung des Lehrplans Verwickelt sind.
   i) Lehrer         ii) Student         iii) Industrie
   iv) Bestehende Studenten      v) Lehrplans Entwicklungs Fachmann
   vi) Gewerkschaften      vii) Andere.

7) Sind sie persönlich in lehrspans Entwicklungs Vorgang verwickelt?
   Wenn ja, und auf welche ebene.
   i) Sammelung des Daten  Datos
   ii) Analyse den Daten
   iii) Lehrplan Muster
   iv) Inhalts Muster
   v) Andere
8) Sind verschiedene Ausbildungs Methode in der Klasse adoptiert?

9) Welche Lehrsmethode werden von Ihnen in der Klasse adoptiert?

10) Was für eine Student Auswertung wird in der Institut gemacht?
   i) Formative Gestaltende Auswertung
   ii) Summative Austwertung (An ende)
   iii) Formative und Summative Auswertung
   iv) Andere

11) Was|wie ist die Auswertungs Methode? Punkte Ablauf Grad geben

12) Was für eine Schatzung wird gemacht, von den studenten lemen? Theorie Praktisch
Mundlich Fortlaufend Fliessendes Auswertung Semester Arbeit Andere.

13) Wer hat die Theorie und Praktische Fragen vorbereitet?
   * Lehrer selbst
   * Lehrer von einem andereh institut
   * Industrie Personnel
   * Technische Kommittee
   * Andere

14) Wer besteuert / auswertet die Antworten?
   i) der der Fragen vorbereitet.
   ii) Lehres anderer als den Fragen Gesetzer.
   iii) Industrie personnel

15) Sind Sie bereit mit der industrie gu wechsel werken? Ja/Nein
16) Wie ist die Natur und die weite der Wechselwirkung mit der Industrie?

Bitte marken Sie ( ) in der entsprechender Saule / Spaltung.

<table>
<thead>
<tr>
<th>Nu.</th>
<th>Natur der Wechselwirkung</th>
<th>Weite der</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Prima</td>
<td>Gut</td>
</tr>
<tr>
<td>1</td>
<td>Industrielle Besuche</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Lehrplan Entwicklung</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Implant Ausbildung</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Berufliche Ausbildung</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Personale Austausch</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Projekt Arbeit</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Lehrer Ausbildung</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Industrie basiert/aufbauend</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Ausbildung (Sandwich system)</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Apprentice Ausbildung</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Andere</td>
<td></td>
</tr>
</tbody>
</table>

18) Kriegen Sie Responz von der Industrie.

19) Nennen Sie die Kommittes, in den sie mitglieder/der Sitzer sind.
1) 2) 3)

20) Sind Sie bezahlt nach den Regeln von der Regierung.

21) Was ist die Ausbildungs Fahigkeit Befahigung, ein lehrer zu werden?

22) Welche strategie wird adoptiert fur die Forderung der Fakultat?

23) Gibt es einige Vorsorge, Fur Urteilen als Antrieben fur gute Lehrem?
Wenn ja, wie wird es gemacht?
1) Publische/Soziale Erkennung alle college Programm
2) Bargeld Preis/urteil.
3) Extra Zuwachs
4) Andere

24) Was ist die Klasse GroBe? (Nummer den Studenten)
25) Was ist die Schubgroße für Labor/workshop
Ja/Nein

26) Ist das Lerner Reichtum/Material benutzbär in den Institut?
Ja/Nein.

27) Sind das Lernen Reichtum Ausrüstungen mit Leichtigkeit/einfach vom Institut benutzbär gemacht?

28) Ist das 'Lerner Reichtum matevieu' in dem Institut entwickelt?

29) Sind genug Reichtumen benutz bar in dem Institut, fur eine wirkende "Lehren-lernen" vorgang?
Ja/Nein

30) Gibt es einige mechanismus festgesetzt.
Ja/Nein
Wenn ja, auf welche ebene
1) Abteilungs Ebene
2) Instituts ebene
3) Staatliche eben
4) Andere

31) Kriegen die studenten Feedback/Rückkoppelung von ihren Schatzung?
Ja/Nein
Wenn ja, was für eine Ruck koppelung ist das?
1) Leere worter ausfüllen
2) Zusätzliche input
3) Unterrichts stunden
4) Andere

32) Ob gibt es genug Bichem in dem Bibliothek?
Ja/Nein

33) Ob gibt es freie Zulassung/Zugang für den studenten in der Bucherei?
Ja/Nein

34) Ist die Qualitats Versicherung' in der technischer Ausbildungs system, in der institut/dem staat festgesetzt?
Ja/Nein
Wenn ja, bitte erwähnen sie eins/zwei Maßnahmen.
35) Was für eine Maßnahmen sind genommen für qualitäts hersicherung input (student) die
vorgang (Lehre- lernen Vorgang) und die Produktion (bestehenden studenten)

1 2 3 4

36) Was ist die ebene nach, lernen von der 'lernen Attitude', den studenten?

1) Hoch 2) Mittelere 3) Nicht gut

37) Gibt es eine andere Abteilung, das kummert sich um/besorgt um Lehrplan Ausführung?

wenn nein, wer besorgt sich um lehrplan ausfuhrung?

1) Abteilung 2) institut 3) Staatliche 4) Andere

38) Gelegeneiten für Personnel

1) Akademisch: Begegnungen, Seminaren, Diskussionen, Orientierungs Kurse,
   Fortbildungs kurse Bucherei Beihilfe

2) Beruflich: Qualitäts Verbesserung Programme, Orientierungs Kurse

3) Physikalisich: Selbstständige Zimmer, Private Bucherei, Sekratansche Bedingungen

39) 1st die Ausbildung in den 'lehrs methode' notig um lehrer zu werden? Ja/Nein

40) Welches Ausbildungs Programme haben sie erfahrt/begleitet

   Namen der Dauer

   Ausbildung

41) Sind die Co-curricular tätigkeiten, für die personalitat Entwicklung den studenten
geführt Ja/Nein

42) Was ist ihre Rolle in den gleichen Lehrplan, Tätigkeiten

43) Sind sie damit einverstanden, daß das Talent nach lehren / unterrichten
technische Beruf nicht erregt/attraktiviert ist? Ja/Nein

Wenn ja, was konnten die möglichste grunde sungen

1) Bezahlungen/lohn sind nicht genug.
2) Lehrer bekommen keine Gelegenheit für das Aussetzen zu der Industrie.

3) Wegen der Abwesenheit von Institut-Industrie wechsel /wirkung
   Leute von diesen Agenturen konnons die Rolle nicht austauschen.

4) Es gibt keine freiheit zur Arbeit

5) Andere
ANNEXURE - X

Q.5) Fragebogen fur den studenten Zeichen: Bitte markieren sie (√) zu dem Punkte, mit den sie fuheen, dass ihre Antwort passt.

1) Name

2) Akademische Jahr: Erste/Zweite/Dritte/Vierte

3) Namen des Programms: Beruflich/Diplom/Grad (Graudurke) d.h. College
   AbschluB/Muster Priitung gemachthat/Doktor wurde

4) Namen des Disciplines:

5) Namen des Institutes:

6) Staat:

7) Warum haben sie/habt ihr technische Ausbildung/Ingenieurwiircle gewahet?
   i) Eigene Interesse   ii) Weil es gute job potentiell gibt auf dem Markt
   iii) Wunsch der eltern   iv) Befahigung in der Technik   v) Andere

8) Ist das Programm benutzlich im Beruf/Arbeit/Industrie, doB sie ausgewahlt haben?
   i) bis eine groBere weite
   ii) bis einbiBchen weite
   iii) Nicht so benutzlich/sinnvoll

9) Sind sie in dem 'Lehrplan Entwicklung Vorgang' verwickelt? Ja/Nein

10) Sind die 'lehrplan Objektives' klar zu ihnen? Ja/Nein

11) Gibt es line chance, die kurser selbst zu auswahlen? Ja/Nein

12) Sind sie besorgt mit moeglichkeiten die Industrie zu besuchen? Ja/Nein

13) Wie ist die Natur und die weite von der wechselwirkung mit der Industrie? Bitte markieren
sie (1) in der entsprechendersaule /Spaltung.

