

Book No 22

CTM

File No

Syllabus

~~Syllabus~~

22/0



Name _____

Subject CV _____

Section _____

RAJIV GANDHI PROUDYOGIKI VISHWAVIDYALAYA

(University of Technology of Madhya Pradesh)

AIR PORT BY PASS ROAD BHOPAL-462036

PHONE : [0755] 2742001, 2742003, FAX : 0755-2742002

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

THREE YEARS DIPLOMA PROGRAMME IN
CONSTRUCTION TECHNOLOGY AND MANAGEMENT

UNDER

MULTIPOINT ENTRY AND CREDIT SYSTEM

DETAILED SYLLABUS

FOUNDATION COURSES FOR CONSTRUCTIONA TECHNOLOGY
AND MANAGEMENT.

101. COMMUNICATION SKILL- I

102. COMMUNICATION SKILL- II

CTM 103 PHYSICS

CTM 104 CHEMISTRY

107 MATHEMATICS-I

108 MATHEMATICS-II

SPONSORED BY -

DIRECTOR OF TECHNICAL EDUCATION BHOPAL (M.P.)

DEVELOPED BY -

CURRICULUM DEVELOPMENT CENTRE

M.P. BOARD OF TECHNICAL EDUCATION, BHOPAL

IN COLLABORATION WITH

TECHNICAL TEACHERS TRAINING INSTITUTE (W.R.) BHOPAL.

P R E F A C E.

In Madhya Pradesh most of the Polytechnics offer straight jacketed Diploma programmes in Civil, Mechanical, Electrical and Electronics & Tele-Communication Engineering. Curriculum is the most crucial input in a technical education, hence, initiating to develop a need based curriculae for establishing relevance of Polytechnic output to the needs of industry, is the demand of the time.

At present 10+ and 12+ science stream/technical stream students in different proportions join a three year diploma programme in all Polytechnics. 10+ students are admitted to first year and 12+ students in Second year of three year diploma programme. These students do not have any option in selection of courses (subjects) and have no opportunity for taking alternative courses appropriate to their capability.

The National policy on Education, therefore, rightly recognised the need for a flexible structure which would allow students to enter the system at different points depending on their entry levels, and take up combination of courses according to needs, thereby facilitating the production of man power for a spectrum of technologies and occupations enhancing the efficiency of the system.

It is, in this context, that the Directorate of Technical Education, Madhya Pradesh and M.P. Board of Technical Education explored the feasibility of restructuring polytechnic education in Madhya Pradesh under World Bank Scheme by introducing the Multi Point Entry and Credit System (MPECS). This Scheme of flexible structure has been introduced at S.V. Government Polytechnic, Bhopal from July, 1990.

Considering the nature of the scheme, the courses (subjects) offered in this new scheme have been clustered under the following groups.

- (1) FOUNDATION COURSES are meant for preparing adequate base of Science, Maths. and language and they are to be undertaken only by students who have passed 10+

(Contd...2)

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN MECHANICAL/ELECTRICAL ENGINEERING.
COURSE : MATHEMATICS II.
COURSE CODE NO : 108

LIST OF REFERENCE BOOKS.

MATHEMATICS- II.

- (1) Co-ordinate Geometry by S.L. Lesney.
- (2) Mathematics for Polytechnic
Vol. I and Vol. II- prepared by T.T.T.I.
- (3) Vector Algebra - B.R. Thakur.
- (4) Applied Mathematics -Popular Book Depot, Bhopal.
- (5) Applied Mathematics- Deepak Prakashn, Gwalior.
- (6) Integral calculus by Gorakh Pd.

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN MECHANICAL/ELECTRICAL ENGINEERING.
COURSE : MATHEMATICS II.
COURSE CODE NO : 108

LIST OF REFERENCE BOOKS.

- (2) HARD CORE COURSES are the courses which are to be taken both by 10+ and 12+ students.
- (3) In the SOFT CORE COURSES there is a choice for the students to select the courses of their choice.
- (4) BASIC TECHNOLOGY courses are the bridge courses between Science subjects and applied Technology courses.
- (5) APPLIED TECHNOLOGY courses are the terminal courses through which the desired knowledge and skills are developed in the students, to perform his job function in the chosen field of technology.
- (6) DIVERSIFIED courses are included to provide an opportunity for some more detailed knowledge in specific areas in the same or related discipline.

The curriculum development centre of the M.P. Board of Technical Education therefore undertook the task of preparing the syllabus/curriculum of the various courses of Diploma programme in Mechanical, Electrical and Construction Technology and Management started under Multi Point Entry and Credit System in collaboration with the CDC Centre of Technical Teacher's Training Institute, Bhopal. The first workshop for preparing the syllabus of the above three disciplines was conducted at TTII., Bhopal from 26-11-90 to 1-12-90 in which teachers from various Polytechnics and particularly from S.V. Government Polytechnic, Bhopal actively participated. The Board of Studies of the respective disciplines have approved the prepared syllabus, and the syllabus is being printed with the intention that the implementation of MPECS should continue unabated.

Where ever required a component of safety and environment has been included in the syllabus and proper care has been taken in :-

- (a) Maintaining sequence of topics.
- (b) Allotting HRS for each topics.
- (c) Avoiding overlaps of the content.
- (d) Relevance of the content.
- (e) Prerequisite of the content.

22/5

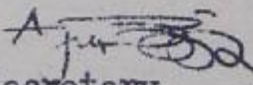
-3-

The comments and healthy criticism from faculty members are however welcome, so that this prepared syllabi can be reviewed and revised periodically.

We are highly grateful to the Director of Technical Education and Prof. G.A. Keshwani, Additional Director of Technical Education, Bhopal for their valuable guidance, encouragement and active co-operation in organising the above workshop.

Words of obligation are due, to P rof. S.A. Balu, Principal, TPTI, Bhopal and the CDC faculty of TPTI, Bhopal. It is out of their valuable suggestions and long term experience in curriculum development that this syllabus is in the hands of the user.

We aspire to improve this in times to come.


Secretary, - 22/2/91
M.P. Board of Technical Education,
Bhopal.

LIST OF PARTICIPANTS.

POLYTECHNIC FACULTY.

- (1) Shri B.B. Bhargava. S.V. Government Polytechnic, Bhopal.
- (2) Shri U.K. Shrivastava. S.V. Government Polytechnic, Bhopal.
- (3) Shri T. Chatterjee. Government Polytechnic, Jabalpur.
- (4) Shri B.L. Khare. Government Women's Poly. Sagar.
- (5) Shri B.P. Sinha. S.V. Government Polytechnic, Bhopal.
- (6) Shri S.K. Saxena. S.V. Government Polytechnic, Bhopal.
- (7) Shri R.M. Hastak. Government Polytechnic, Jabalpur.
- (8) Smt. S. Ekbote. S.V. Government Polytechnic, Bhopal.
- (9) Shri R.K. Gawande. S.V. Government Polytechnic, Bhopal.
- (10) Shri R.C. Chouksey. Shri Vaishnav Polytechnic, Indore.
- (11) Shri R.R. Gangane. Government Polytechnic, Ujjain.
- (12) Shri M.G. Rawal. Government Polytechnic, Jabalpur.
- (13) Shri B.K. Saxena. S.V. Government Polytechnic, Bhopal.

T.T.T.I. FACULTY.

- (1) Prof. V.M. Kapse Head of the Department C.D.C.
- (2) Dr. N.S. Kapruan.
- (3) Prof. G.N.N. Rao
- (4) Prof. H.R. Nemanna.
- (5) Dr. K.C. Sabbarwal.
- (6) Prof. S.B.L. Shrivastava.
- (7) Prof. P.C. Jain.
- (8) Prof. M.K. Shrivastava.

CURRICULUM DEVELOPMENT CENTRE:

- (1) Shri Ashok Ratnaparkhi. Joint Director
- (2) Shri K.K. Jain. Deputy Director
- (3) Shri C.P. Bhargava. Deputy Director.

