SYLLABUS

DIPLOMA IN TEXTILE PROCESSING / TEXTILE PROCESSING

FULL TIME & SANDWICH

COURSE CODE 1061 / 2061

2015 – 2016

M - SCHEME

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING / TEXTILE PROCESSING

Syllabus Revision Committee

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DIPLOMA COURSES IN ENGINEERING/TECHNOLOGY

(SEMESTER SYSTEM)
(Implemented from 2015- 2016)

M – SCHEME

R E G U L A T I O N S*

***** *Applicable to the Diploma Courses other than Diploma in Hotel Management & Catering Technology and the Diploma Courses offered through MGR Film Institute, Chennai.*

1. Description of the Course:

a. Full Time (3 years)

The Course for the full Time Diploma in Engineering shall extend over a period of three academic years, consisting of 6 semesters* and the First Year is common to all Engineering Branches.

b. Sandwich (3½ years)

The Course for the Diploma in Engineering (sandwich) shall extend over a period of three and half academic years, consisting of 7 semesters* and the First Year is common to all Engineering Branches. The subjects of three years full time diploma course being regrouped for academic convenience.

During 4^{th} and/or during 7^{th} semester the students undergo industrial training for six months/ one year. Industrial training examination will be conducted after completion of every 6 months of industrial training

c. Part Time (4 years)

The course for the diploma in Engineering shall extend over a period of 4 academic years containing of 8 semesters*, the subjects of 3 year full time diploma courses being regrouped for academic convenience.

* Each Semester will have 15 weeks duration of study with 35 hrs. /Week for Regular Diploma Programme and 18hrs/ week (21 hrs. / Week I year) for Part-Time Diploma Programmes.

The Curriculum for all the 6 Semesters of Diploma courses (Engineering & Special Diploma Courses viz. Textile Technology, Leather Technology, Printing Technology, Chemical Technology etc.) have been revised and revised curriculum is applicable for the candidates admitted from 2015 – 2016 academic year onwards.

2. Condition for Admission:

Condition for admission to the diploma courses shall be required to have passed in

The S.S.L.C Examination of the Board of Secondary Education, TamilNadu.

(Or)

The Anglo Indian High School Examination with eligibility for Higher Secondary Course in TamilNadu.

(Or)

The Matriculation Examination of Tamil Nadu.

(Or)

Any other Examination recognized as equivalent to the above by the Board of Secondary Education, TamilNadu.

Note: In addition, at the time of admission the candidate will have to satisfy certain minimum requirements, which may be prescribed from time to time.

3. Admission to Second year (Lateral Entry):

A pass in HSC (Academic) or (Vocational) courses mentioned in the Higher Secondary Schools in TamilNadu affiliated to the TamilNadu Higher Secondary Board with eligibility for university Courses of study or equivalent examination, & Should have studied the following subjects.

Sl. No	Courses	H.Sc Academic	H.Sc Vocational	
		Subjects Studied	Subjects Studied	
			Related subjects	Vocational subjects
1.	All the Regular and Sandwich Diploma Courses	Maths, Physics & Chemistry	Maths / Physics / Chemistry	Related Vocational Subjects Theory & Practical
2.	Diploma course in Modern Office Practice	English & Accountancy English & Elements of Economics English & Elements of Commerce	English & Accountancy, English & Elements of Economics, English & Management Principles & Techniques, English & Typewriting	Accountancy & Auditing, Banking, Business Management, Co-operative Management, International Trade, Marketing & Salesmanship, Insurance & Material Management, Office Secretaryship.

- For the diploma Courses related with Engineering/Technology, the related / equivalent subjects prescribed along with Practical may also be taken for arriving the eligibility.

- Branch will be allotted according to merit through counseling by the respective Principal as per communal reservation.

- For admission to the Textile Technology, Leather Technology, Printing Technology, Chemical Technology and Modern Office Practice Diploma courses the candidates studied the related subjects will be given first preference.

- *Candidates who have studied Commerce Subjects are not eligible for Engineering Diploma Courses.*

4. Age Limit: No Age limit.

5. Medium of Instruction: English

6. Eligibility for the Award of Diploma:

No candidate shall be eligible for the Diploma unless he/she has undergone the prescribed course of study for a period of not less than 3 academic years in any institution affiliated to the State Board of Technical Education and Training, TamilNadu, when joined in First Year and two years if joined under Lateral Entry scheme in the second year and passed the prescribed examination.

The minimum and maximum period for completion of Diploma Courses are as given below:

Diploma Course	Minimum Period	Maximum Period
Full Time	3 Years	6 Years
Full Time(Lateral Entry)	2 Years	5 Years
Sandwich	3½ Years	6½ Years
Part Time	4 Years	7 Years

7. Subjects of Study and Curriculum outline:

The subjects of study shall be in accordance with the syllabus prescribed from time to time, both in theory and practical. The curriculum outline is given in Annexure **- I**

8. Examinations:

Board Examinations in all subjects of all the semesters under the scheme of examinations will be conducted at the end of each semester.

The Internal assessment marks for all the subjects will be awarded on the basis of continuous internal assessment earned during the semester concerned. For each subject 25 marks are allotted for internal assessment and 75 marks are allotted for Board Examination.