Nuv Natur des Interaktion weite des intesaktion
a Industrielle Besuche Prima/Gut/Nicht Gut
b Vorlesung von industrielle Personnel
c Industrielle Ausbildung
d Projekt Arbeit
e Andere

14) Bekommen sie gute Responz von der Industrie?

15) Gibt es eine unterrichtungs Technik, die von den lehren in die klassen benutzen wird? Wenn ja, welche von den folgenden Methode sind benutzt ?

a) Vorlesung Methode (Kreide und sprechen)
b) Mit Hilfe der OHP, slides
c) Demonstration
d) Gruppen-Diskussion
e) Frage-Antwort technik
f) Seminaren
g) Andere

16) Gefällt es Ihnen, in dem labor/workshop zu arbeiten? Wenn nein, warum ?
   i)
   ii)
   iii)

17) Sind sie fortschreitendlich, an ihrer Arbeit besteuert? Ja/Nein  

18) Bekommen sie Feedback/Rückkopplung von ihrer Progress/ Fortschritt im 
   Examen/Arbeit? Ja/Nein

19) Gibt es genug Bücher in der Bucherei ?
20) Kann man in dem Bibliothek freiwillig gehen?

21) Welche Gelegenheiten, kriegen sie in der Institut?
   1) Co-curriculare/lehrplan-spiel, sport, Debatten, Diskussionen, Seminaren, Exhibition, Besuche
   2) Finanzielle Hilfe

22) Wie sind die studenten ermutigt, eine bessere Erfüllung oder Performanz zu zeigen, oder wie sind ihre Talente ermennt?
   1) Mit Pramin in college Zeremoaie
   2) Mit stipendium
   3) Mit Verdienst Zeugnissen
   4) Mit Bargeld Preise
   5) Andere

23) Konnen sie ihre Anregungen/Hinweisen geben, die qualität der technischer Ausbildung zu verbessern?
ANNEXURE - XI

VOCATIONAL EDUCATION (INDIA)

MODEL OF INDUSTRIAL TRAINING INSTITUTE

Industrial Training Institute Aurangabad is the one of the oldest institute established in the year 1958 and offering courses in vocational Education. The institute is a government institute and the budget/finance for Recurring and Non-recurring expenditure is provided by the state government. The administrative, financial and academic control is done by Directorate of vocational education and training.

The institute offers one year, two years and three years vocational courses. The qualification requirement to learn these courses varies from course to course. The selection of the students is made in general on marks obtained in the qualifying examination. There are reservations of seats for various category people as per the rules laid down by the state Government. The institute runs 30 trades with total intake of 1008 students. The intake in each trade varies from 30-80. The curricula for the programme is designed by National Council for Vocational Training, New Delhi and is common Nationwide. The review and restructuring/revision of curricula is made as per the needs of industry and society. The flexibility in course offerings do not exist in the curricula. The focus of programme is more on developing practical skills and hence there is more weightage to practical work in the curricula. The institute makes use of chart and demonstration method of teaching in class room/Laboratory. The qualification of teachers is as per the rules laid down by National Council for Vocational Training. The selection of the teacher is done by Public Service Commission/Staff Selection Board. The institute conducts 30 trades having 65 units. One unit has one teacher and the sub-ordinate staff. There are about 65 teachers and 150 other
11. What is the nature and extent of Industry-Institute-Interaction.  

Please mark (√) in appropriate column.

<table>
<thead>
<tr>
<th>SR. NO.</th>
<th>NATURE OF INTERACTION</th>
<th>EXTENT OF INTERACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Excellent</td>
</tr>
<tr>
<td>a.</td>
<td>Industrial visits</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>Curriculum Development</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>Implant training</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>Vocational training</td>
<td></td>
</tr>
<tr>
<td>e.</td>
<td>Exchange of staff</td>
<td></td>
</tr>
<tr>
<td>f.</td>
<td>Project work</td>
<td></td>
</tr>
<tr>
<td>g.</td>
<td>Teachers training</td>
<td></td>
</tr>
<tr>
<td>h.</td>
<td>Industry based education (sandwich pattern)</td>
<td></td>
</tr>
<tr>
<td>i.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

12. Is the required quality of manpower achieved by the present technical education system: Yes/No

13. If no what could be the reasons?

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Please (√) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>More emphasis on theory</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Course not need based</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Lack of institute industry interaction</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>No practical orientation to courses</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Out of date infrastructure</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Inefficient examination system</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>

14. What are the difficulties/constrains in industry institute interaction:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Particulars</th>
<th>Please (√) Here</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Institutes are lacking in interaction</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Requirements of institutes are too much</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>No sufficient time with industry</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Training is not the main business</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Any other</td>
<td></td>
</tr>
</tbody>
</table>
supporting and ministerial staff in the institute. These teachers/staff working in Government institute are considered civil servants.

The institute also runs Advance Training Programmes, Evening classes for industrial workers, certificate courses.

The evaluation of the students is done on the basis of sessional work throughout the year and year end examination for Theory, Practical and Oral. The student has to secure 40% in theory and 60% marks in practical examination to gain the Trade certificate. The attendance to theory class and Practical class (80%) is compulsory. The examination is conducted at National level by National council for vocation training and 'Trade certificate' is awarded by council to the successful candidate.

The state council for vocational training provides the support in conduct of trade test. The examination for certificate courses is administered by state council for vocation training. In order to foster a spirit of halt by competition among the trainees of the institute with a view to raising the standard skill, the all India skill competition is conducted at two level. The awards are given to the winner.

The Industrial Training institute is providing major share to industries in the form of skilled labour. The students passing Trade certificate examination (two year programme) can opt for higher education programme in polytechnic. The typical organization structure of I.T.I. is shown in chart 23. The photographs to Industrial Training institute are shown on page number 359 and 360.
There are Industrial Training institutes, run by private organization. The private authorities has to take the permission from National council for Vocational training, Directorate of vocational training and state government to start new courses to establish the institute. The Government does not provide any financial support for private institutes. The quality of education in ITI is monitored yearly as per the proforma designed by National Council for Vocational Training. Any institute either Government or private follows the norms laid down by NCVT for Land, Building, Staff, equipment and machinery.
CHART - 23
Organization Chart of an Industrial Training Institute

Principal/Superintendent

↓

Training and Placement Officer

↓

*Vice-Principal

↓

Group Instructor

↓

Office Supdt.

↓

Hostel Supdt. - Cum-
Physical Training Instructor

↓

Store Superintendent

↓

Medical Officer

↓

Compounder Dresser

Vocational Instructor

↓

Accountant
Clerical staff
for the Institute

↓

Hostel Clerk
Class IV staff for Hostel.

↓

Asst. Store-keeper
Store Attendant

Instructor for Allied trade
Drawing Instructor
Millwright Instructor
Mathematics Instructor
A. V. Instructor
Workshop Attendant

Supporting Staff

*Wherever sanctioned.
INDUSTRIAL TRAINING INSTITUTE (I.T.I.)
INDIA

CLASSROOM IN I.T.I.
AUTOMECHANIC WORKSHOP IN I.T.I.

COMPUTER CENTRE IN I.T.I.
ANNEXURE - XII

TECHNICIAN EDUCATION (INDIA)

MODEL OF POLYTECHNIC

The Technician Education facility in the state and country is provided in the Government/Government Aided/Un-aided polytechnics. The objective of Technical Education is, “to develop middle level manager to work on site/shop floor”.