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,

BHOJAL.

PROGRAMME; DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT UNDER M.P.B.C.S.

PROGRAMME - SEMEME.

DISCIPLINE FOUNDATION COURSES.

S. No.	CODE No.	COURSE TITLES	CREDIT
1.	101	Communication Skill- I	3
2.	102	Communication Skill- II.	3
3.	CTM 103	Physics.	5
4.	CTM 104	Chemistry.	5
5.	107	Mathematics- I.	4
6.	108	Mathematics- II.	4
Total credits.			24

- Notes 1. To be compulsorily taken by all 10+ students of DCIM programme.
2. Courses; 101, 102, 107 and 108 are common to DCIM, DME & DEE Programmes.

DISCIPLINE: HARD CORE

S.NO.	CODE NO.	COURSE TITLE	CREDIT
1.	201	Applied Mech.	4
2.	CTM 202	SOil Mechanics.	3
3.	CTM 203	Hydraulics.	3
4.	CTM 204	Elements of Civil Engr. Drawing.	5
Total Credits.			15

- Note (1) Compulsory for all 10+ and 12+ students of DCIM programme.
- (2) Course 201 common to DCIM, DME & DEE. programmes.

DISCIPLINE : SOFT CORE COURSES

S.No.	Code No.	COURSE TITLE.	Credits
1.	301	Computer App.	3
2.	302	Environmental Engg.	3
3.	CTM 303	Rural Housing and Sanitation.	3
4.	CTM.304	Interior Decoration and furniture Design.	3
5.	CTM.305	Industrial Engg.	3
6.	CTM.306	Architecture.	3
7.	CTM 307	Element of Mechanical & Eleet. Engg.	3
8.	CTM 308	Town and Country planning.	3
Total Credits.			09

- Note(1) Any three courses to be offered by each student of DCIM Programme
- (2) Course; 301 & 302, common to DCIM, DME & DEE. Programmes.

DISCIPLINE : BASIC TECHNOLOGY

S.No.	Code No.	Course title	Credit
1.	CTM 401	Surveying- I.	5
2.	CTM 402	Surveying- II.	5
3.	CTM 403	Enterpreneurship.	3
4.	CTM 404	Mech. of Structure	4
5.	CTM 405	Civil Engineering Drg.	5
6.	CTM 406	Material Technology	5
Total credits.			27

Note : All courses are to be taken by students of DCIM Programme.

III. PROGRAMME SCHEME.

PROGRAMME: DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT.

DISCIPLINE : APPLIED TECHNOLOGY.

DISCIPLINE : DIVERSIFIED.

S.No.	Code No.	Course title	Credit
1.	CTM 501	Construction Tech.I.	6
2.	CTM 502	Construction Tech.II.	6
3.	CTM 503	Construction Tech.III.	6
4.	CTM 504	Quality Surveying Costing.- I.	5
5.	CTM 505	Quality Surveying Costing- II.	4
6.	CTM 506	Construction Management.	5
7.	CTM 507	Structural Design & Drawing. I.(RCC)	5
8.	CTM 508	Structural Design & Drawing II(Steel)	4
9.	CTM 509	Industrial Training & Report I.	3
10.	CTM 510	Industrial Training & Report II.	3
11.	CTM 511	Advanced Entrepreneurship & Project.	5
12.	CTM 512	Project.	5
Total Credits.			57

S.No.	Code No.	Course Title	Credit
1.	CTM 601	Fabrication & Erection.	4
2.	CTM 602	Materials Management	4
3.	CTM 603	Marketing Management	4
4.	CTM 604	Human Resource Management.	4
5.	CTM 605	Prefab. Conc. Construction.	4
6.	CTM 606	Advance Environmental Engineering.	4
7.	CTM 607	Computer Aided Design.	4
8.	CTM 608	Advanced Structural Design and Drafting.	4
Total Credits.			08

Note : (1) Student will have to clear all the foundation courses before taking up any course of this level of DCTM programme.

(ii) Any two courses to be offered by the student of DCTM programme.

Note: S(1) Student will have to clear all the foundation courses before taking up any course of this level of DCTM programme.

(2) All courses are to be taken by students of DCTM programme.

NOTE: To pass the programme, student has to earn 140 credits.

22/3

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION, BHOPAL.
 SCHEME OF STUDIES AND EXAMINATION OF DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT.
 (M.P.E.C.S.)

FOUNDATION COURSE.

S.No. CODE NO. COURSE	PRE-REQUISITE	HOURS /WEEK. TH.	CREDITS	SESSIONAL TERM WORK	PROGRESSIVE ASSESSMENT I	BOARD PAPER II	EXAM. DUR.	THEORY MARKS.	PRACT. DUR. MARKS.	THEORY PRACTICAL/VIVA TEMARKS.	
											IAB
1. 101 COMMUNICATION SKILL I	-	3	3	20	-	10	10	3 Hrs.	100	-	-
2. 102 COMMUNICATION SKILL-II.	-	3	3	20	-	10	10	3 Hrs.	100	-	-
3. CTM103 PHYSICS.	-	4	5	20	20	10	10	3 Hrs.	100	1	3 Hrs. 50
4. CTM104 CHEMISTRY.	-	4	5	20	20	10	10	3 Hrs.	100	1	3 Hrs. 50
5. 107 MATHEMATICS-I	-	4	4	20	-	10	10	3 Hrs.	100	-	-
6. 108 MATHEMATICS-II.	-	4	4	20	-	10	10	3 Hrs.	100	-	-
<u>TOTAL CREDITS 24</u>											

NOTE: (1) Foundation courses are compulsory for all 10+ students.
 (2) Course code No. 101, 102, 107, 108 are common to DCIM/DME/DEF.

22/10

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION, BOPAL,
 SCHEME OF STUDIES AND EXAMINATION OF DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT
 (M.P.E.C.S.)
 2. HARD CORE

S. No.	CODE NO.	COURSE.	PRE REQUISITE	TH.	HOURS/SEM	PR.	CREDIT	SESSIONAL	PROGRESSIVE	TERM LAB ASSESSMENT	BOARD EXAM. PAPER DUR.	THEORY HOURS.	THEORY PRACT/VIVA	REMARKS.
2. <u>HARD CORE.</u>														
2. <u>HARD CORE</u>														
1.	201	APPLIED MECHANICS.	-	3	2	4	20	20	10	10	3 Hrs.	100	1	3 Hrs. 50
2.	CTM 202	SOIL MECHANICS.	-	2	2	3	20	20	10	10	3 Hrs.	100	1	3 Hrs. 50
3.	CTM 203	HYDRAULICS.	-	2	2	3	20	20	10	10	3 Hrs.	100	1	3 Hrs. 50
4.	CTM 204	ELEMENTS OF CIVIL ENGG. DRAWING.	-	2	6	5	20	20	10	10	3 Hrs.	100	1	(VIVA) 50
<u>TOTAL CREDITS 15</u>														

- NOTE :- (1) Hard Core courses are compulsory for all 10+ and 12+ students.
 (2) Course Code No. 201 is common to DCTM/DME/DEE.

22/11

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION, BHOPAL.
 SCHEME OF STUDIES AND EXAMINATION OF DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT.
 (M.P.E.C.S.)