9. Continuous Internal Assessment:

A . For Theory Subjects:

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

i. Subject Attendance **5 Marks**

(Award of marks for subject attendance to each subject theory/practical will as per the range given below)

80%	- 83%	)	1 Mark
84%	- 87%		2 Marks
88%	- 91%		3 Marks
92%	- 95%		4 Marks
96%	- 100%		5 Marks

ii) Test # **10 Marks**

2 Tests each of 2 hours duration for a total of 50 marks are to be conducted. Out of which the best one will be taken and the marks to be reduced to: 05 marks

The Test – III is to be the Model test covering all the five units and the marks so obtained will be reduced to : 05 marks

Total **10 marks**

TEST	UNITS	WHEN TO CONDUCT	MARKS	DURATION
Test I	Unit – I & II	End of 6th week	50	2 Hrs
Test II	Unit – III & IV	End of 12th week	50	2 Hrs
Test III	**Model Examination** - **Compulsory** Covering all the 5 Units. (Board Examination-question paper-pattern).	End of 15th week	75	3 Hrs

 # - From the Academic year 2015-2016 onwards.

Question Paper Pattern for the Periodical Test :(Test - I & Test- II)
With no choice:

PART A type questions:	4 Questions X 2 mark	… … 8 marks
PART B type questions:	4 Questions X 3 marks	… … 12 marks
PART C type questions:	3 Questions X 10 marks	… … 30 marks

	Total	50 marks
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iii) Assignment **10 Marks**

For each subject Three Assignments are to be given each for 20 marks and the average marks scored should be reduced for 10 marks

All Test Papers and assignment notebooks after getting the signature with date from the students must be kept in the safe custody in the Department for verification and audit. It should be preserved for 2 Semesters and produced to the flying squad and the inspection team at the time of inspection/verification.

B. For Practical Subjects:

The internal assessment mark for a total of 25 marks which are to be distributed as follows:-

a)	Attendance	:	**5 Marks**
	(Award of marks as same as Theory subjects)		
b)	Procedure/ observation and tabulation/		
	Other Practical related Work	:	**10 Marks**
c)	Record writing	:	**10 Marks**

	TOTAL	:	**25 Marks**

- *All the Experiments/exercises indicated in the syllabus should be completed and the same to be given for final board examinations.*
- The Record for every completed exercise should be submitted in the subsequent Practical classes and marks should be awarded for 20 for each exercise as per the above allocation.
- At the end of the Semester, the average marks of all the exercises should be calculated for 20 marks and the marks awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks)
- The students have to submit the duly signed bonafide record note book/file during the Practical Board Examinations.

- *All the marks awarded for assignment, Test and attendance should be entered in the Personal Log Book of the staff, who is handling the subject. This is applicable to both Theory and Practical subjects.*

10. Life and Employability Skill Practical:

The Life and Employability Skill Practical with more emphasis is being introduced in IV Semester for Circuit Branches and in V Semester for other branches of Engineering.
Much Stress is given to increase the employability of the students:

Internal assessment Mark ….. **25 Marks**

11. Project Work:

The students of all the Diploma Programmes **(except Diploma in Modern Office Practice)** have to do a Project Work as part of the Curriculum and in partial fulfillment for the award of Diploma by the State Board of Technical Education and Training, Tamilnadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e. institution wise, region wise and state wise. **The Project work must be reviewed twice in the same semester.**

a) Internal assessment mark for Project Work & Viva Voce:

Project Review I	…	**10 marks**
Project Review II	…	**10 marks**
Attendance	…	**05 marks** (award of marks same as theory subjects pattern)
Total	…	**25 marks**

Proper record to be maintained for the two Project Reviews, and It should be preserved for 2 Semesters and produced to the flying squad and the inspection team at the time of inspection/verification.

b) Allocation of Mark for Project Work & Viva Voce in Board Examination:

Viva Voce	…	**30 marks**
Marks for Report Preparation, Demo	…	**35 marks**
Total		**65 marks**

c) Written Test Mark (from 2 topics for 30 minutes duration): $

i) Environment Management	2 questions X 2 ½ marks	= **5 marks**
iI) Disaster Management	2 questions X 2 ½ marks	= **5 marks**
		10marks

$ **-** Selection of Questions should be from Question Bank, by the External Examiner. No choice need be given to the candidates.

Project Work & Viva Voce in Board Examination	--	**65 Marks**
Written Test Mark (from 2 topics for 30 minutes duration)	--	**10 Marks**
TOTAL	--	**75 Marks**

A neatly prepared PROJECT REPORT as per the format has to be submitted by individual during the Project Work & Viva Voce Board examination.

12. Scheme of Examinations:

The Scheme of examinations for subjects is given in **Annexure - II.**

13. Criteria for Pass:

1. No candidate shall be eligible for the award of Diploma unless he/she has undergone the prescribed course of study successfully in an institution approved by AICTE and affiliated to the State Board of Technical Education & Training, Tamil Nadu and pass all the subjects prescribed in the curriculum.

2. A candidate shall be declared to have passed the examination in a subject if he/she secures not less than *40% in theory subjects* and *50% in practical subject* out of the total prescribed maximum marks including both the internal assessment and the Board Examination marks put together, subject to the condition that he/she secures at least a minimum of *30 marks out of 75 marks in the Board's Theory examinations and a minimum of 35 marks out of 75 marks in the Board Practical Examinations.*

14. Classification of successful candidates:

Classification of candidates who will pass out the final examinations from April 2018 onwards (Joined in first year in 2015-2016) will be done as specified below.

First Class with Superlative Distinction:

A candidate will be declared to have passed in **First Class with Superlative Distinction** if he/she secures not less than 75% of the marks in all the subjects and passes all the semesters in the first appearance itself and passes all subjects within the stipulated period of study 3/ 3½/ 4 years (Full Time/Sandwich/Part Time) without any break in study.

First Class with Distinction:

A candidate will be declared to have passed in **First Class with Distinction** if he/she secures not less than 75% of the aggregate of marks in all the semesters put together and passes all the semesters except the I and II semesters in the first appearance itself and passes all the subjects within the stipulated period of study 3/ 3½/ 4 years (Full Time/Sandwich/Part Time) without any break in study.

First Class:

A candidate will be declared to have passed in **First Class** if he/she secures not less than 60% of the aggregate marks in all semesters put together and passes all the subjects within the stipulated period of study 3/ 3½ / 4 years (Full Time/Sandwich/Part Time) without any break in study.