Government polytechnic Aurangabad was established in 1955 with the intake of 60 in civil engineering and in 1999 the institute runs six Diplomas and two part-time programme with intake capacity of 30-60 and post diploma and Advance diploma one each. The total intake capacity of the institute is 350 for full time diploma programme and 120 for part time programmes. The institute also conducts course in Information Technology at certificate level (10+ and 10+2) and post graduate diploma in Information Technology. The intake to these programme is 40 each (Total 120). The general class size is of 60 students. The duration of programme is 2-3 years. The facility is provided to study the course at the pace of learner.

The institute is a government institute and the budget/finance for Recurring and non-recurring expenditure is provided by the state government. The administrative, financial and academic control (to certain extent) is done by Directorate of Technical education. The institute is Autonomous (Academic Autonomy) and designs its own curricula, conducts the examination and awards the degree-'Diploma' in respective branch/faculty.

The qualification requirement for admission to diploma programme is 10+/12+ with minimum 50% marks (45% for category people). The selection is done on merit basis in the qualifying
examination. The admission is done at the institute level as well as Regional/state level (70:30).

The curriculum for diploma programme is designed by the institute with the involvement of representatives from industry. The curricula provide flexibility in course offering. The curricula is frequently revised on the basis of needs of industry. The institute makes use of media. Question Answer technique, project method as methods of teaching.

The qualification of teacher is as per the norms laid down by All India council for Technical Education (AICTE) New Delhi. The selection of the teacher is done by Public service commission. The institute has 65 teaching faculty including Principal, Heads of Department. Lecturer selection grade and senior lecturer and other 200 supporting and ministerial staff. This teachers/staff are having status of civil servants.

The evaluation of student performance is done on the basis of continuous Assessment, progressive test and term end examination. The term end examination includes theory, practical and oral examination. The students has to secure minimum 40% marks to quality in Diploma examination. The attendance is compulsory (80%) in theory and practical classes. Successful students are awarded with “Diploma” certificate by the institute.

The major features of institute are,

- Practical orientation to courses
- Non-examination credit courses (like Yoga, Cricket, Dance, Music, Photography) for overall personality development
• Involvement of industry in curriculum development
• Internal monitoring of curriculum implementation
• Compulsory Industrial visits.

The institute has curriculum development cell, examination cell and Industry institute interaction cell.

The institute also conducts staff development programmes for polytechnic teachers and staff and continuing education programme for industry people. The institute provides facilities like consultancy, and testing in the field of engineering and technical education.

In order to develop technical competency as well as to provide scope for personality development, state level/institute level competitions are arranged.

The polytechnic is providing major share to industries in the form of middle level managers. The students passing Diploma certificate with 60% minimum marks can opt for higher education programme in respective faculty in Engineering College. The typical organizational structure of polytechnic is shown in chart 24 and the photographs of the institution are shown on page number 366 and 367.

There are Government Polytechnics in the state, which do not have Academic Autonomy and these institutes implement the curricula designed by Maharashtra Board of Technical Education, which is common statewide. The examinations are conducted by the Board and the certificate “Diploma” is awarded by the Board itself.
The polytechnic institution, are also run by private sector. These organizations have to take the permission from All India Council for Technical Education, Directorate of Technical Examination and state government for starting new course/to establish the institute. The government provides financial grant to the Aided private polytechnics (90%) for recurring expenditure, where as no financial grant is provided to un-aided private polytechnics. There exist Aided Autonomous (Academic) Polytechnics in the state. The quality of education in polytechnic is monitored by Directorate of Technical Education and Board of Technical Education.

Any polytechnic, either Government/Private, follows the norms laid down by AICTE regarding Land, Building, Staff, Equipments and machinery.
Organisational Structure
Polytechnic/Engg.College

Principal

- Training & Placement cell
- Administration
- Workshop
- Academic
- Library

- Sections
  - Accounts/Student/Establishment/Exam.

- Supporting Staff

- Departments
  - Faculty & Staff
POLYTECHNIC BUILDING IN INDIA

CLASSROOM IN POLYTECHNIC
WORKSHOP IN POLYTECHNIC (INDIA)

COMPUTER CENTRE IN POLYTECHNIC
ANNEXURE - XIII

TECHNICAL (TECHNOLOGY) EDUCATION (INDIA)

MODEL OF ENGINEERING COLLEGE

Government College of Engineering Pune is one of the oldest and premier engineering institutions in the country. It was established in the year 1854. It is one of the first few colleges established by the British to serve the Indian Sub-continent in the second half of the 19th century and the first half of the 20th century.

Initially it started as the Poona Engineering class and Technical School to train sub-ordinate officers for carrying out public works like buildings, dams, canals, railways and bridges. Later the school became "Poona Civil Engineering College" and subsequently in the year 1911 the name was changed to the "College of Engineering, Poona". The institution was initially affiliated to the University of Mumbai for a degree of Licentiate in Civil Engineering known as LCE. Later on the certificate course was converted into a degree course and the first batch of B.E. (CIVIL) degree students came out in 1912. The degree course in Mechanical Engineering was introduced in the next year and the degree courses in Electrical Engineering, Electronics and Telecommunication, Metallurgy, Instrumentation and Control and Computer Engg. were introduced subsequently. The duration of programme is four years.

The post-graduate degree courses are being conducted in the various branches regularly from 1959. College is affiliated to the University of Poona in 1949. During the period of 81 years of its University affiliation, it has produced more than 17,500 Under-Graduate
Engineers and 1300 Post graduate Engineers in various branches of Engineering. The duration of programme is one and half year.

The college is spread over an area of 38 acres and located on the Mumbai-Pune national highway. The college hostels are within a distance of 200 meters and have 355 rooms and provide accommodation for 900 male students and 90 female students.

The college has produced many eminent engineers who are competent and committed to the high professionals standards in the field of Engineering and Technology. Bharat Ratna Sir M. Visvesvaraya has passed out from this college. Several leading engineering industries are being headed by the alumni of this college.

The institute is a government institute and the budget/finance for recurring and non-recurring expenditure is provided by the state government. The administrative, financial and academic (to certain extent) work is done by Directorate of Technical Education.

The college is affiliated to the University of Poona and hence follows a common curriculum designed by university and does not provide flexibility in course offerings. The examination are conducted by the university (through institutes) and awards the degree of “Bachelor of Engineering” in respective branch of engineering.

The qualification requirement for admission to degree programme is 12+ with science and mathematics with minimum 50% (45% for category people) marks. The selection of the student is made on the basis of marks obtained in the qualifying examination. The admission
is done at university level and state level by the Directorate of Technical Education by giving responsibility to one of the engineering colleges.

The qualification of teacher is as per the norms laid down by All India Council for Technical Education (AICTE) New Delhi. The selection of the teacher is done by Public Service Commission.

The evaluation of student’s performance is done on the basis of progressive test and term end examination. The term end examination includes Theory, practical, oral, seminar/project (in final term/year). The student has to secure minimum 40% marks to qualify in examination. The successful students are awarded with degree of “Bachelors in Engineering” by the University.

The college has introduced sandwich pattern courses since 1973 in Mechanical, Electrical and Metallurgical branches. The industries like TELCO, Bajaj Auto, Bharat Forge, Vulcanlaval, Kirloskar groups of industries cooperate with the college. The student attain industrial training placement for the period of six months on the basis of education imparted in institutes.