3. SOFT CORE.

S.No.	CODE NO.	COURSE.	PRE-REQUISITE TH.	HOURS/WK.	CREDIT.	SESSIONAL TERM LAB. ASSESSMENT.	PROGRESSIVE PAPER	BOARD EXAM. DUR.	THEORY MARKS.	PRACTICAL/VIVA	REMARKS.
						WORK I				PRACT. DUR. MARKS.	
1.	301	COMPUTER APPLICATION.	-	2	3	20	20	10	10	1	3 Hrs. 50
2.	302	ENVIRONMENTAL ENGINEERING.	-	2	3	20	20	10	10	1	3 Hrs. 50
3.	CTM 303	RURAL HOUSING AND SANITATION.	-	3	3	20	20	10	10	1	-
4.	CTM 304	INTERIOR DECORATION AND FURNITURE DESIGN.	-	2	3	20	20	10	10	1	3 Hrs. 50
5.	CTM 305	INDUSTRIAL ENGINEERING.	-	2	3	20	20	10	10	1	3 Hrs. 50
6.	CTM 306	TECHNICAL DRAWING	CTM 204	2	3	20	20	10	10	1	3 Hrs. 50
7.	CTM 307	ELEMENTS OF MECHANICAL AND ELECTRICAL ENGG.	-	2	3	20	20	10	10	1	3 Hrs. 50
8.	CTM 308	TOWN AND COUNTRY PLANNING.	CTM 204	2	3	20	20	10	10	1	3 Hrs. 50
TOTAL CREDITS										9	

NOTE :- Any Three courses will be offered by each student.

22112

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION, BHOPAL.
SCHEME OF STUDIES AND EXAMINATION OF DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT.
(M.P.E.C.S.)

4. BASIC TECHNOLOGY.

S. No.	CODE NO.	COURSE.	PREREQUISITE COURSE	Th.	Pr.	CREDITS	TERM LAB.	LAB. ASSESSMENT	PROGRESSIVE BOARD EXAM.	PAPER DURS.	THEORY MARKS.	PRAC. DUR.	MARKS.	THEORY PRACTICAL/VIVA	REMARK.	
1.	CTM 401	SURVEYING I	-	2	6	5	20	20	10	10	1	3 Hrs.	100	1	3 Hrs.	50
2.	CTM 402	SURVEYING-II.	CTM 401	2	6	5	20	20	10	10	1	3 Hrs.	100	1	3 Hrs.	50
3.	CTM 403	ENTREPRENEURSHIP.	-	3	-	3	-	-	10	10	1	3 Hrs.	100	-	-	-
4.	CTM 404	Mech. of STRUCTURE.	201	4	-	4	-	-	10	10	1	3 Hrs.	100	-	-	-
5.	CTM 405	CIVIL ENGG. DRAWING.	CTM 204	2	6	5	20	20	10	10	1	4 Hrs.	100	1	-	50 (VIVA)
6.	CTM 406	MATERIALS TECHNOLOGY.	CTM 204	3	4	5	20	20	10	10	1	3 Hrs.	100	1	3 Hrs.	50
<u>TOTAL CREDITS 27</u>																

NOTE:- ALL courses are compulsory.

22/13

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION, BHOPAL.
 SCHEME OF STUDIES AND EXAMINATION OF DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT.
 (M.P.E.C.S.)

5. AFFILIATED TECHNOLOGY.

5. AFFILIATED TECHNOLOGY.

S.No.	CODE NO.	COURSE.	THEORY HOURS/ WEEK	LAB. WORK.	PROGRESSIVE BOARD EXAM.	THEORY PRACTICAL/VIVA	REMARKS.
			TH.	PT. D. W.	PAFER. DUR.	MARKS.	MARKS.
5. AFFILIATED TECHNOLOGY							
1.	CTM 501	CONSTRUCTION I TECHNOLOGY-I.	4	4	6	20	20
			4	4	6	20	20
2.	CTM 502	CONSTRUCTION TECHNOLOGY-II.	4	4	6	20	20
			4	4	6	20	20
3.	CTM 503	CONSTRUCTION TECHNOLOGY-III.	4	4	6	20	20
			4	4	6	20	20
4.	CTM 504	QUANTITY SURVEY AND COSTING-I.	2	6	5	20	-
			2	6	5	20	-
5.	CTM 505	QUANTITY SURVEY AND COSTING-II.	2	4	4	20	-
			2	4	4	20	-
6.	CTM 506	CONSTRUCTION MANAGEMENT.	4	2	5	20	-
			4	2	5	20	-
7.	CTM 507	STRUCTURE DESIGN AND DRAWING I (R.C.C.)	3	3	5	20	-
			3	3	5	20	-
8.	CTM 508	STRUCTURE DESIGN AND DRAWING-II (STEEL)	2	3	4	20	-
			2	3	4	20	-
9.	CTM 509	INDUSTRIAL TRAINING REPORT-I	-	6	3	20	-
			-	6	3	20	-
10.	CTM 510	INDUSTRIAL TRAINING REPORT-II	-	6	3	20	-
			-	6	3	20	-
11.	CTM 511	ADVANCED ENTREPRENEURSHIP AND PROJECT.	2	3	5	20	20
			2	3	5	20	20
12.	CTM	PROJECT (CIVIL ENGG.)	90	6	5	20	-
			90	6	5	20	-

TOTAL CREDITS: 12

(1) The students will not be allowed to take up these 5, and 6 level courses unless he clears all the foundation courses.
 (2) All courses are compulsory.

22/14

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION, BHOPAL.
 SCHEME OF STUDIES AND EXAMINATION OF DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT
 (M.P.T.C.S.)

6. DIVERSIFIED COURSES.
 S.No. CODE NO. COURSE. TERM. TH. PR. HOURS/WEEKS CREDITS. SESSIONAL. PROGRESSIVE BOARD EXM. THEORY PRACTICAL/VIA. MARKS. FRACT. DUR. MARKS. REMARKS.

6. DIVERSIFIED COURSE																
S.No.	CODE NO.	COURSE.	TERM.	TH.	PR.	HOURS/WEEKS	CREDITS.	SESSIONAL.	PROGRESSIVE	BOARD EXM.	THEORY	PRACTICAL/VIA.	MARKS.	FRACT. DUR.	MARKS.	REMARKS.
1.	CTM 601	PARTICULAR FABRICATION.	3	2	4	20	20	10	10	1	3 Hrs.	100	1	3 Hrs.	50	
2.	CTM 602	MATERIAL MANAGEMENT. & CPM 400 & CPM 500	3	2	4	20	20	10	10	1	3 Hrs.	100				
3.	CTM 603	MARKETING MANAGEMENT.	3	2	4	20	20	10	10	1	3 Hrs.	100				
4.	CTM 604	HUMAN RESOURCES MANAGEMENT.	3	2	4	20	20	10	10	1	3 Hrs.	100				
5.	CTM 605	PRECAST CONSTRUCTION.	3	2	4	20	20	10	10	1	3 Hrs.	100	1	3 Hrs.	50	
6.	CTM 606	ADVANCED ENVIRONMENTAL ENGG.	3	2	4	20	20	10	10	1	3 Hrs.	100	1	3 Hrs.	50	
7.	CTM 607	COMPUTER AIDED DESIGN.	3	2	4	20	20	10	10	1	3 Hrs.	100	1	3 Hrs.	50	
8.	CTM 608	ADVANCED STRUCTURAL DESIGN AND DRAFTING.	3	2	4	20	20	10	10	1	3 Hrs.	100	1	3 Hrs.	50	

NOTE:-

- (1) Only two courses are to be offered.
- (2) The student will not be allowed to take up these five and six level courses unless he clears all the foundation courses.
- (3) Total credits for diversified courses - 08

23/15

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHCIAL.

PROGRAMME : DIPLOMA IN MECHANICAL & ELECTRICAL ENGINEERING.
COURSE : COMMUNICATION SKILL
COURSE CODE NO: 101
PREREQUISIT. : NIL.

R A T I O N A L E.

Foundation courses are intended to prepare adequate base for alumni in language besides Science and Mathematics. A language plays dominant role in interpretation and understanding of human activities. As such it is imperative that the students be equipped with effective skills to communicate their ideas through the medium of instructions adopted in the Polytechnic system. This indubitably is a formidable task because of the chosen between needs and actual attainment of the entrants to this course. The needs of students stepping into the precincts of technical institutions are of a different type. Communication skill-I as a subject is introduced to enable students to understand properly text books on Science and other allied subjects.