Second Class:

All other successful candidates will be declared to have passed in **Second Class.**

The above mentioned classifications are also applicable for the Sandwich / Part-Time students who pass out Final Examination from October 2018 /April 2019 onwards (both joined in First Year in 2015-2016)

15. Duration of a period in the Class Time Table:

The duration of each period of instruction is 1 hour and the total period of instruction hours excluding interval and Lunch break in a day should be uniformly maintained as 7 hours corresponding to 7 periods of instruction (Theory & Practical).

16. Seminar:

For seminar the total seminar 15 hours(15 weeks x 1hour) should be distributed equally to total theory subject per semester(i.e 15 hours divided by 3/4 subject). A topic from subject or current scenario is given to students. During the seminar hour students have to present the paper and submit seminar material to the respective staff member, who is handling the subject. It should be preserved for 2 Semesters and produced to the flying squad and the inspection team at the time of inspection/verification.

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DIPLOMA IN TEXTILE PROCESSING

Description of the Courses:

Diploma in Textile Processing deals with Desizing, Scouring, Bleaching, Mercerizing, Dyeing, printing and finishing of natural and manmade textile materials. These above processes applied on fibres, yarn, fabric and Garments. After spinning, weaving and knitting it is one of the lengthiest processes.

After dyeing, printing and finishing, the cloth acquires pleasing and decorative appearance. It gives the value addition to the grey yarn and grey fabrics. Now it is ready for the garment industries. There by we can improve the foreign export and earn valuable foreign currency.

Course objectives:

Now a days the no. of processing industries are tremendously increasing to fulfill the need of population growth and export order so the job opportunities for the Diploma in textile processing students in the processing industries are increasing day by day. After gaining experience of 3 to 5 years in processing industries, they will become a master level or up to the key post of the industry.

Also they acquire the capability of become an entrepreneur. There by developing themselves, their family and our Nation.

Now-a-days there are so many modern industries developed with modern machineries which will improve and fulfill the export need, only processing technologist can look over in the above industries.

So the M-Scheme syllabus covers the latest industries need. This syllabus covers Fibre Science, Yarn and Fabric Manufacture, Textile Testing, Dyeing, Printing and Finishing, Eco Friendly Dyeing and Computer Programming and Applications, Computer colour matching for dyeing and printing shades, Garment Technology, Management, Entrepreneurship and water effluent and pollution control. Since the present processing industries are in vital need of water effluent treatment plant. Also the Project work and the Industrial training programme to gain the practical knowledge.

ANNEXURE – I

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

M-SCHEME

(Implements from the Academic year 2015-2016 onwards)

CURRICULUM OUTLINE

FIRST SEMESTER (FULL TIME)

S.No.	SUBJECT	HOURS PER WEEK				
		Theory Hours	Drawing	Tutorial	Practical hours	Total Hours
30011	Communication English-I	5	-	-	-	5
30012	Engineering Mathematics-I	8	-	-	-	8
30013	Engineering Physics-I	5	-	-	-	5
30014	Engineering Chemistry-I	5	-	-	-	5
30015	Engineering Graphics-I	-	5	-	-	5
30016	Engineering Physics-I Practical	-	-	-	2	2
30017	Engineering Chemistry-I Practical	-	-	-	2	2
30018	Workshop Practice	-	-	-	3	3
TOTAL		23	5	-	7	35

SECOND SEMESTER (FULL TIME)

S.No.	SUBJECT	HOURS PER WEEK				
		Theory Hours	Drawing	Tutorial	Practical hours	Total Hours
30021	Communication English-II	5	-	-	-	5
30022	Engineering Mathematics-II	5	-	-	-	5
30023	Applied Mathematics	5	-	-	-	5
30024	Engineering Physics-II	5	-	-	-	5
30025	Engineering Chemistry-II	5	-	-	-	5
30026	Engineering Graphics-II	-	6		-	6
30027	Engineering Physics-II Practical	-	-	-	2	2
30028	Engineering Chemistry-II Practical	-	-	-	2	2
TOTAL		25	6	-	4	35

THIRD SEMESTER

S. No	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
36031	Fibre Science and Technology*	5	-	-	5
36132	Preparation for Textile Processing	5	-	-	5
36133	Dyeing of Natural Fibres	5	-	-	5
36134	Fibre and Chemical Analysis Practical	-	-	5	5
36135	Preparation for Textile Processing Practical	-	-	5	5
36136	Dyeing of Natural Fibres Practical	-	-	5	5
30001	Computer Application Practical**	-		4	4
Seminar		1			1
TOTAL		16	-	19	35

*Common with Diploma in Textile Technology
**Common Papers with All branches

FOURTH SEMESTER

S. No	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
36141	Technology of Yarn Manufacture	5	-	-	5
36142	Technology of Fabric Manufacture	5	-	-	5
36143	Dyeing of Manmade Fibres and Blends	5	-	-	5
36144	Technology of Textile Finishing	5	-	-	5
36145	Dyeing of Manmade Fibres and Blends Practical	-	-	5	5
36146	Technology of Textile Finishing Practical	-	-	5	5
36147	Engineering Utilities Practical	-		4	4
Seminar		1			1
TOTAL		21	-	14	35

FIFTH SEMESTER

S. No	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
36051	Textile Testing *	5	-	-	5
36152	Technology of Textile Printing	5	-	-	5
36153	Quality Assurance in Textile Processing	5	-	-	5
36671	Elective – I Apparel Merchandising @	5	-	-	5
36172	Elective – I Eco Friendly in Textile Processing				
36155	Technology of Textile Printing Practical	-	-	5	5
36156	Quality Assurance in Textile Processing practical	-		5	5
30002	Life and Employability Skills Practical **			4	4
Seminar		1			1
TOTAL		21	-	14	35

*Common Papers with Diploma in Textile Technology
**Common Papers with All branches
@ Common papers with Diploma in Garment Technology

SIXTH SEMESTER

S. No	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
36061	Textile Management*	5	-	-	5
36062	Garment Manufacture*	5	-	-	5
36181	Elective - II Water, Effluent Treatment & Pollution Control	5	-	-	5
36182	Elective – II Advances in Textile Processing		-	-	
36064	Garment Manufacture - Practical*	-	-	4	4
36165	Shade Matching in dyeing and printing Practical	-	-	6	6
36166	Textile Testing Practical	-	-	5	5
36167	Project Work	-	-	4	4
Seminar		1			1
TOTAL		16	-	19	35