The other features of college of Engineering Pune are-

- Industrial Training and consultancy
- Sponsored Research Projects
- Modernization programme with the help of Japanese Grant and assistance
- Research and Development programme
Consultancy and Testing

Microprocessor Application Engineering Programme centre (Department of Electronics, Government of India)

The Government College of Engineering Pune is providing major share to industries in the form of Managers, Technologist and Technocrat. The typical organization structure of Engineering college is shown in chart 25 and the typical arrangements of classroom and laboratory is shown in photographs on page number 371.
LABORATORY IN ENGINEERING COLLEGE
ANNEXURE - XIV

TECHNICIAN EDUCATION (GERMANY)

MODEL OF BERUFSSHULE / FACHSCHULE

Wilhelm – Busch – Schule, Bruchsal (Germany) is the institute of vocational education offering one year/ two-year vocational education in dual system as well as full time vocational school. The institute also runs Technician education programmes in different disciplines of engineering. The Technician Education level is equivalent to the Polytechnic level education in India. The institute offers vocational education in about eleven trades (Craftsman Training equivalent to level of I.T.I. in India) and six programmes of Technician education.

The institute has history of 1000 years in vocational education in the field of kilns (stone makers), established 165 years ago (about 1833-34). The institute is the municipal institute where in the cost towards construction of vocational school and equipments is borne by the municipal corporation and salary to the staff is paid by the state government. The staff is the civil servant. The schools are autonomous in restricted sense, that is the faculty and staffs is not transferred to the other institute but their appoint has to be got confirmed by the state government. The teacher (after acquiring qualification) for getting the employment apply to the state government (Department of education) for the post advertised by specific school and accordingly the state government issues the appointment order to the teacher. The institute implements the curriculum, which is more or less common nationwide.

The intake to different trades in vocational and Technician education ranges between 25-70 per programme.
The qualification for admission to vocational education (Berufsschule/Berufsfachschule) is successfully completed Hauptschule or Realschule (9+ or 10+) depending on the type of trinity the students wish to obtain.

The qualification for admission to Technician education (Fachschule) is completion of Vocational Training (in Berufsschule/Berufsfach Schule) and working experience in their field. Fachschulen are schools based on initial qualification which offer advanced vocational training as well as general education. The Fachschulen train specialized middle level personnel to manage enterprise in their chosen fields, to train junior personnel. The duration of programme is 1-2 years.

The selection to the Berufsschule and Fachschule is made on the basis of grades obtained in the qualifying examination. The curricula provide flexibility in course offerings. The attendance is compulsory in vocational schools. The vocational schools use the teaching methods, which are action oriented. The methods being used are Project method, Planning games, Case studies, Practice companies and experimental exercise.

The institute had 447 full time students, 725 part-time students and 49 teachers and 20 instructors. The qualification of teachers and instructors was as per the rules laid down by state government. The administrative staff were about seven.

The examination for students of dual system is conducted by the competent body (chamber) and the examination for Berufsfachschule and Fachschule is conducted by the institute itself.
(except master craftsman). The grades are awarded based on the practical, Theory and oral examinations.

The successful students from Berufsschule get the vocational school certificate and Examination certificate from school and chamber respectively. The final examination certificate is “Skilled Workers” certificate. In general grade ‘4′ is treated as minimum grade for passing/qualifying examination.

In Fachschule the Master Craftsman examination for craft trade is conducted by chamber of handicraft for the respective districts. The students after passing the examination is awarded the certificate “Master Craftsman” by Chamber.

The Technician examination is conducted by the institute and the successful candidate is entitled for getting “State-certified technician” certificate.

The student passing from Berufsschule can obtain further vocational training in Fachschule.

The student passing from Fachschule are entitled for admission to Fachhochschule and also get an employment as middle level manager in industry. The candidate having master craftsman can run a craft trade business in the trained craft and also can get train as apprentices in industry training centre.

The organization structure of vocational school is shown in chart 26 and the arrangements in classroom and laboratory are shown in photographs 378 to 380.
The Vocational schools system is under government supervision. The schools are state or municipal institutions. In addition, there are unlicensed Private vocational schools, which are subject to state supervision. Recognition of leaving certificate from these schools is dependent on the observance of pertinent state regulations with regards to lessons, qualification of teachers and the execution of examinations. The financial responsibility in the private school is that of the management.

Since the states are in charge of vocational schools, the financing of these schools (except unlicensed private schools) is a matter for state governments. As a general rule, public funds are use to pay teachers in all states:

Expenditure for the establishment, maintenance and servicing of school buildings and facilities is generally borne by the school sponsors. At the state level, these sponsors are the municipal and rural boroughs. For the establishment of school buildings and facilities the sponsors generally receive subsidies of varying amounts from the state.
CHART – 26

Organization Structure of Vocational Training School Ravensburg

Principal
(Mr. Schick)
Deputy Director
(Mr. Schuster)

Administration
(4 secretaries
3 Caretakers)

Assisting executives
(committee of students,
representative of employers...)

2 Assistants to the Principal
(Public relation, lesson
schedules)

Departments
/Sections

Dept. I
Mr. Schlumpberger
Mechanical
Section Printing
Section
24 teachers
11 Workshop
instructors
490 students

Dept. II
Mr. Bayer
Electrical Section
mobile section
16 teachers
9 Workshop
instructors
339 students

Dept. III
Mr. Steinle
Wood Section
Health Care
Section
16 teachers
6 Workshop
instructors
574 students

Dept. IV
Mr. Malhofer
Painting Section Textile
Section Body care Section
(hairdressing)
11 teachers
6 Workshop
instructors
234 students

Dept. V
Mr. Schmid
Food/
Bakery
Section
8 teachers
2 Workshop
instructors
281 students

Dept. VI
Mr. Wolf
Full time schools
(Technisches
Gymnasium...)
31 teachers
WERNER-VON-SIMENS SCHULL (MANNHEIM)
SIMENS FACHSHULE (GERMANY)

ELECTRICAL ENGG. LABORATORY OF FACHSHULE
CLASS ROOM IN FACHSCHULE (GERMANY)

DEMONSTRATION ROOM OF FACHSCHULE
ELECTRONICS LABORATORY IN FACHSCHULE
ANNEXURE - XV

TECHNICAL EDUCATION (GERMANY)

MODEL OF FACHHOCHSCHULE / UNIVERSITY OF APPLIED SCIENCE

The Fachhochschule Karlsruhe is an institution of higher education, which grew out of the Grand Duchy college of Building founded in 1878. In 1919 the name of this educational institution was changed to the ‘Baden Higher Technical College’. The name ‘State Technical College’ became an important concept in Germany. In 1963, the name of the college was changed to “Karlsruhe State college of Engineering”.

The problem of recognition and equivalence within the European community led to the establishment of “Fachhochschulen” in the early 70’s. In October 1971, the Karlsruhe College of Engineering became the Fachhochschule Karlsruhe. At that time the Fachhochschule has approximately 1500 students. In a further step, the name was amended to “Fachhochschule Karlsruhe – Hochschule fur Technik” (University of technology) in January 1995.

At the time of study the Fachhochschule Karlsruhe had approximately 4700 students, 150 full-time professors, 15 honorary professor, 300 full time and part-time lectureks and instructors, as well as 200 technical and administrative staff members.

The Fachhochschule offers 15 four year degree programmes (within 13 department) consisting of eight semesters, of which six are theoretical and two periods are for integrated practical training in industry.
The qualification for the admission to programme in Fachhochschule is Fachhochschulreife (from Fachhochschule classes 11 and 12) / Abitur Hochschulreife certificate from Gymnasium / Fachhochschulreife (from Fachschule), as well as to have completed a period of pre-study (2-6 month based on Degree programme) work experience.

The institute is state institution with the status of a body corporate and have the right of autonomous self administration within the framework of the law. The Federal and Laender (state) authorities are jointly concerned with enabling the institute to provide a sufficient, adequately qualified and regionally balanced supply of places for study and research and supplying suitable building for this. The Federal authorities are responsible for outline legislation and the Laender for everything else. The Laender have organization of universities, legal jurisdiction, finance and staffing policy. The institutes (university) are self-administrating and implement state policy with regard to personnel, budget and finance. Staffing cost at university is completely met by the state.