AIMS OF THE COURSE:

- The course aims at enabling students -
- (a) to acquire words of general use besides the words from the register of physical Sciences.
 - (b) to understand and use grammatical items occurring in the unit.
 - (c) to develop reading comprehension.
 - (d) to compose guided and free paragraphs.

22/16

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN MECHANICAL AND ELECTRICAL ENGINEERING.

COURSE : COMMUNICATION SKILL- I

COURSE CODE NO: 101

PREREQUISIT : -

S C H E M E O F S T U D I E S .

S.No.	TOPICS	LECTURE HOURS.
1.	Passages for comprehension (A course in Technical English, Book I)	22 hours.
2.	Grammar (Living English Structure by W.S. Allen)	20 hours.
		Total 42 hours.
		Credits 3

22117

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOJAL.

PROGRAMME : DIPLOMA IN MECHANICAL AND ELECTRICAL ENGG.
COURSE : COMMUNICATION SKILL
COURSE CODE NO : 101
PREREQUISIT : NIL
CONTENTS.

I. Passes for Comprehension.

(A Course in Technical English, Book I, Somaiya Publications, Bombay)
(Prescribed units - 1, 2, 4, 5, 7, 8, 9, 10, 11, 17)

II. Grammar

(Living English Structure by W.S. Allen)

Exercises- 1 to 5, 7, 26 to 29, 76, 78, 79, 81, 83, 85 to 88,
93, 94, 115, 116, 136, 145, 229, 230, 232, 243, 244A, 262 to 269

I PASSAGES FOR COMPREHENSION

(A Course in Technical English, Book I)

S.No.	TOPICS.	Content	Scope.
1.	THE MINER GOES TO WORK (UNIT- ONE)	The Unit deals with the life of miners working in a modern pit- its hazards as well as precautions to offset them.	(i) Develops scope for developing idea into short paragraphs and also giving short answers to questions. (ii) Conceptual words: Props, shaft winding room. (iii) Phrasal verbs: to be on the look out; to look for; to go through (iv) Compound words: pit-props; brassband; cool face.
2.	TELEX (UNIT- TWO)	General principle and utility of telex. Its superiority over letters and long distance calls	(i) Writing of short paragraphs on given ideas and topics- Giving single sentence answer. (ii) Linguistic points:- (a) Use of prefixes: tele, trans, auto. (b) Participial words: Incoming calls, giving & receiving.

S.No.	TOPICS	CONTENT.	SCOPE.
			information
			(c) Use of comparative- superior to inferior to
3.	BAIRD & TELEVISION (UNIT FOUR)	Early life and accomplishment of John Logic Baird is dealt with.	(i) Offers scope for developing ideas into short paragraphs and also giving short answers to questions. (ii) <u>Linguistic points-</u> (a) use of phrasal verbs/idioms in sentences- to make full use of, to keep in time, accomplished fact. (iii) <u>Grammatical points-</u> (a) Passive transformations, (b) modals expressing immediate obligation in the past.
4.	BRICK LAYING (UNIT- FIVE)	The unit sketches the development of a one storey brick house. Loss of thousands of man-hours in the building trade due to unpleasant working conditions.	(i) Writing guided composition using a given list of words/phrases. (ii) <u>Linguistic points-</u> (a) Conceptual words: Cavity walls, setting out, layout, pointing, plate level. (b) Compound words: Load bearing walls, metal ties.
5.	WEALTH FROM THE GROUND (UNIT-SEVEN)	Exploration of oil-refining the crude by process of distillation-transportation of refined oil.	(i) Composing short paragraph from the given list of words and phrases as well as giving single sentence answering to questions. (ii) Use of phrasal verbs: at sea, look for, turn into, look for
6.	ROAD MAKING (UNIT-EIGHT)	Careful survey for choosing the best route-clearing and levelling of a route-arrangements required to be made by a construction firm.	(i) Offers scope for developing ideas, into short paragraphs and also giving short answers to questions. (ii) <u>Linguistic points</u> (a) Conceptual words: Cut and fill, tender. (b) Compound words: fuel tank, construction firm, consulting engineer. (c) Homonyms: route- root Later-fatter, petrol- patrol.

S.No.	TOPIC.	CONTENT	SCOPE.
7.	SOLAR ENERGY (UNIT-NINE)	Harnessing of solar energy for the betterment of human life- its use for the domestic needs and also in Agriculture and Forestry.	(i) Giving single sentence answer to questions and composing short paragraphs. (ii) <u>Linguistic points-</u> (a) Conceptual words:- Working, shrinking, fabrication, seasoning (b) Phrasal verbs: to devoid of, to result in, lack of (c) Antonyms: adequate, traditional, transparent, upper, major
8.	FLIGHT NUMBER 631 (UNIT- TEN)	The unit deals with Bruce and Carolines holiday in some place in the Mediterranean shore and the flight back to London.	(i) Writing guided composition using a given list of words and phrases. (ii) Linguistic points- (a) Compound words: airl shaped, giant hand, snow cap, baggage truck. (b) homonyms: Cease-seize, draught-draft; Land-Lend; quite-quiet. (c) Use of phrases/idioms come into view; to reach out; roll by, to keep an eye on.
9.	NONDESTRUCTIVE TESTING (UNIT-ELEVEN)	Discussion of criterion determining destructive and non destructive test- its use in industry for the purpose of sorting and identifying materials.	(i) Offers scope for developing ideas into short paragraphs and also giving short answers to questions. (ii) Compound words: Production failure; material structure; production process. (iii) homonyms: Affect-effect, sale-sell, break-brake.
10.	DESIGNING A CAR (UNIT-SEVENTEEN)	Designing of a new model of a car is a team work - decision taken by the directors- work entrusted to Engineers and artists.	(i) Composing short paragraphs from the given list of words and phrases, as well as giving single sentence answers to questions. (ii) Conceptual words: busks, prototyle, transmission, assembly line. (iii) Compound words: fashion trend; scale model, road test, mass production.

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION, BHOPAL.
PROGRAMME : DIPLOMA IN MECHANICAL & ELECT. ENGINEERING.

GRAMMAR

(Living English Structure by W.A. Allen)

S.No.	TOPICS.	CONTENTS.	SCOPE.	LECTURE.
1.	Countable and uncountable nouns.	Use of 'a', an, the, some omissions of articles with go to school, college hospital, church- names of meals etc.	Rules for use of omission of these articles to be applied in the context by attempting exercises 1 to 5, 7 and 8.	
2.	"Some" and "Any"	The rough-and-ready rule of 'some' in affirmative statements and any' in negatives and questions. But in questions the use of 'some or'any' depends on the expected or implied reply.	Exercises 26 to 29	
3.	The Tenses	(i) The Tenses- their time of action and identification. Fundamental difference between the simple present & present continuous; simple past and present perfect; present continuous and present perfect continuous. (ii) Certain verbs-mainly verbs of condition or behaviour not strictly under human control- are practically never used in the present continuous. (iii) Shall/will and going to (iv) The past perfect. (v) Conditions and unreal pst.	Exercises 76 to 79 Exercises 83, 85 Exercise 86 to 88 Exercises 93 and 94 Exercise 81. Exercise - 115, 116 Exercise - 136 Exercise- 145	

Contd...

No.	TOPIC.	C O N T E N T	SCOPE.
4.	Reported speech.	(i) When the reporting verbs is in the present, present perfect, or Future Tense- there is no change of tense in the words reported.	Exercise 229
		(ii) When the reporting verbs is in the past, past perfect, or conditional tense, the words reported are viewed in a different perspective.	Exercise 230
		(iii) The word-order of Reported questions is the same as a simple statement; there is no inversion. In questions introduced by a question-word(who what, how, when etc.) this word serves as a link between the introducing verb and the reported speech.	Exercise 232
	Passive voice.	Used most frequently in scientific and technical writings.	Exercise 243
		(i) When the verb in the active voice takes one object.	
		(ii) When the verb in the active voice takes two objects.	Exercise 244 A
	Preposition & Adverbial particles.	(i) Prepositions indicating time	Exercise 262
		(ii) Prepositions indicating position	to
		(iii) Prepositions indicating directions to form idiomatic compounds.	265.