* Common Papers with Diploma in Textile Technology

ANNEXURE - II
SCHEME OF THE EXAMINATION
DIPLOMA IN TEXTILE PROCESSING/
DIPLOMA IN TEXTILE PROCESSING (SANDWICH)

I SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment marks	Board Exam marks	Total Marks		
30011	Communication English-I	**25**	**75**	**100**	**40**	**3**
30012	Engineering Mathematics-I	**25**	**75**	**100**	**40**	**3**
30013	Engineering Physics-I	**25**	**75**	**100**	**40**	**3**
30014	Engineering Chemistry-I	**25**	**75**	**100**	**40**	**3**
30015	Engineering Graphics-I	**25**	**75**	**100**	**40**	**3**
30016	Engineering Physics-I Practical	**25**	**75**	**100**	**50**	**3**
30017	Engineering Chemistry-I Practical	**25**	**75**	**100**	**50**	**3**
30018	Workshop Practice	**25**	**75**	**100**	**50**	**3**
	TOTAL	**200**	**600**	**800**		

II SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment marks	Board Exam marks	Total Marks		
30021	Communication English-II	**25**	**75**	**100**	**40**	**3**
30022	Engineering Mathematics-II	**25**	**75**	**100**	**40**	**3**
30023	Applied Mathematics	**25**	**75**	**100**	**40**	**3**
30024	Engineering Physics-II	**25**	**75**	**100**	**40**	**3**
30025	Engineering Chemistry-II	**25**	**75**	**100**	**40**	**3**
30026	Engineering Graphics-II	**25**	**75**	**100**	**40**	**3**
30027	Engineering Physics-II Practical	**25**	**75**	**100**	**50**	**3**
30028	Engineering Chemistry-II Practical	**25**	**75**	**100**	**50**	**3**
	TOTAL	**200**	**600**	**800**		

THIRD SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment marks	Board Exam marks	Total Marks		
36031	Fibre Science and Technology *	**25**	**75**	**100**	**40**	**3**
36132	Preparation for Textile Processing	**25**	**75**	**100**	**40**	**3**
36133	Dyeing of Natural Fibres	**25**	**75**	**100**	**40**	**3**
36134	Fibre and Chemical Analysis Practical	**25**	**75**	**100**	**50**	**3**
36135	Preparation for Textile Processing Practical	**25**	**75**	**100**	**50**	**3**
36136	Dyeing of Natural Fibres Practical	**25**	**75**	**100**	**50**	**3**
30001	Computer Application Practical**	**25**	**75**	**100**	**50**	**3**
	TOTAL	**175**	**525**	**700**		

*Common with Diploma in Textile Technology

**Common Papers with All branches

FOURTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment marks	Board Exam marks	Total Marks		
36141	Technology of Yarn Manufacture	**25**	**75**	**100**	**40**	**3**
36142	Technology of Fabric Manufacture	**25**	**75**	**100**	**40**	**3**
36143	Dyeing of Manmade Fibres and Blends	**25**	**75**	**100**	**40**	**3**
36144	Technology of Textile Finishing	**25**	**75**	**100**	**40**	**3**
36145	Dyeing of Manmade Fibres and Blends Practical	**25**	**75**	**100**	**50**	**3**
36146	Technology of Textile Finishing Practical	**25**	**75**	**100**	**50**	**3**
36147	Engineering Utilities Practical	**25**	**75**	**100**	**50**	**3**
	TOTAL	**175**	**525**	**700**		

FIFTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment marks	Board Exam marks	Total Marks		
36051	Textile Testing *	**25**	**75**	**100**	**40**	**3**
36152	Technology of Textile Printing	**25**	**75**	**100**	**40**	**3**
36153	Quality Assurance in Textile Processing	**25**	**75**	**100**	**40**	**3**
36671	Elective – I Apparel Merchandising @	**25**	**75**	**100**	**40**	**3**
36172	Elective – I Eco Friendly in Textiles	**25**	**75**	**100**	**40**	**3**
36155	Technology of Textile Printing Practical	**25**	**75**	**100**	**50**	**3**
36156	Quality Assurance in Textile Processing Practical	**25**	**75**	**100**	**50**	**3**
30002	Life and Employability Skills Practical **	**25**	**75**	**100**	**50**	**3**
	TOTAL	**175**	**525**	**700**		

*Common Papers with Diploma in Textile Technology

**Common Papers with All branches

@ Common papers with Diploma in Garment Technology

SIXTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment marks	Board Exam marks	Total Marks		
36061	Textile Management*	**25**	**75**	**100**	**40**	**3**
36062	Garment Manufacture*	**25**	**75**	**100**	**40**	**3**
36181	Elective- II. Water, Effluent Treatment & Pollution Control	**25**	**75**	**100**	**40**	**3**
36182	Elective – II. Advances in Textile Processing	**25**	**75**	**100**	**40**	**3**
36064	Garment Manufacture – Practical*	**25**	**75**	**100**	**40**	**3**
36165	Shade Matching in dyeing and printing practical	**25**	**75**	**100**	**50**	**3**
36166	Textile Testing Practical	**25**	**75**	**100**	**50**	**3**
36167	Project Work	**25**	**75**	**100**	**50**	**3**
	TOTAL	**175**	**525**	**700**		

* Common Papers with Diploma in Textile Technology

DIPLOMA IN TEXTILE PROCESSING (SANDWICH)

SEVENTH SEMESTER

INDUSTRIAL TRAINING & VIVA VOCE

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal assessment marks	Board Exam marks	Total Marks		
36192	INDUSTRIAL TRAINING & VIVA VOCE	**25**	**75**	**100**	**50**	**3**