The Land (state) and university act co-jointly responsible for regulation of studies and examinations, the establishment and re-organization of courses and facilities, planning and the appointment of professors. For the appointment of professors, the institute publishes advertisement in the Newspaper and the selection of the professors is done by conducting interviews. The proposal of selected professors is sent to the Ministry of education and after approval from the ministry (state government), the professors are appointed in the institute. The funding is made by the state government.
The curricula of the institute differs from other similar type of institutes. The curricula are designed on the broad guidelines given by the senate. The curricula provide flexibility in course offering.

The intake to each of 15 programmes is restricted (unlike in university) and is in range of 70-150 based on the programme. The selection for the programme is done on the basis of grades acquired by the applicant in the qualifying examination.

The degree programme at the Fachhochschule Karlsruhe are designed to combine an academic education with the requirement of industry.

Important elements of the application oriented curriculum are:

- Industrial experience of teaching staff
- Industry – relevant work in laboratories and practical courses.
- Labs, exercises, simulations, projects, factory visits
- Integrated traineeship
- Application oriented project work
- Application oriented thesis
- Teaching through seminar (normally 40 students in one lecture).

The aim of application – oriented education is flexibility i.e. the ability to apply theoretical and methodological knowledge to concrete professional problems. This adaptability is systematically trained in courses at the Fachhochschulen and supported by most of the professors and part-time lectures and leading professionals from industry.
Most of the teaching is done in the classical way in the form of lectures. Special feature is the limited number of students in one lecture rather in the form of a seminar. Some courses are projects, and most of the work a student has to do at home or in the library.

In almost all the courses an examination (mostly written) has to be passed at the end of the semester. There also exits examination for each chapter/continuous Assessment for few courses. In most cases the examination will be marked, in some cases the students will earn a "Pass" or "Fail" only (disjunctive individual lectures, which means that the distribution of marks may differ considerably from one subject to another). In the examination grades are used.

1.0 - is the best mark
4.0 - the pass mark
5.0 - the worst mark

1.0 means: very good
2.0 means: good
3.0 means: fair
4.0 means: satisfactory (just passed)

A student has passed an examination with marks ranging from 1.0 to 4.0 and has not passed it with marks from 4.1 to 5.0.

The institute Fachhochschule Karlsruhe - University of Applied Science awards the degree "Diplom (FH)" to the successful candidates.
The typical organization structure of Fachhochschule is shown in chart 13 and the arrangements in classroom and laboratory are shown in photographs on page number 387 to 389.

The Fachhochschule also has the central resources to support both teaching and research:

- Library with access to data bank
- CAD/CAM Laboratory
- Testing laboratory for building materials
- Computer Centre with PC-Pools

The other features of the institute are:
- Research facility
- Technology Transfer Centre
- Continuing education
- Recreation and Relaxation.

There also exists some private Fachhochschule in Germany, which are run by the Private sector. These institutions differ from the others by dint of their particular status and have generally limited autonomy. The funding to these institutions is made by sponsors i.e. private management/sector.
CLASS ROOM IN FACHHOCHSCHULE (GERMANY)

LABORATORY AT FACHHOCHSCHULE-STUTTGART (GERMANY)
LABORATORY IN FACHHOCHSCHULE (GERMANY)

MODEL / EXHIBITION IN FACHHOCHSCHULE-STUTTGART
SOIL MECHANICS LABORATORY IN FACHHOCHSCHULE
ANNEXURE - XVI

TECHNICAL EDUCATION (TECHNOCRATS) (GERMANY)

MODEL OF HOCHSCHULE FOR TECHNIK /TECHNICAL UNIVERSITY

The university of Karlsruhe was developed on the basis of a number of special colleges. The "Architekonische Zeichenschule" founded in 1768 was converted into a "Bauschule" by Friedrich Weinberenner. In parallel to this Gottfried Tulla, the genius who created the regulation of the Upper Rhine, founded the "Ingenieurschule" in 1807.

Following the suggestion of Weinbrenner and Tulla and according to the example given by the "Ecole Polytechnique" in Paris, the Grande Duke Ludwig of Baden founded the "Polytechnische schule" on October 7th 1825, which become the first technical college in Germany. In 1832 and following years the "Polytechnische Schule" became recognized and was provided with an entire college constitution by means of the organization statute of January 20th 1865.

In 1885 the college again was renamed as "Technische Hochschule" while at the same time new institutions like Rektor Magnificus, Senate, grate Council were added to the existing institutions. In 1899 the graduate degree "Doctor of Engineering (Dr-Ing)" was established.

In the year of 1902 the college was named "Fridericiana" in honour of its generous supporter arand Duke Friedrich I of Baden. On 5th July 1967 it was renamed as "Universitat Karlsruhe (Technische Hochschule)".
The division of the University into faculties refers back to the year 1865.

When the University of Karlsruhe established has 15 teachers and 250 students, now it is a large and modern institution for teaching and research. Now Engineering, Natural Science and Business administration programmes are offered by the University. There are twelve faculties and 123 institutes, 17000 students with 300 professors and 4000 employees.

The federal state bear the greatest responsibility and the main financial burden for the University. The federal government has direct and indirect responsibilities of the universities. The Federal and State government is responsible for the higher education framework, general pay and service legislation and other framework conditions such as professional qualifications guidelines. The state government is responsible for maintaining the universities, funds basic equipment, appoint and employ the professors and supervise the universities in legal issues, authorize degree courses and degrees.

The “freedom of research and teaching” in choosing content matter (curriculum) and consequent degree of institutional autonomy lies with the university.

The Technical University Karlsruhe offers 40 courses at the university. These courses either end in diplom, a scientific examination for advanced Highschool teachers or a magistrate examination. The duration of programmes range from 4-5 years.

The qualification for admission to various programmes in university is “Abitur” and the selection is done on the basis of grades acquired by the applicant in the qualifying
examination. There is restriction on intake capacity of various programmes except for very few programmes having admission quota (numerus calusus). It is the fundamental, constitutional freedom of anyone with the secondary-leaving certificate (Abitur) to attend university and study what they like, as they like (except programmes having limited quota).

The curriculum is designed by the university and provides flexibility in course offerings. Further, the study regulations permit considerable deviation from the regular plan in terms of timing as well as in terms of chosen courses. The students are expected to initiate their own study teams. The attendance of lectures and tutorials in general are not compulsory. The class size is as much 350-400 in some courses.

The engineering curriculum of the first two years of Basic studies primarily involves lectures, exercises and laboratory work. The subjects in the Basic studies include Mathematics, Physics, Mechanics, Chemistry, Material Science and general engineering subjects. The Basic study ends with intermediate examination.

After completing the intermediate examination, students are admitted to the advance level of studies and final examinations is conducted in 8th semester.

The students achievement are evaluated by their performance in written examination and the final examination.
The marks from 1.0 to 5.0 is used for grading the examination (1.0 - very good; 2.0 - good; 3.0 - fair; 4.0 - satisfactory; 5.0 - fail). Students pass the examination if they receive a mark not exceeding 4.0 in all subjects related to their field of specialization.

The student after successful completion of Diplom examination are issued a certificate showing the marks they have received. The "Diplom" certificate is awarded by institute itself.

The typical organization structure of the university is shown in chart 16 and the arrangements in classroom and laboratory are shown in photographs on page number 394 and 395.