22/22

MAHATMA JAWAHARLAL NEHRU
TECHNICAL EDUCATION BOARD

TECHNICAL

PROGRAMME : DIPLOMA IN

COURSE : MECHANICAL AND ELECTRICAL ENGINEERING.

COURSE : COMMUNICATION SKILLS - I.

COURSE CODE NO: 101

PREREQUISITE : NIL,

To achieve the objectives of the course the following books have been prescribed :

LIST OF BOOKS.

- (1) A Course in Technical English, Book I. Revised Edition, 1984, Somaiya Publications, Bombay.
- (2) Living English structure by W. Stennard Allen

MAHATMA GANDHI BOARD OF TECHNICAL EDUCATION,

MUMBAI.

DIPLOMA IN

PROGRAMME : MECHANICAL AND ELECTRICAL ENGINEERING.

COURSE : COMMUNICATION SKILL- I.

COURSE CODE NO: 101

PREREQUISIT : NIT,

To achieve the objectives of the course the following books have been prescribed :

LIST OF BOOKS.

- (1) A Course in Technical English, Book I.
Revised Edition, 1984, Somaiya Publication, Bombay.
- (2) Living English structure by W. Stenard Allen

22/23

22/24

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN MECHANICAL AND ELECTRICAL ENGINEERING.

COURSE : COMMUNICATION SKILL- II.

COURSE CODE NO: 102 PREREQUISIT : NIL

R A T I O N A L E.

The main purpose of designing Communication Skill II is to reinforce further the skills acquired earlier. While the communication skill I endeavoured to drill certain syntactical patterns and attempted the extension of vocabulary by including words from the register of the Physical Sciences, the thrust of communication Skill II is towards greater enrichment of power of expression by acquiring words from the Social Sciences. However, we can not grow obbivious to the fact that for technicians flourishes of ornamental style have no place in their day-to-day work. They have to communicate with their superiors, peers and subordinates. They have to write reports and letters in the course of their professional life. Therefore, attempts have been made to familiarize them with different forms and features of technical writing, as well as organisation mechanics and style of letter writing.

22/25

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN MECHANICAL AND ELECTRICAL ENGG.

COURSE : COMMUNICATION SKILL- II.

COURSE CODE NO: 102

PREREQUISIT :

SCHEME OF STUDIES.

S.No.	Topics.	HRS. P.A.S
I.	Passages for comprehension (Passages in General Studies, Vikas Publication, Bhopal (Prescribed Units- 3, 4, 5, 6, 7 and 10)	15
II.	Technical Writing	15
III.	Business letters (A course in Technical English, Book II.)	12
		<hr/>
		42
		<hr/>
		Credits - 3

22/26

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOJAL.

PROGRAMME : DI POOMA IN MECHANICAL AND ELECT. ENGG.
COURSE : COMMUNICATION SKILL II
COURSE CODE NO : 102
PREREQUISITE : -

C O N T E N T S

I. Passages for comprehension

(Passages in General Studies, Vikas Publication, Bhopal

S.No.	CONTENT.	SCOPE.
1.	Salient features of the Indian Constitution (Unit- Three)	(i) Offers cope for composing counted connected paragraphs on topics like- Unitary tendencies of the constitution; rigidity and flexibility of the constitution; Fundamental Rights etc. (ii) Writing of short paragraphs on given ideas and topics as well as giving single- sentence answers to questions. (iii) One-word, substitutes, appropriate word derivations.
2.	Structure of Government (Unit- Four)	The treatment of this and other passages may be based on the lines suggested in the preceding unit.
3.	Functioning of an Economic system (Unit Five)	As above.
4.	The Public Sector in India (Unit Six)	As above.
5.	Production and productivity (Unit Seven)	As above.
6.	Professional Ethics (Unit - Ten)	As above.

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION, BHOPAL.
PROGRAMME: DIPLOMA IN MECHANICAL AND ELECTRICAL ENGG.

II. TECHNICAL WRITING

(A course in Technical English- Book II)

S.N.

CONTENT

- (1) Basic facts of Technical writing. (a) Its importance. (b) Types of communication- Advantages and Disadvantages.
- (2) Features of Technical Style: (i) Style Difference between literary and technical style; Features of technical style. (ii) Mechanics: Abbreviations numerals, punctuations and spelling rules.
- (3) Types of Technical Writing. - Feasibility Report, Progress Report, Trouble Report in the form of memorandum.
- (4) Technical Descriptions - (a) Objecta- Cooler; refrigerator; Pressure cooker, fire extinguisher; call bell etc. (b) Processes -

III. BUSINESS LETTERS

(A course in Technical English Book II)

S.No.

CONTENT

- (1) Business letters (Brief introduction) Importance; purposes.
- (2) Mechanics. The format of a businss letter
- (3) Style. (i) Negative (ii) Neutral (iii) Positive.
- (4) Types of business letter. (i) Application for job. (ii) Enquiry. (iii) Order. (ic) Complaint.

22/28

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN MECHANICAL AND ELECTRICAL ENGINEERING.
COURSE : COMMUNICATION SKILL- II
COURSE CODE NO : 102
PREREQUISIT : NIL.

The objectives of the course are proposed to be achieved
in 42 hours for which following books have been prescribed :

LIST OF BOOKS.

- (1) Passages in General Studies,
Vikas Publications, Bhopal.
- (2) A Course in Technical English, Book II,
Somaiya Publications Pvt. Ltd; Bombay.

22/29

MARHVA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOJAL.

PROGRAMME : DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT.

COURSE : FUNDAMENTAL PHYSICS.

COURSE CODE NO: CTM 103

PREREQUISITE : NIL

R A T I O N A L E.

Physics forms the foundation of all technician courses.

The knowledge and comprehension of basic concepts like motion, force energy molecular phenomena, heat lightselectric phenomena helps in understanding the engineering subjects, And hence these concepts are incorporated in the syllabus.

The different topics in Physics for the foundation course were identified on the following basis:

- (i) Attainment level of student at entry level.
- (ii) Reference to engineering subjects.
- (iii) And to maintain continuity of sequence for logical development of subject.

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN CONSTRUCTION TECHNOLOGY & MANAGEMENT.

COURSE : PHYSICS

COURSE CODE NO. : CIM 103

PRE-REQUISITE : NIL

SCHEME OF STUDIES.

<u>S.No.</u>	<u>NAME OF TOPIC.</u>	<u>Th. Hrs.</u>	<u>Pr. Hrs.</u>	<u>Total.</u>
✓(1)	Physics and its importance in technician education.	1	-	1
✓(2)	S.I. Units.	3	-	3
(3)	Linear and angular measurements.	4	6	10
✓(4)	Force and Motion.	4	-	4
✓(5)	Circular Motion.	4	-	4
✓(6)	Molecular phenomena in solids liquids and gases.	5	-	5
✓(7)	Surface tension.	4	-	4
✓(8)	Heat and work.	2	4	6
✓(9)	Hygrometry.	3	4	7
(10)	D.C. Circuits.	8	4	12
(11)	Heating effect of electric current.	3	-	3
(12)	Comparative study of cells batteries and their maintenance.	3	4	7
(13)	Refraction of light.	4	4	8
(14)	Effects of images.	3	-	3
(15)	Optical instruments.	5	6	11
Total		56	28	84

Credit - 5

M.P. STATE BOARD OF TECHNICAL EDUCATION,
BUNDEL.

PROGRAMME : D.I. LOG. IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT,
COURSE : PHYSICS,
COURSE CODE NO: CTH 103
PREREQUISITE : NIL

CONTENTS.