ALTERNATIVE SUBJECTS FOR I AND II SEMESTER SUBJECTS

'L' SCHEME TO 'M' SCHEME

With effect from October 2015 Board Examinations

I Semester

S.No.	SUBJECTS IN L – SCHEME	S.No.	ALTERNATIVE SUBEJCTS IN THE M – SCHEME
20011	Communication English-I	30011	Communication English-I
20012	Engineering Mathematics -I	30012	Engineering Mathematics-I
20013	Engineering Mathematics-II	30012	Engineering Mathematics-I
20014	Engineering Physics-I	30014	Engineering Physics-I
20015	Engineering Chemistry-I	30015	Engineering Chemistry-I
20016	Engineering Graphics -I	30016	Engineering Graphics-I
20017	Engineering Physics–I Practical	30017	Engineering Physics-I Practical
20018	Engineering Chemistry-I Practical	30018	Engineering Chemistry-I Practical

II Semester

With effect from April 2016 Board Examinations

S.No.	SUBJECTS IN L – SCHEME	S.No.	ALTERNATIVE SUBEJCTS IN THE M – SCHEME
20021	Communication English-II	30021	Communication English-II
20022	Engineering Mathematics-III	30022	Engineering Mathematics-II
20023	Engineering Mathematics - IV	30023	Applied Mathematics
20024	Engineering Physics-II	30024	Engineering Physics-II
20025	Engineering Chemistry-II	30025	Engineering Chemistry-II
20026	Engineering Graphics-II	30026	Engineering Graphics-II
20027	Engineering Physics-II Practical	30027	Engineering Physics-II Practical
20028	Engineering Chemistry-II Practical	30028	Engineering Chemistry-II Practical
20029	Workshop Practice	30018	Workshop Practice (I sem)

DIPLOMA IN TEXTILE PROCESSING /

DIPLOMA IN TEXTLE PROCESSING (SANDWICH)

ALTERNATIVE SUBJECTS FOR III AND IV SEMESTER SUBJECTS			
SUBJECTS IN L – SCHEME		**ALTERNATIVE SUBJECTS IN THE M– SCHEME**	
	III SEMESTER – W.E.F. OCT '16		
26031	Fibre Science and Technology*	36031	Fibre Science and Technology*
26132	Preparation for Textile Processing	36132	Preparation for Textile Processing
26133	Dyeing of Natural Fibres	36133	Dyeing of Natural Fibres
26134	Fibre and chemical Analysis Practical	36134	Fibre and chemical Analysis Practical
26135	Preparation for Textile Processing practical	36135	Preparation for Textile Processing practical
26136	Dyeing of Natural Fibres practical	36136	Dyeing of Natural Fibres practical
20001	Computer Application Practical**	30001	Computer Application Practical**
IV SEMESTER W.E.F. APR '17			
26141	Technology of Yarn Manufacture	36141	Technology of Yarn Manufacture
26142	Technology of Fabric Manufacture	36142	Technology of Fabric Manufacture
26143	Dyeing of Manmade Fibres and Blends	36143	Dyeing of Manmade Fibres and Blends
26144	Technology of Textile Finishing	36144	Technology of Textile Finishing
26145	Dyeing of Man Made Fibres and Blends Practical	36145	Dyeing of Man Made Fibres and Blends Practical
26146	Technology of Textile Finishing - Practical	36146	Technology of Textile Finishing - Practical
26147	Engineering Utilities - Practical	36147	Engineering Utilities - Practical

ALTERNATIVE SUBJECTS FOR V and VI SEMESTER SUBJECTS			
SUBJECTS IN L – SCHEME		**ALTERNATIVE SUBJECTS IN THE M – SCHEME**	
V SEMESTER – W.E.F. OCT '17			
26051	Textile Testing*	36051	Textile Testing*
26152	Technology of Textile Printing	36152	Technology of Textile Printing
26153	Quality Assurance in Textile Processing	36153	Quality Assurance in Textile Processing
26671	Elective – I Apparel Merchandising@	36671	Elective – I Apparel Merchandising@
26172	Eco Friendly in Textile Processing	36172	Eco Friendly in Textile Processing
26155	Technology of Textile Printing Practical	36155	Technology of Textile Printing Practical
26156	Quality Assurance in Textile Processing Practical	36156	Quality Assurance in Textile Processing Practical
20002	Communication and Life Skills Practical**	30002	Life and Employability Skills Practical**
VI SEMESTER – W.E.F. APR '18			
26051	Textile Management*	36051	Textile Management*
26052	Garment Manufacture*	36052	Garment Manufacture*
26181	Elective – II Water, Effluent Treatment and Pollution Control	36181	Elective – II Water, Effluent Treatment and Pollution Control
26182	Advances in Textile Processing	36182	Advances in Textile Processing
26054	Garment Manufacture Practical*	36054	Garment Manufacture Practical*
26155	Shade Matching in Dyeing and Printing Practical	36155	Shade Matching in Dyeing and Printing Practical
26166	Textile Testing Practical	36166	Textile Testing Practical
26167	Project work	36167	Project work

Important Note:

*** Common Subject with Diploma in Textile Technology**

**** Common Subject with All Diploma Engineering Courses**

Question paper pattern

Common for all theory subjects

PART A ***- (1 to 8) 5 Questions are to be answered out of 8 questions for 2 marks each.*****(Question No. 8 will be the compulsory question and *can be asked from any one of the units)(From each unit maximum of two 2 marks questions alone can be asked)***

PART B ***- (9 to 16)5 Questions are to be answered out of 8 questions for 3 marks each.*** **(Question No. 16 will be the compulsory question and *can be asked from any one of the units) (From each unit maximum of two 3 marks questions alone can be asked)***

PART C ***- (17 to 21) Five Questions will be in the Either OR Pattern. Students have to answer these five questions. Each question carries 10 marks. (Based on the discretion of the question setter, he/she can ask two five mark questions (with sub division A & sub division B) instead of one ten marks question if required)***

Any additional requirement, if necessary, should be mentioned in the question pattern. Graph sheet, Inch graph for design etc..

III SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

III SEMESTER

2015 – 2016 onwards

FIBRE SCIENCE AND TECHNOLOGY

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36031

Semester : III Semester

Subject Title **:** **FIBRE SCIENCE AND TECHNOLOGY**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
FIBRE SCIENCE AND TECNOLOGY	5 Hrs	75 Hrs	25	75	100	3 Hrs

TOPICS AND ALLOCATION OF HOURS

Sl. No	Topic	Time (hrs.)
1	INTRODUCTION	14
2	VEGETABLE FIBRES	14
3	ANIMAL FIBRES	14
4	REGENERATED FIBRES	13
5	SYNTHETIC FIBRES	13
6	TEST & REVISION	07
Total		75

Rationale:

Fibres are the basic raw materials for the manufacture of yarns and fabrics. The ultimate property of a yarn or fabric depends on the property of the fibre in it. Therefore, it is important to study the fibre properties.

Different fibres exhibit different physical and chemical properties. This is due to a number of factors like the material of the fibre, its molecular structure, length and the amount of draft applied during spinning process. Fabrics are made from different types of fibres and their blends are put to specific uses such as summer wear, winter wear, industrial wear etc., depending on their particular properties.

Therefore it is very important for a Textile student to study the Science of Fibres and the manufacture of manmade fibres.

Objectives

- To know about the various classifications of textile fibres, their origin chemical nature and properties etc.
- To know about the fibre chemical composition, reaction, methods and uses.
- To know about the Indian & hybrid cotton varieties and their uses.
- To know about the Flax fibre, Linen fibre, Pineapple fibre, Banana Fibre, Jute fibre, and their uses.
- To know about Wool fibre.
- To know about silk fibres.
- To study about different types of spinning methods – manufacture of Viscose rayon.
- To know about Tencel, Lyocell, Modol, Polynosic rayon and HT rayon.
- To know about the manufacture of Nylon 6, Nylon 66, polyester, Acrylic fibres and their properties & uses.
- To know uses of Glass fibre, bamboo, casein, carbon, Nomex and Kevlar fibres

DETAILED SYLLABUS

CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**INTRODUCTION:** Definition of Textile Fibre. Classification of Textile Fibres based on origin and chemical nature - Properties required for an ideal textile fibre - Identification of Textile Fibres (cotton, silk, wool, Viscose, nylon, polyester acrylic) - Microscopic test, burning test, Solubility test - Types of polymerization - Addition and condensation polymerization. Definition of monomer, polymer, repeat unit, polymerization, Degree of polymerization, Staple fibre, filament yarn, mono filament, multifilament, spun yarn & ply yarn.	14
II	**VEGETABLE FIBRES** **Cotton:** Cotton producing countries and states in India - Classification of commercial cottons, Indian hybrid cottons with their characteristic - Physical and chemical structures of cotton fibre - Physical and chemical properties of cotton - Uses. **Linen:** Linen producing countries - Physical and chemical properties - Uses. **Jute:** Jute producing countries and states in India - Physical and chemical properties – Uses. End uses of Bamboo, soya, sisal, Banana and Pineapple fibres.	14
III	**ANIMAL FIBRES** **Wool:** Wool producing countries - Classification of wool with respect to fleece and breeds - Physical and chemical structure - Physical and chemical properties - Comparison of woollen and worsted yarns - Uses. **Silk:** Silk producing countries - Types of silk (Mulbery, Eri, Muga) - Reeling, throwing and doubling - Degumming of silk - Weighting of silk - Physical and chemical properties – Uses.	14
IV	**REGENERATED FIBRES** : Types of spinning of manmade fibres - Wet, dry and melt spinning - Drawing and its importance. **Viscose Rayon:** Viscose Rayon manufacturers in India - Raw material – manufacturing Process with flow chart - Properties - uses. **Properties and Uses -** High Wet Modulus rayon, HT Rayon,	13

	Tencel Rayon, Lyocell, Modal, polynosic	
V	**SYNTHETIC FIBRES:** Nylon and Polyester manufacturers in India. **Nylon – 6, 6:** Raw material – manufacturing Process with flow chart - properties - uses. **Nylon – 6:** Raw material – manufacturing Process with flow chart - properties - uses **Polyester:** Raw material – manufacturing Process using PTA route with flow chart - properties - uses. **Acrylic Fibre:** Raw material - manufacturing Process with flow chart - properties - uses. Applications of the following fibres: Glass, Asbestos, Casein, Carbon, Nomex, Kevlar & Polyurethane.	13

TEXT BOOKS:

S.No	TITLE	AUTHOR	PUBLISHERS	YEAR OF PUBLICATION
1	Textile fibres	V.A. Shenai	"Technology of Textile Processing". Sevak publications, Bombay	1997
2	Textile fibres Vol I, Vol II	J.Gordon cook	Wood head Publishing Ltd. Cambridge England	2001
3	Manmade fibres	P.W. Moncrieff	Newnes – Butterworth's, London	1975

REFERENCE BOOKS:

S.No	TITLE	AUTHOR	PUBLISHERS	YEAR OF PUBLICATION
1	Textile Science	E.P.C. Gohle and L.D. Vilensty	CBS Publishers and Distributors Delhi, India	1987
2	Fibre Science and Technology	S.P. Mishra	New age International (p) Ltd Daryaganj, New Delhi-110002	2005
3	Dyeing and chemical Technology of Textile Fibres	ER Trotman	British high commission Madras – 2	1970

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

III SEMESTER

2015 – 2016 onwards

PREPARATION FOR TEXTILE PROCESSING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36132

Semester : III Semester

Subject Title **:** **PREPARATION FOR TEXTILE PROCESSING**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours/ week	Hours/ Semester	Marks			Duration
PREPARATION FOR TEXTILE PROCESSING	**5**	**75**	Internal Assessment	Board Examination	Total	
			25	**75**	**100**	**3 Hrs**

Topics and Allocation of Hours:

Sl. No.	Topic	Time(Hrs)
1	BASIC TEXTILE CHEMISTRY	**14**
2	SINGEING & DESIZING	**14**
3	MERCERIZATION & SCOURING	**14**
4	BLEACHING	**13**
5	PREPARATORY PROCESS FOR NONCELLULOSIC FIBRES AND DRYING MACHINES	**13**
6	TEST & REVISION	**07**
	TOTAL	**75**

RATIONALE:

Due to the high volume of export and the local need of the textile goods, it is inevitably necessary to produce in a bulk and quicker rate. It is possible by the modern machines with latest technology. This subject covers basic textile chemistry, singeing,

desizing, and mercerising, scouring, bleaching and preparatory process for non – cellulosic fibres. Hence, it fulfills the above need.