The features of Technical University Karlsruhe are:

- Intense research and close co-operation with companies and research institutes.
- Close co-operation between the University and Nuclear research Centre at Karlsruhe
RESEARCH LABORATORY IN UNIVERSITY (GERMANY)
ANNEXURE - XVII

MODEL OF INDIAN INSTITUTE OF TECHNOLOGY (IIT)

The six IIT were set up by an ACT of parliament as institute of national importance. The IIT Education as a model are autonomous institutes established at Khargpur 1951, Bombay 1958, Madras 1959, Kanpur 1960, Delhi 1961, and Gauhati 1995 through the "Institute of Technology Act-1961" which declared the five institutes to be of national importance.¹

The students for B.Tech. (Bachelors of Technology) and M.Tech. (Master of Technology) are selected from joint entrance examination nationwide. These institutes were meant primarily to be postgraduate institutions. It is found that, initially and recently the emphasis is on under graduate education because of the quality of intake at this level. The data reveals that, about 70% of the B.Tech. and almost all M.Tech. and Ph.D. have made significant contribution to the Indian Industrial scene in manufacturing, research and development and management.²

The system has built-in flexibility for a student to complete the B. Tech. programme at individual pace longer than normal (five years) without any discredit or sense of failure, the IIT adopt continuous evaluation system.

The entrance qualification and requirement in IIT for B.Tech. and M. Tech. Are,

➢ Bachelors of Technology (B.Tech.) - 10+2 and Joint entrance examination

¹ V. D. Karad, Education System in India – Need for a Pragmatic Apprals. MAEERS MII Pune (Journal) (1993) PP 56-57
² Ibid P 59
> Master of Technology - B.E./B.Tech.
(M.Tech.) - GATE entrance examination score

IIT is autonomous institute and gets budget and financial allocation from central government.

The IIT, as autonomous institute review methods of their courses and evaluation.

IIT conducts following major activities along with undergraduate and post graduate programmes.

----Continuing education programme
----Research and development
----Consultancy and testing
----Centres of Educational Technology
----Quality improvement Programmes (QIP)

Before the late 1950s, a survey of the technical education scene in India reveals a predominance of undergraduate education and training in various universities, with little emphasis on post graduate education and Research a development. The setting up of six IIT's have served to user in a new culture in technical education by providing a quantum leap in the quality instruction, Research and development and interaction with industry.³

³ Ibid P 59
ANNEXURE - XVIII

MODEL OF REGIONAL ENGINEERING COLLEGE

The establishment of Regional Engineering Colleges (RECs) was a logical outcome of the industrial and economic policies of the Government of India during the 1950s. The implementation of various development projects during the First five-year Plan revealed the urgent need for assessing the availability of technical manpower in the context of planning for the future. This important task was entrusted to the Planning Commission which, in turn, appointed the Engineering Personnel Committee (EPC) for the assessment of demand and supply position in respect of technical manpower.\textsuperscript{4}

Based on the information from various departments of their manpower requirements during the Second Five Year Plan, the EPC recommended that in order to “meet the shortage, capacity in existing established institutions should be expanded fully”. The EPC was moreover, of the opinion that, in addition to the existing technical institutions, new colleges would have to be opened to supply the necessary technical manpower.

The recommendations of the EPC were accepted by the Planning Commission, which sought the views of the All India Council for Technical Education (AICTE), about establishing new engineering colleges. The AICTE, in turn appointed the Ghosh-Chandrakant Committee to examine the proposal of establishing new technical instrument of eight new engineering colleges, each with an annual intake capacity of 250 students. The recommendation was accepted by the Government of India, which approved the establishment of 8 centrally


396
sponsored Regional Engineering Colleges under the programmes of "Further Expansion of Technical Education in the second Five-Year Plan".\textsuperscript{5}

\textbf{Establishment of RECs}

Under the scheme of "Establishment of Regional Engineering Colleges" (RECs). The institutions established were conceived as large-sized ones by the standards then prevailing in the country and they were to function on an all-India basis.

During the first phase, the Ministry of Human Resource Development (known then as the Ministry of Education). Government of India approved the establishment of eight RECs. In due course of time, 9 Regional Engineering Colleges (Total 17) were established in India.

\textbf{Aims and Objectives of RECs}

Regional Engineering Colleges were intended to have an all-India character, and serve the whole country by providing technical personnel required for the successive Five Year Plans. Considering the background intentions and later developments, the aims and objectives of the RECs are –

(1) To offer courses of instruction in different branches of industry-based engineering, initially at the under-graduates level, with a view to developing an integrated personality:

(2) To make the instruction and training oriented towards creating in the students awareness of the technological and socio-economic needs of the country;

\textsuperscript{5} Ibid P
(3) To promote research efforts among the various faculties, preferably on interdisciplinary projects;

(4) To undertake post-graduate instruction and training, keeping in view the needs of technological growth and the requirements of regional development;

(5) To promote co-operation with industries and other sectors of economy;

(6) To maintain an all-India character in regard to student admissions and faculty; and

(7) To act as an important link in the interaction between the central and state sectors of technical education.

In addition to under-graduate courses, all RECs offer post-graduate courses in certain specialized areas of science and technology. Many of these courses are industry-oriented, so as to meet the needs of industry and at the same time, enhance job opportunities for the students concerned. Such courses are offered in consultation with nearby major industrial units. At many RECs, facilities are available for doctoral research in major disciplines of engineering and at some RECs in applied science and in humanities too.
ANNEXURE - XIX

MODEL OF TECHNICAL TEACHERS’ TRAINING INSTITUTE

In the mid sixties four Technician Teachers’ Training Institutes (TTTIs) were established by the Government of India under their ongoing scheme of Quality Improvement in Technical Education, located at Bhopal (Western Region), Calcutta (Eastern Region). Initially these institutions were expected to primarily to meet the scarcity of trained technical teachers due to the expansion of polytechnic education.\(^6\)

TTTI Bhopal was established in 1965, with the major role of preparing professionally competent teachers for the polytechnics of the states of Madhya Pradesh, Maharashtra, Gujrat and Goa in the Western Region of India. The institute is located in the capital of Madhya Pradesh, Bhopal.

Over the years the nature of activities and the role of TTTI Bhopal has expanded beyond the teacher development concept. These enhancements occurred in steps and stages spread over a couple of decades from the early seventies.\(^7\)

As a consequence of the transformation, TTTI Bhopal has now become a resource institution of excellence for the technician education system of the country. It has also demonstrated its potential for catering to the needs of allied education systems like degree institutions and vocational education systems to industry training centres, as well as to the needs of developing countries in technician education development.

The objectives of TTI Bhopal

- To conduct human resource development programmes for the staff of technical institutions at different levels.
- To develop and supply teaching-learning resources, including print material, multimedia learning packages, educational television programmes, video programmes and Computer aided instruction package.
- To conceive and help in installing infrastructures in stages and institutions for facilitating:
  i) curriculum development and course design,
  ii) linkage with industry
  iii) technical manpower development for the unorganized and rural sectors,
  iv) distance learning,
  v) instructional resources development,
  vi) student testing and evaluation and certification,
  vii) management development including project formulation and implementation, project/programme monitoring and evaluation,
  viii) educational research,
  ix) community development
  x) computer centre establishment and utilization,
  xi) laboratory design and innovations,
  xii) manpower planning.
- To establish network relationships with industries and communities, state systems, other technical and management institution, R and D organizations and professional

bodies appropriate technology centres, nongovernment service agencies and international organizations.

- To explore the advent of hi-tech in industry and to prepare the technical education systems for the introduction of hi-tech programmes and learning experiences.
- To innovate and develop new models and approaches in areas like methods, curriculum design, education and training technology, teacher development, establishment of linkages, student assessment, institutional management.
- To review the performance of institutions and state systems and help, conceive and implement measures to enhance effectiveness of performance.
- To chart out performance trends and development in technical education, to disseminate information to technical education systems and network institutions and states for the purposes of idea and resources exchange.
- To conceive and develop models, and processes for managing change and innovations, and assisting systems to bring about change and innovations.
- To undertake policy analysis and research for facilitating policy formulation, implementation and review at all levels.