<u>S.No.</u>	<u>TOPIC.</u>	<u>SUB-TOPICS.</u>
1.	<u>PHYSICS AND ITS RELEVANCE IN TECHNICAL EDUCATION.</u>	Why teach Physics, Importance of fundamental Sciences, Physics in particular in the field of engineering education.
2.	<u>S.I. UNITS.</u>	- S.I. Units. - Base and Supplementary units. - Derived units. - Symbols, abbreviations and precautions.
3.	<u>LINEAR AND ANGULAR MEASUREMENTS.</u>	- Principle of linear and angular verniers. - Calculation of L_n and use of vernier callipers, vernier attached with Travelling microscope, Fortin's barometer spectrometer etc. - Zero error of linear and angular verniers. - Principle, use and LC of screw instruments. - Zero error and Backlash error of screw instruments.
4.	<u>FORCE AND MOTION</u>	- Classification of motion. - Concept of particle in Mechanics. - Characteristics of different types of motion. - Distinction between rotary and circular motion. - Newton's laws of motion. - Velocity- Time and Distance- Time graphs.
5.	<u>CIRCULAR MOTION</u>	- Circular motion and related physical quantities. - Relation between linear and angular velocity. - Centripetal and centrifugal forces. - Banking of roads and bending of cyclist.

6. MOLECULAR PHENOMENA
IN SOLIDS, LIQUIDS &
GASES.

- Order of mass, size and speeds of motion of molecules in matter.
- Postulates of molecular Kinetic theory of structure of matter.
- Corroboration of these postulates with experiments, Brownian motion, diffusion of solids, liquids & gases.
- Kinetic and potential energy of molecules.
- Order of magnitude of interaction forces in matter (molecular forces)
- Concept of internal energy.
- Change in internal energy.
- Relation of internal energy with heat and temperature.

7. SURFACE TENSION

- Molecular forces.
- Cohesive and adhesive forces.
- Free still surface of a liquid tries to contract and behaves like a stretched membrane, Def. of S.Tension
- For a given perimeter circle occupies largest area (preparation of table)
- For a given volume sphere has the least surface area (preparation of table)
- Reason for spherical shape of rain drops.
- Capillary rise, meniscus and angle of contact.
- Capillarity phenomena in Science and Engineering.
- Effect of temp. on S.T. of liquids.
- Experimental determination of ST of liquids by capillary rise (No derivation of formula required)

22/33

8. HEAT AND WORK

- Nature of heat energy.
- Relation of degree of hotness with KE of motion of molecules.
- Relation of heat in a body with internal energy.
- Concept of heat capacity & specific heat capacity of a body.
- Variation specific heat capacity of bodies in different temperature. Zones.
- First law of thermodynamics, Mechanical equivalent of heat.
- Concept of latent heat capacity.

9. HYGROMETRY

- Importance of the knowledge of humidity in Industry and metrological observations.
- Concept of Absolute & Relative humidity (RH) and dew point.
- Determination of RH, dew point hygrometer (Regnault's), Wet and dry bulb Hygrometer, Hair's hygrometer.

10. D.C. CIRCUITS

- Electric current, free electron theory of metallic conduction.
- Ohm's Law current voltage relation, resistance.
- Dependence of resist on various factors.
- Grouping of resistances.
- Determination of resistances.
- Wheatstone bridge, meter bridge.
- Internal resist of a cell.
- Potentiometer and its use to compare EMF's of two cells, and to determine internal resist of a cell.

11. HEATING EFFECT OF ELECTRIC CURRENT.

- Joule's laws.
- Work and power in electric circuits.
- Calculation of electric energy.

- 12. COMPARATIVE STUDY OF CELL BATTERIES AND THEIR MAINTENANCE.
 - Comparative study of electrodes, electrolytes, depolariser, emf's and order of internal resistances of different cells and batteries with the aid of a chart.
 - Ampere-hour capacity of batteries.
 - Sulphating of plates.
 - Testing of secondary cells, precautions.

- 13. REFRACTION OF LIGHT
 - Refraction of light, laws of refraction.
 - Speed of light in different media.
 - Refraction through prism.
 - Refraction through lenses.
 - Combination of lenses and power of lens.

- 14. DEFECTS OF IMAGES
 - Defects of images
 - Chromatic and Spherical aberrations.

- 15. OPTICAL INSTRUMENTS.
 - Simple microscope.
 - Compound microscope.
 - Astronomical telescope.
 - Galililian telescope

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHCFAI.

PROGRAMME : CONSTRUCTION TECHNOLOGY AND MANAGEMENT.

COURSE : PHYSICS.

COURSE CODE NO. : CTM 103

PRE-REQUISITE : None

LIST OF EXPERIMENTS.

Students are required to perform any six experiments out of the following:

- (1) To determine the fraction of unit of length with the aid of linear and angular verniers.
- (2) To determine area of cross section of a wire with the aid of screw gauge.
- (3) To determine specific heat of a solid by the method of mixture.
- (4) To verify Ohm's law.
- (5) To determine resist of wire material with the aid of material bridge.
- (6) To determine R.H. of atmospheric air with the aid of wet and dry bulb hygrometer.
- (7) To determine focal length of a convex lens by conjugate foci method.
- (8) To determine the refractive index of transparent slab material.

22/36

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOJAL.

PROGRAMME : DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT.

COURSE : PHYSICS.

COURSE CODE NO: CTM 103

PREREQUISITE : NIL

LIST OF REFERENCE BOOKS.

- (1) Principles of Physics Prepared by T.T.T.I., Bhopal.
- (2) Principle of Physics By Brijlal & Subrahmaniyam.
- (3) Principles of Physics. By H. White.
- (4) Basic Applied Physics. By R.K. Gour.
- (5) A Text Book of Applied Physics- By Mehta,
- (6) A Text Book of Physics By- R.F. Goyal.

22/37

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT.

COURSE : CHEMISTRY.

COURSE CODE NO : CTM 104

PREREQUISITE : NIL

RATIONAL.

The teaching of Chemistry should be aimed in developing right type of attitudes in the student. It should develop in student the habit of scientific enquiry, ability to investigate the cause and effect relationships, ability to predict the results under given conditions of chemical activity and give convincing reasons for his prediction, and the ability to make generalisation.

22/38

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT.

COURSE : CHEMISTRY.

COURSE CODE NO: CTM 104

PREREQUISITE : NIL

SCHEME OF STUDIES.

S.NO.	TOPICS.	No. of Hrs.		Total.
		Th. Hrs.	Pract. Hrs.	
✓ 1.	Atomic structure and Radio Activity.	6	-	6
✓ 2.	Chemical Equilibrium.	2	-	2
✓ 3.	Periodic classification of Elements.	4	-	4
4.	Electro Chemistry	3	4	7
5.	Surface chemistry.	2	4	6
6.	Metals and Alloys.	8	6	14
7.	Carbon compounds.	4	-	4
8.	Ionisation pH Value Corrosion and Protection	8	6	14
9.	Glass.	3	-	3
10.	Water.	8	6	14
11.	High Polymers and insulators.	4	2	6
12.	Pollution.	4	-	4
		56	28	84

Credits - 5

22/39

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN CONSTRUCTION TECHNOLOGY & MANAGEMENT.

COURSE : CHEMISTRY.

COURSE CODE NO. CTM 104

PREREQUISITE : NIL

C O N T E N T S.

1. ATOMIC STRUCTURE AND RADIO ACTIVITY.
 - Discovery of Electron, Proton & Neutron
 - Rutherford & Bohr's model of atom; shells.
 - Bohr's scheme of filling of electrons in various orbits.
 - Idea of s, p, d, f. orbitals.
 - Electrovalency & Co-valency
 - α , β & γ rays.
 - Theory of radio activity.
 - Group displacement law.
 - Half life period (Numericals)
 - Fusion & Fission.