The various sequences of processes like singeing, desizing, scouring, mercerizing, bleaching have to be included and knowledge on drying machines provides the basic inputs required in the subject of preparatory processes for textile processing.

OBJECTIVES:

- To acquire knowledge in basics of textile chemistry.
- To understand the chemistry of various auxiliaries used in textile wet processing.
- To understand the basic structure of fibre forming polymers and its effect on processing.
- To learn the basic principle of singeing.
- To study the types of desizing and their principles.
- To study the machines used for singeing and desizing
- To have an understanding of effects of mercerization.
- To have an idea about liquid ammonia treatment.
- To thoroughly impart knowledge in scouring of cotton.
- To acquire knowledge in understanding different types of bleaching agents used.
- To study about bleaching of cotton material using hydrogen peroxide
- To have an idea about single stage desizing, scouring, bleaching.
- To impart ideas about the preparatory processes of non-cellulosic fibres.
- To give emphasis in preparatory sequence of polyester.
- To understand the principles of hydro extraction & drying.

DETAILED SYLLABUS

CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**Basic Textile Chemistry** Definition of inorganic chemicals, organic chemicals, acids, alkalies, salts - Use of oxidizing agents, reducing agents, surfactants, sequestering agents in textile processing with examples - pH and its importance in textile processing – Ionic nature of chemicals - Use of hydrometers - Importance of soft water- Brief study of surfactants & soaps - Sequence of processes involved in textile processing of woven fabrics, knitted fabrics and yarn with purposes of each process - quality parameters of water required for preparatory processes.	**14 Hrs**
II	**Singeing and Desizing** Inspection of grey goods- Lot preparation – objects of singeing- Gas singeing machine for yarn - Gas singeing machine for woven fabrics, Tubular singeing machine for knitted fabrics –- precautions needed in singeing- Objects of desizing – Principle of desizing of starch & synthetic sizes – Brief study on properties and types of enzymes used for desizing – Enzymatic desizing processes by pad, batch and pad steam – Advantages of enzyme desizing process – Study on washing machines rope washing and continuous washing machine. .	**14 Hrs**
III	**Mercerisation & Scouring** Objects of mercersation – conditions recommended (recipe) for mercerizing - changes taking place in mercerized cotton – significance of dry on wet, wet on wet caustic applications in mercerisation - Working of chain mercerising machine and chainless mercerising machine for woven fabrics – Working of any one knit fabric mercerising machine – Objects of scouring – Impurities in cotton, wool and silk fibres – Mechanism of scouring by which impurities are removed – scouring of cotton fabric with suitable recipe using machines Kier and jigger.	**14 Hrs**

IV	**Bleaching** Objects of bleaching – Oxidising bleaching agents – properties and limitation of hypochlorites – Properties of hydrogen peroxide – advantages of H_2O_2 bleaching– Stabilisers for hydrogen peroxide – Process of bleaching with H_2O_2 with recipes using Jigger and continuous bleaching range (CBR) - combined scouring and bleaching of knitted fabrics using soft flow machines - Scouring and bleaching of yarn using cheese dyeing machine.– peroxide killer treatment - Oxalic acid treatment for iron impurities removal – Optical brightening agents for full bleaching.	**13 Hrs**
V	**Preparatory processes for non-cellulosic fibres and drying machines** Scouring of wool – bleaching of wool – degumming of silk – bleaching of silk – Bio scouring – Enzymes used for bio scouring, mechanism of impurities removal by enzymes and process of bio scouring of 100% cotton fabrics - principles of hydro extraction – Working of hydro extractor - balloon padder – principles of drying – working of drying machines vertical drying range, relax dryer and continuous tumble dryer – Features and advantages of RF dryer over hot air drying methods.	**13 Hrs**

TEXT BOOKS:

Author	**Title**	**Publisher**	**Year of Publication**
Marsh.J.T	Introduction to Textile Bleaching	BI Publications, Janapath, Delhi-1	1979
Shenai.V.A	Technology of Bleaching &Mercerising	Sevak Publications, Wadala, Mumbai-	1987
John shore	Cellulosic dyeing	SDC Publications, UK	2000

REFERENCE BOOKS

Author	Title	Publisher	Year of Publication
Chakravarthi.R.R & Trivedi	Technology of Bleaching and Dyeing Vol. I Part I	Mahajan Book Depot, Ahemedabad-9	
Trotman. E.R	Textiles Scouring & Bleaching	Charless Griffins, Com. Ltd. London	1968
Marsh.J.T	Mercerising	BI Publications, Janapath Delhi-1	
Ghokale.S.V. & Dingra.A.K	Maintenance in Chemical Processing AITRA Ahemedabad-5		1984
Dr.J.V.Rao	Auxiliaries	NITRA Publications, Ghaziabad.	