**Organizational Structure**

The TTTI has organized itself into a matrix structure. The Institute has a number of departments/centres and three extension centres, for accomplishing its aims and objectives. Each faculty is member of department / centre and also associate member of another department / centre, depending on his / her choice, expertise and Institute priorities. This matrix structure facilitates departments / centres in interdisciplinary areas, and is characteristic of this institute.
ANNEXURE - XX

MODEL OF BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE PILANI

During World War II, the Government of India established a Technical Training Centre at Pilani for the supply of technicians for defense services and industry. At the end of the war, late shri. G.D.Birla decided to convert it into an engineering college in 1946 with degree programmes in Electrical and Mechanical engineering. The institute was initially registered as a society under the Rajasthan Societies Registration Act of 1958 on the 13th May 1964. Subsequently, by notification published in Gazette of India dated 27th June 1964 Ministry of Education, Government of India declared that the institute shall be “deemed to be a university”.

The Birla Institute of Technology and science (BITS), Pilani is an all-India Institute for higher education deemed to be university by the Government of India. It is privately supported fully residential and admits both men and women students.

The primary objectives of the Institute are, to provide for and otherwise promote education and research in the field of Technology, Science, Humanities, Industry, Business and Public Administration and to collate and disseminate in such fields effective ideas, methods, techniques and information as are likely to promote the material and industrial welfare of India, and to train young men and women able to and eager to create and put in to action such ideas, methods, techniques and information. BITS adopt the semester pattern, modular structure of courses, continuos and internal evaluation and letter grading. The institute developed several flexible educational programmes.

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The three-tier structure of Education and programme of studies at Birla Institute of Technology and science (Pilani) is shown in Table.
Birla Institute of Technology and Science, Pilani Three Tier Structure of Education

### Ph.D. Degree

<table>
<thead>
<tr>
<th>Higher Degrees</th>
<th>On-campus Programmes</th>
<th>Off-campus-Distance Learning and Collaborative Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td>M.E. Biotechnology, Chemical, Civil, Computer Science, Electronics and Control, Management System, Mechanical, Microelectronics, Software Systems, Systems and Information</td>
<td>M.E. (Collaborative) Project Engineering M.Phil. Cardiac Sciences, Hospital and Health Systems Management, Mathematics, Optometry, Physics, Physician Assistant, Science Communication and Journalism M.Phil (Applied)</td>
<td></td>
</tr>
<tr>
<td>M.Pharm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.Phil</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Integrated First Degrees

<table>
<thead>
<tr>
<th>On-campus Programmes</th>
<th>Off-campus-Distance Learning and Collaborative Programmes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group A</strong>&lt;br&gt;B.E. (Hons.)&lt;br&gt;Chemical, Civil Computer Science, Electrical and Electronics, Instrumentation, Mechanical&lt;br&gt;B.Pharm. (Hons.)&lt;br&gt;M.M.S. (Master of Management Studies)</td>
<td><strong>Group D</strong>&lt;br&gt;M.V.S. (Master of Vocational Studies)&lt;br&gt;Footwear Technology,</td>
</tr>
</tbody>
</table>

**Source:** Bulletin of BITS Pilani (1997-98)

The institute operates at the three tiers of education, namely, the integrated first degree programmes, Higher degree programmes and the doctoral programmes.

**Integrated first degree**

These degree are offered at the first tier and are having the nomenclature like B.E. (Hons.), B.Pharm. (Hons). These are called integrated degree for two reasons: (i) there are several common courses amongst these degrees and (ii) no intermediate first degree like B.Sc., B.Sc. (Hons.), BA is awarded. These degrees are based on modular structure and the academic requirements are spelt out in respect of number of courses rather than number of
years spent. Normally students finish a programme in 8 semesters, the flexibility allows a student to complete the programme at faster / slower pace.

**Higher degree programmes (ME/M.Pharm/M-Phil)**

The requirements of these programmes is in terms of the total number of units the students required to complete rather than the duration. A normal student completes the programme in three semesters. The last semesters have two alternative (i) dissertation and (ii) practice school.

**Doctoral programmes**

The Ph.D. Programme is structured on the basis of completion of institutes higher degree.

**Evaluation**

All courses are conducted and evaluated in a continuous and internal manner by teacher teaching the courses. The performance of a student in each course is assessed by the teacher by means of continuous evaluation throughout the semester in class work, tests, tutorials, laboratory work, home work, project and a comprehensive examination at the end of the semester. The evaluation system encourages and rewards continuos and systematic study and provides a constant feed back.
At the end of the semester, the teacher of the course awards letter grade A, B, C, D, E based on the total performance and it is relative to the performance of others taking to the same course. The overall performance is indicated by cumulative grade point average.

**Practice school**

All integrated first degree and higher education programmes of the institute provide for a practice school option. On completion of the programme with option of practice school the student gets the degree with the tag "With practice school". The structure of Integrated first degree programme with practice school option is shown in Chart 27.
CHART - 27

THE STRUCTURE OF INTEGRATED FIRST DEGREE PROGRAMME

<table>
<thead>
<tr>
<th>Foundation Courses</th>
<th>Foundation Courses</th>
<th>PS I</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Math</td>
<td>Core Math</td>
<td></td>
</tr>
<tr>
<td>Core Science</td>
<td>Core Science</td>
<td></td>
</tr>
<tr>
<td>TA</td>
<td>TA</td>
<td></td>
</tr>
<tr>
<td>AAOCES</td>
<td>AAOCES</td>
<td></td>
</tr>
</tbody>
</table>

I Sem    II Sem    III Sem    IV Sem    Summer

| Electives | PS II |

VII Sem    VII sem+Half    Summer    Half Summer+VII    VIII Sem

<table>
<thead>
<tr>
<th>CDC</th>
<th>AAOC</th>
<th>CDC</th>
<th>AAOC</th>
</tr>
</thead>
</table>

Legend:
AAOC = Analysis and Application Oriented Courses
CDC = Compulsory Discipline Courses (Specialized)
ES = Engineering Sciences
HSS = Humanities and Social Sciences
PSI = Practice School I
PSII = Practice School II
TA = Technical Arts
ANNEXURE - XXI
MODEL OF SPECIAL TECHNICAL INSTITUTE IN INDIA

Introduction

Sant Longowal institute of Engineering and Technology (SLIET) established by Govt. of India to provide technical education in emerging areas of Engineering and Technology to cater to the technical manpower requirements at various levels of education, taking into consideration the shortcomings in technical education-system in the state of Punjab and the region. The education programmes of this institute are non-conventional, innovative practical oriented and contain all aspects of New Education policy, 1986. It started Certificate and Diploma programmes in various branches of Engineering and Technology in the year 1991. The degree programme has been introduced in the academic year 1994-95. The programmes started at SLIET have a built-in flexibility to provide for innovation in the academic structure to enable and fulfil a wide variety of needs that currently exist and that are likely to emerge in Punjab and other parts of the country.\(^\text{10}\) The programmes in the institute provide both lateral entry and vertical mobility at all levels of education, besides non-formal education and entrepreneurship development programmes.

Objectives

The objectives of the Institute are:

A) Education and Training:

i) To offer flexible, modular, credit based multipoint entry programmes in Technology and Engineering and in areas like rural development, education planning, information and

\(^{10}\) Information booklet. Sant Longowal Institute of Engineering and Technology, Longowal (Punjab) (1995-96) P. 4
management sciences with built in continuity of education at various levels in the defined areas.

ii) To promote “self-employment” in all programmes by introducing an element of entrepreneurship and providing guidance and counseling services to help students to take-up self-employment ventures.

iii) To offer non-formal programmes in different technology areas to increase the scope of institutional programmes.

iv) To provide technical education facilities for women, through specially designed courses.

v) To offer continuing education programmes for working population from industries at different levels.

vi) To offer bridge courses for lateral entry in all programmes and for moving from one level of course to another level.

B) Extension Services:

To offer extension services to:

i) Industries in the neighborhood and in the region

ii) Working population,

iii) Passed out students,

iv) Social organizations,

v) Research institutes and other institutes of higher learning.