2. CHEMICAL EQUILIBRIUM.
 - Rate of reaction, factors effecting rate of reaction, Reversible reaction.
 - Law of mass action & its application to reversible reactions.
 - Le-Chateliers Principle.
 - Effect of temperature, pressure & concentration in Chemical equilibrium of NH_3 , HI, FeS .

3. PERIODIC CLASSIFICATION OF ELEMENTS.
 - Doberniers Trial, New Land's law
 - Mendeleeff's law and his periodic table, advantages and limitations.
 - Modern periodic law.
 - Spdf Orbital classification of elements.
 - Elementary idea of Lanthanide and Actinide series.

- 4. Electro Chemistry
 - Explanation of electrolysis.
 - Faraday's laws of electrolysis.
 - Numerical problems on Faraday's laws.
 - Electroplating of copper and Nickel.

- 5. SURFACE CHEMISTRY
 - True solution, Colloidal solution and suspension.
 - Classification of Colloids.
 - Properties of colloids.
 - Explanation of emulsion, and Gels.

- 6. METALS AND ALLOYS
 - General principles of metallurgy.
 - Mineral, ores, Chief ores.
 - Ore dressing, Roasting, Smelting, Bessemerisation, Fluxes, Purification.
 - Extraction of metal copper, Aluminium and iron.
 - Explanation of alloying purposes.
 - Composition and uses of alloys, * like Brass, Bronze, Duralumin, Steel, Solder etc.

- 7. CARBON COMPOUNDS.
 - Tetra valency of carbon.
 - Saturated and unsaturated hydrocarbons, Nomenclations
 - Homologous series, Isomerism (chain and functional)
 - Laboratory preparation and properties and uses of ethylene, Acetylene, and Ethane.
 - Manufacture of Ethyl alcohol.

- 8. IONISATION pH VALUE CORROSION AND PROTECTION.
 - Arrhenious theory of ionisation.
 - Factors effecting ionisation.
 - Hydrolysis of acid, Base and salts.
 - pH meaning (numericals)
 - Buffer solutions and Buffer actions.
 - Choice of indicator (Acidimetry and alkalimetry- pH curves)
 - Explanation of corrosion, factors effecting corrosion, types of corrosion
 - Corrosion control (protection against corrosion)
 - Metal coating and organic coating for corrosion control.

- 9. GLASS
 - Basic raw materials for glass.
 - Composition of glass.
 - Manufacture of glass.
 - Varieties of glass.
 - Annealing of glass.

10. WATER

- Sources of water
- Types of water.
- Hardness of water.
- Types and causes of hardness of water.
- Removal of hardness of water.
- Boiler feed water.
- Harmful effect of hard water in boiler.
- Municipal water supply.
- Numericals on soda lime process.
- Determination of hardness of water by O.Hesiens, EDTA & soap solution methods.

11, High polymers and Insulators.

- Polymerisation and condensation
- Classification of plastic.
- Compounding and moulding constituents of plastics.
- Preparation properties and uses of FVE, Polytshene, Polystyrene, Bakelite.
- Synthetic fibres - Nylon, Rayon, Orlon Decbon and Polysters.
- Definition characteristics, classification and properties of insulators.
- Glass wool and thermocole.

12. POLLUTION

- Introduction
- Chemical Toxicology.
- Air pollution.
- Water pollution.
- Control of air and water pollution

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN CONSTRUCTION TECHNOLOGY AND MANAGEMENT.
COURSE : CHEMISTRY.
COURSE CODE NO. : CEM- 104
PREREQUISITE : NIL.

LIST OF 8 PRACTICALS.

- (1) To identify one cation and one anion in a given sample of salt. (excluding interfering radical)
- (2) To measure the pH of different solutions by :
 - (1) Colorimeter method.
 - (2) pH meter.
- (3) To determine the percentage of Iron in a ferrous salt by redoximetry.
- (4) To prepare a colloidal solution and interpretate its properties.
- (5) To determine the percentage of copper in a sample of Brass by iodimetry.
- (6) To determine the temporary and permanent hardness of a sample of water by
 - (i) O'Heners method.
 - (ii) EDTA method
 - (iii) Soap solution method.
- (7) To prepare Bakelite.
- (8) To set up an experiment for simple electroplating of a regular and irregular surface material.

22/43

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION
BHPAL.

PROGRAMME : DIPLOMA IN CONSTRUCTION TECHNOLOGY & MANAGEMENT.

COURSE : CHEMISTRY.

COURSE CODE NO. CPM-104

PREREQUISITE ; NIL.

LIST OF SUGGESTED BOOKS.

- (1) Applied Chemistry By Shrivastava and Singhal
PBS Publication, Bhopal.
- (2) Physical Chemistry By- Bahl and Tuli.
- (3) Advanced inorganic chemistry By- Mitra.
- (4) Engineering Chemistry By P.C. Jain & Monica Jain
(Dhanpat Rai & Sons Publication)
- (5) Objective in Chemistry By Shrivastava & Shrivastava.
(Chandra Publication, Bhopal)
- (6) Experiments in Applied Chemistry - By- M. Prasad Chandra Publication,
Bhopal.

22/44

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHPAL.

PROGRAMME : DIPLOMA IN MECHANICAL/ELECTRICAL ENGINEERING.

COURSE : MATHEMATICS- I.

COURSE CODE NO: 107

PRE-REQUISITE : —

R A T I O N A L E.

Mathematics forms backbone for all technologies and hence occupies an important place in the curriculum of polytechnic education. The subject is equally important for the future self development of Polytechnic students. In designing the curriculum for foundation course the admission level to Polytechnics has been considered as 10th Board examination and mathematical needs of Technical subjects have been given due consideration.

22/45

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME: DIPLOMA IN MECHANICAL/ELECTRICAL ENGINEERING.

COURSE : MATHEMATICS - I.

COURSE CODE NO: 107 PREREQUISIT :

SCHEME OF STUDIES.

Pre-requisite	- Nil.
Theory hours.	-56
Tut. hours.	-Nil.
Total hours.	- 56
Credits.	-04

S. No.	Topic.	Duration of Hours.			Total
		Th.	Pr.	Tut.	
<u>ALGEBRA</u>					
1.	Sequence and series.	1	-	-	1
2.	Arithmetical Progression	3	-	-	3
3.	Geometrical Progression.	3	-	-	3
4.	Harmonical progression.	3	-	-	3
5.	Permutations.	3	-	-	3
6.	Combinations.	3	-	-	3
7.	Partial fractions.	3	-	-	3
8.	Binomial Theorem.	3	-	-	3
9.	Determinants.	4	-	-	4
10.	Exponential series.	3	-	-	3
<u>TRIGONOMETRY</u>					
1.	Trigonometrical ratios.	5	-	-	5
2.	Properties of triangles.	5	-	-	5
3.	Trigonometrical Equations.	3	-	-	3
4.	De Moivre's Theorem.	4	-	-	4
<u>DIFFERENTIAL CALCULUS.</u>					
1.	Definitions.	2	-	-	2
2.	Differentiation.	6	-	-	6
3.	Successive Differentiation.	2	-	-	2
				36	56
				Credits	4

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

P-PROGRAMME : DIPLOMA IN MECHANICAL/ELECTRICAL ENGINEERING.
COURSE : MATHEMATICS - I
CODE CODE NO : 107 PREREQUISIT :
MATHEMATICS-I.