C) Research and Development

i) To conduct exploratory research to assess manpower requirement leading to integrated educational planning, curriculum, and development in the identified areas of science and technology.
ii) To conduct research in the inter-disciplinary areas aimed at solving the problems of industry and community.

The concept of practice school for Industrial Training has been introduced in the institute. The students spend one third of the time in the industry for on the hand job training. The courses offered flexible, modular and credit based. At the certificate level, in particular, the evaluation is proficiency based.

The programmes are designed so that on their completion, the students will be able to:

- Meet the requirements of small, medium and large scale industries, agro based industries, manufacturing industries and service sectors and get employment in these sectors of development.
- Take up self-employment: and
- Pursue higher level programmes in the institute after acquiring necessary work experience and after appropriate bridge courses.
- In addition, the institute provide non-formal education and training to persons from un-organized sectors of population and school drop-outs through its extension services to enable them to acquire basic technical skills, so that they are gainfully employed.

**Status**

The institute is an autonomous body and fully funded by Govt. of India. It is controlled by SLIET Society, registered under the Societies Registration Act, 1860.\(^{11}\) The institute awards

\(^{11}\) Ibid P 5
its own Certificates and Diplomas. It is affiliated to the Punjabi University, Patiala, for the award of Degree. The Certificate programme of the Institute has been declared equivalent to (10+2) for service purpose only by Government of India, Ministry of Human Resource Development (Department of Education).

Facilities

A. Hostel
B. Workshops and Laboratories
C. Central Library
D. Central Computer Centre
E. Central Instrumentation Centre
F. Dispensary
G. Bank, Post Office, Telephone Exchange and Shopping Centre

Programme Structure

The Institute offers modular pattern of education at Certificate, Diploma and Degree levels in emerging technical subjects. Higher level programmes are introduced at a later stage on need basis. There is a provision of vertical linkage between various modules. The Linkage between Certificate to Diploma (except for certificate students of building maintenance) and Diploma to Degree with suitable bridge courses. Suitable bridge courses in science are provided to overcome the deficiencies required for vertical improvement and for direct entry after diploma at different level. Bridge courses on technical subjects provide for the direct entry to Diploma after 10+2 and Degree after 10+2+3. Extensive industrial
training is arranged throughout the country for outgoing students at various levels for acquiring practical experience in industries through practice schools.

The entry to the higher modules i.e. Diploma and Degree is through All India Common Entrance Test. 50% seats of Diploma and Degree are kept reserved for the students passing from SLIET. Merit list of the candidates of Institutes is based on the performance in the Direct Entry Test and further weightage of 20% given to each candidate of the institute based on performance in previous final result (CGPA).

The entry of qualification and programme duration of various levels is shown in Table 34.

**TABLE - 34**

**ENTRY QUALIFICATION AND PROGRAMME DURATION OF VARIOUS LEVELS**

<table>
<thead>
<tr>
<th>ENTRY LEVEL</th>
<th>YEARS SPENT DURING</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Certificate Course</td>
</tr>
<tr>
<td>10+</td>
<td>2</td>
</tr>
<tr>
<td>10+2</td>
<td>--</td>
</tr>
<tr>
<td>10+2+3</td>
<td>--</td>
</tr>
</tbody>
</table>

**Certificate Programme**

The objective of the certificate programme is to produce technically skilled manpower in appropriate areas. The meritorious students who want to have further education join the advance programmes of the SLIET to acquire higher education after undergoing suitable bridge course. Compared to the conventional courses, SLIET have additional components of science, industrial training and entrepreneurship development programme.
a) Entry Qualification:

The *minimum* qualification for admission to the certificate programme is 10th pass from a State Secondary Education Board/CBSE/ICSE or equivalent.

b) Duration:

The duration of the certificate programme is two years.

c) Discipline of Study:

Admissions done in the following disciplines with an intake of 30 students in each discipline:

1. Air Conditioning Mechanic (CAC)
2. Auto and Farm Equipment Mechanic (CAF)
3. Building Maintenance (CBM)
4. Data Entry Operators and World Processing (CDE)
5. Electrician (CEN)
6. Food Processing and Preservation (CFP)
7. Foundry and Forging (CFF)
8. Servicing and Maintenance of Electronics Instruments (CSME)
9. Servicing and Maintenance of Medical Instruments (CSMM)
10. Tool and Die Technology (CTD)
11. TV Mechanic (CTV)
12. Welding (CWG)
Diploma Programme

The objective of the diploma programme is to produce middle level technical manpower such as junior engineers, supervisors and technicians. Greater stress is given practical oriented class work in the Institute with extensive training in an industry through practice school to enable the pass out students to get immediate placements in industry and other departments.

a) Entry Qualification: 10+2 Pass with Physics, Chemistry, Mathematics or. Certificate holder of SLIET.

Degree Programme

The following categories of candidates are eligible for admission in degree programme:

1. Diploma holders of SLIET

2. Diploma holders of polytechnics affiliated with the State Board of Technical Education.

3. Diploma holders of all the institutions approved by All India Council for Technical Education.

B.Sc. with Mathematics, Physics and Chemistry from a recognized University.

b) Duration

For direct entry, the duration of degree programme is three years including bridge courses of one year.

c) Discipline of Study

1. Chemical Engineering with specialization in
2. Computer Science and Engineering
3. Electronics and Communication Engineering
4. Food Technology
5. Instrumentation Engineering
6. Mechanical Engineering with specialization in
   a) Manufacturing Engineering
   b) Welding Technology
ANNEXURE - XXII
INDIAN SOCIETY FOR TECHNICAL EDUCATION NEW DELHI

The Indian Society for Technical Education is a national professional, nonprofit making society registered under the societies Registration Act of 1860. First started in 1941 as the Association of Principals of Technical Institutions, it was converted into “Indian Society for Technical Education” in 1967 with a view to enlarge its activities to advance the cause of technological education. Its membership was thrown open to any person who is actively interested in or have concern for technical education. The major objectives of the ISTE is to assist and contribute the production and development of top quality professional engineers and technicians needed by the industries and other organizations.

ISTE has now a provision for institutional membership, which is open to Engineering colleges, Polytechnics, University Departments offering engineering courses, Research Institutes, Industries and Government Departments which have interest in technical education system.

Being the only national organization of educators in the field of engineering and technology, ISTE is being represented on various technical committees and boards formed by the Central Government. The Ministry of Human Resource Development has also been involving ISTE in most of their important programmes and activities.

Objectives of the ISTE

The major objectives of ISTE are

1) To formulate the general goals and responsibilities of technical education.
2) To suggest curriculum and educational processes to the changing conditions
3) To develop effective teachers and educational administrators
4) To improve instructional methods, practices and administrative usage.
5) To enhance professional ideals and standards
6) To foster research as a function complimentary to teaching.
7) To cultivate fraternal spirit amongst the teachers, administrators, industrialists and professionals etc.
8) To bring about effective linkage between technical institutions, industry and society.

Activities of the ISTE

Some of the activities of the ISTE are

1) Curriculum development and updating.
2) Summer/Winter schools for engineering teachers and practicing engineers.
3) Preparation of teaching manuals and other instructional resource materials.
4) Subject updating courses for practicing engineers in selected areas of relevance to industry.
5) Special short-term industrial exposure programmes for teachers organized by industries in their premises;
6) Seminars/workshops/conferences on topics of relevance to the technical education;
7) Publication of a monthly "ISTE News Letter";
8) Publication of half-yearly "Indian Journal of Technical Education"; and
9) Publication of monographs and various reports relating to technical education.
Over the past 20 years the activities of the ISTE have expanded and diversified into various areas covering all aspects of teaching and learning, research, institution, industry and institution-community interaction, transfer of technology and others alike. ISTE has derived its strength from the support and encouragement given by various technical institutions, the industry, sister organizations and the Central and State Governments.