ALGEBRA

- (1) Sequences and Series - Difference between sequence and series, General term of a series and to formulate a series.
- (2) Geometrical Progression. - Definition, Computation of n^{th} term, sum of n terms, Arithmetic mean.
- (3) Geometrical progression - Definition, computation of n^{th} term, sum of ' n ' terms, Infinite Geometric series and Geometric mean.
- (4) Harmonical progression - Definition, n^{th} , Harmonic mean.
- (5) Permutations. - Factorial notation, Permutations of ' n ' dissimilar things taken ' r ' at a time. Different cases of the above permutations.
- (6) Combinations. - Combination of ' n ' dissimilar things taken ' r ' at a time and its different cases.
- (7) Binomial Theorem. - Statement of theorem for positive index, general term, Middle term, use of theorem to approximate values. Sum of Binomial coefficients.
- (8) Partial fractions. - Principle of partial fraction of different Algebraic expressions, viz. cases of linear, different and repeated linear factors. Quadratic factors.
- (9) Determinants - Concept and principles of Determinants, properties of determinants of order three and simple problems for evaluation of determinants. Solution of simultaneous equations of three unknowns by determinants.
- (10) Exponential series. - Statement of e^x and sum of series given in exponential form.

TRIGONOMETRY

- 1. Trigonometrical ratios - Sum and difference formulae, allied angles, Multiple and sub-multiple angles, product formulae and problems relating to them.
- 2. Properties of triangles. - Relation between sides and angles of a triangle i.e. Sine law, cosine formula projection formula and tangent formula.

- 3. Trigonometrical equations- Solution of trigonometrical equations based on

$$\sin \theta = \sin \alpha$$

$$\cos \theta = \cos \alpha$$

$$\tan \theta = \tan \alpha$$

- 4. Demoiver's Theorem - Meaning of $i = \sqrt{-1}$, Definition of complex number in carterian and polar forms and their conversion, Statement of Demoiver's Theorem for any index. Application of Demoiver's theorem for algebraic equations such as $x^2 \pm 1 = 0$, $x^3 \pm 1 = 0$, $x^5 \pm 1 = 0$ etc.

DIFFERENTIAL CALCULUS.

- 1. Definitions. - Definition of function, constant, variable, limit and evaluation of limits. Definition of differentiation and differentiation by first principles.
- 2. Differentiation - Differentiation of sum, product and quotient of two functions. Differentiation of a function of a function, Implicit function, Logarithmic function, Trigonometrical functions, Parametric equations and exponential functions.
- 3. Successive differentiation: Successive derivatives of a function w.r. to x and simple problems related to successive differentiation.

22/48

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DIPLOMA IN MECHANICAL/ELECTRICAL ENGINEERING.

COURSE : MATHEMATICS- I.

COURSE CODE NO: 107

PREREQUISIT :

MATHEMATICS-I.

LIST OF REFERENCE BOOKS.

- (1) Applied Mathematics Publisher Popular Book Depot, Bhopal.
- (2) Mathematics for Polytechnic Vol. I. T.T.T.I., Bhopal.
- (3) Applied Mathematics Publisher Deepak Prakashan, Gwalior.
- (4) Algebra by Hall and Knight.
- (5) Trigonometry. by S.L. LONEY.
- (6) Calculus by G. Fraser.

22/49

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL

PROGRAMME : DIPLOMA IN MECHANICAL/ELECTRICAL ENGINEERING.

COURSE : MATHEMATICS- II.

COURSE CODE NO: 103

PRE-REQUISIT :

R A T I O N A L E.

Requisite knowledge of Mathematics for the entrants to Polytechnics can not be denied. The depth and breadth of Mathematics needed will vary from course to course hence the topics included for Mathematics have been selected after carefully analysing the needs of each course.

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHCAL.

PROGRAMME : DIPLOMA IN MECHANICAL/ELECTRICAL ENGINEERING.

COURSE := MATHEMATICS- II.

COURSE CODE NO : 108 : PREREQUISIT : -

SCHEME OF STUDIES.

S.No.	Topic	Duration of hours.			Total
		Th.	Pr.	Tut.	
<u>COORDINATE GEOMETRY</u>					
1.	Coordinate system.	1	-	-	1
2.	Distance, Division and area.	2	-	-	2
3.	Standard forms of the equation of a straight line.	4	+	-	4
4.	Intersection of straight lines.	4	-	-	4
5.	Change of axes.	1	-	-	1
6.	Pair of straight lines.	2	-	-	2
7.	General equation of second degree.	3	-	-	3
8.	Circle.	3	-	-	3
9.	Conic section.	1	-	-	1
10.	Parabola.	4	-	-	4
11.	Ellipse.	3	-	-	3
12.	Hyperbola.	3	-	-	3
<u>VECTOR ALGEBRA</u>					
1.	Introduction of vectors.	1	-	-	1
2.	Addition of vectors, components of vectors.	4	-	-	4
3.	Multiplication of vectors.	2	-	-	2
4.	Application of product of two vectors.	3	-	-	3
<u>INTEGRAL CALCULUS.</u>					
1.	Integration.	2	-	-	2
2.	Methods of Integration.	5	-	-	5
<u>MATRIX.</u>					
1.	Matrix.	1	-	-	1
2.	Special Matrices.	2	-	-	2
3.	Operation and different laws.	5	-	-	5
		<u>56</u>			<u>56</u>

Credits 4

MADHYA PRADESH BOARD OF TECHNICAL EDUCATION,
BHOPAL.

PROGRAMME : DII IQAA IN MECHANICAL/ELECTRICAL ENGINEERING.

COURSE : MATHEMATICS- II.

COURSE CODE NO: 106 : PREREQUISIT : -

COORDINATE GEOMETRY:

- 1. Coordinate system - Cartesian and polar coordinates and relation between them.
- 2. Distance, Division and area. - Distance between two points, Division of a line segment, area of triangle.
- 3. Standard forms of the equation of a straight line. - Locus of a point, standard forms viz $y = mx + c$, $\frac{x}{a} + \frac{y}{b} = 1$ and $x \cos \alpha + y \sin \alpha = p$, General equation of a straight line and its reduction to the standard form. Equation of a straight line passing through one point and two points.
- 4. Intersection of straight-lines. - Point of intersection of two lines, angle between two straight lines, Bisector of the angle between the two straight lines. Length of perpendicular.
- 5. Change of axes. - Transformation of coordinates when the origin is shifted or the axes are rotated.
- 6. Pair of straight lines - Homogeneous quadratic equation $ax^2 + 2hxy + by^2 = 0$. Properties of the pair of straight lines represented by the above equation.
- 7. General equation of second degree. - Condition that the general equation of second degree represents a pair of straight lines, point of intersection and the angle between them.
- 8. Circle - Definition, standard form, general equation, centre, radius, tangent and normal.
- 9. Conic Section. - General equation of second degree and its representation in particular cases.

contd...

10. Parabola

- Definition and its standard forms, General equation of parabola, tangent and normal, Geometrical properties.

11. Ellipse.

- Definition, standard equation, Tangent and normal.

12. Hyperbola.

- Definition, standard equation, Asymptotes, rectangular hyperbola and conjugate hyperbola.

VECTOR ALGEBRA :

1. Introduction of vectors-

- Concept of vector and scalar quantities.

2. Addition of vectors components of vectors.

- Principles of addition and subtraction of vectors, component of vectors, standard unit vectors i, j, k .

3. Multiplication of vectors

- Scalar and vector product of two vectors.

4. Application of product of vectors.

- Work done, Power, Power-factor, Moment of a force about a point and reactive power.

INTEGRAL CALCULUS.

1. Integration

- Definition, Fundamental properties of Integration.

2. Methods of Integration.

- Integration by substitution, Integration by parts.

MATRIX

1. Matrix.

- Definition of matrix.

2. Special matrices.

- Row matrix, column matrix, sub-matrix, Square matrix, Diagonal matrix, principal diagonal, Determinant of a square matrix, unit matrix, scalar matrix, zero or null matrix, upper and lower triangular matrices, symmetric and skew symmetric matrices.

3. Operation and different Laws.

- Scalar multiple of matrix, Addition of matrices, commutative and associative law, Transpose of matrix, product of matrices, Reversal law for the transpose of a product, adjoint of a square matrix, singular and non-singular matrices, Inverse of a matrix, Reversal law for the inverse of a product of matrices.