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

III SEMESTER

2015 – 2016 onwards

DYEING OF NATURAL FIBRES

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36133

Semester : III Semester

Subject Title : DYEING OF NATURAL FIBRES

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours/ week	Hours/ semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
DYEING OF NATURAL FIBRES	5	75	25	75	100	3 Hrs

Topics and Allocation of Hours:

Sl.No.	Topic	Time(Hrs)
1	THEORY OF COLOURATION	**14**
2	DIRECT DYES , AZOIC DYES & NATURAL DYES	**13**
3	REACTIVE DYES	**14**
4	VAT, SOLUBLIZED VAT AND SULPHUR DYES	**14**
5	ACID, BASIC, MISCELLANEOUS DYES & DYEING MACHINES	**13**
6	TEST & REVISION	**07**
	TOTAL	**75**

RATIONALE:

Dyeing is an important process in the textile processing sequence which imparts uniform color in the textile material. Dyeing depends on the affinity of dyes

for the fibres, conditions of dyeing and auxiliaries used for dyeing of natural fibres. Direct dyes, Azoic dyes , Natural dyes, Reactive dyes, Vat, Solubilised Vat dyes & Sulphur dyes are used for cotton and Acid, Basic dyes for silk, wool material using various techniques and machines.

The content of the syllabus for this subject is aimed to fulfill the requirements of dyeing industries in addition to the theoretical knowledge behind the chemistry of dyeing of the above classes of dyes with natural fibres.

OBJECTIVES:

- To know about the basic theory and application concepts of dyeing.
- To have an idea about the role and functions of dyeing auxiliaries.
- To know how direct dyes are applied on cellulosic material.
- To know how azoic dyes are applied on cellulosic material.
- To know how Natural dyes are applied on cellulosic material
- To know how various types of Reactive dyes are applied on cellulosic material.
- To know how Vat, & Sulphur dyes are applied on cellulosic material.
- To know how the Solubilised Vat dyes are applied on cellulosic material.
- To know how Acid & Basic dyes are applied on Wool and Silk materials.
- To know how pigments are applied on cellulosic materials.
- To know how Acid & Basic dyes are applied on Wool and Silk materials.
- To have an idea of construction and working of woven & knitted fabric dyeing machines

DETAILED SYLLABUS

CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**THEORY OF COLOURATION** Introduction about Colour Theory. Definitions-Dyes, Pigments, Hue, Chroma Value, Chromophore, Auxochrome. Primary and Secondary colours-Common terms in dyeing-Affinity, Substantivity, Exhaustion, Expression, Percentage shade - Theory of dyeing – Adsorption, Diffusion, Fixation - Classification of dyes – Essential properties of a dye – Effect of M : L ratio, salt, temperature and time of dyeing – Dyeing auxiliaries - Wetting agents, sequestering agent, Exhausting agents, Leveling agents, retarding agent, Dispersing agents, Dye fixing agent and Stripping agents.	**14**
II	**DIRECT DYES, AZOIC DYES AND NATURAL DYES** **Direct Dyes** – Classification – Properties – Mechanism of dyeing - Application of direct dyes on cotton – after treatments – Advantages and disadvantages of direct dyes – Stripping of direct dyed material. **Azoic dyes** – Properties of Naphthols and Fast bases – Application of naphthol and fast base on cotton. Advantages and disadvantages of azoic dyes. **Natural dyes**- definition – properties – Application of natural dyes on cotton.	**13**
III	**REACTIVE DYES** Reactive dyes – Classification – Properties – Mechanism of dyeing (Nucleophilic substitution & Nucleophilic Addition Reaction) Application methods – Exhaust dyeing (cold brand, HE & ME dyes), Semi continuous (vinyl sulphone dyes) and Continuous method (e-control process) - Advantages and Disadvantages of	**14**

	reactive dyes - Dyeing of silk with reactive dyes - Stripping of reactive dyed material. Problem with hydrolyzed reactive dyes & solution.	
IV	**VAT SOLUBLISED VAT AND SULPHUR DYES** **Vat dyes** – Classification – Properties –Steps involved in vat dyeing – Application methods like Leuco vat, Pigment padding and continuous method, Advantages and Disadvantages of vat dyes - Stripping vat dyed material. **Solublised Vat dye** – Properties – Exhaust method of application of solublised vat dyes on cotton - Advantages and Disadvantages of solublised vat dyes - Stripping of solublised vat dyed material. **Sulphur dye** – Properties- Exhaust method of application of sulphur dyes on cotton- Advantages and Disadvantages of sulphur dyes - Problems involved in sulphur dyeing like Bronziness and acid tendering and remedies - Stripping of sulphur dyed material	**14**
V	**ACID, BASIC DYES AND DYEING MACHINES** **Acid dyes** – Classification – Properties – Mechanism of dyeing – Dyeing of silk with acid - Dyeing of wool with acid dyes - Advantages and Disadvantages of acid dyes. **Basic dye** – Properties – Dyeing of silk with basic dyes - Dyeing of wool with basic dyes - Advantages and Disadvantages of basic dyes Brief study on Pigment dyeing: Pad – dry – cure and Exhaust method. **Dyeing Machine**: Woven Fabric Dyeing - Working of Jigger, Working of Soft Flow dyeing machine.	**13**

TEXT BOOK:

Author	Title	Publisher	Year
Asim kumar roy choudhury	Textile preparation and dyeing	Oxford & IBH publishing Company Pvt. Ltd. New Delhi	2006
Shenai V.A	Technology of Dyeing Technology of Textile Processing, Vol. I	Sevak Publications, 306, Sri Hanuman Industrial Estate, GC Ambedkar Road, Wadala, Bombay 400 031	1980
Chakravarthy RR and Trivedi S.S	Technology of Bleaching and Dyeing of Textile Fibres Vo	Mahajan Book Publishers, Supermarket Basement, Near Nataraj Cinema, Ashram Road, Ahmedabad 380 009	1979
John shore	Cellulosic dyeing	SDC Publications, UK	1995

REFERENCE BOOKS

Author	Title	Publisher	Year
Trotman E.R	Dyeing and Chemical Technology of Textile Fibres	Charles Griffin & Co, 42, Dhury lane, London WC2	
Gokhle S.V. and Shah.R.C	Cotton Piece dyeing	Ahmadabad Textile Industries, Research Assn. (ATIRA), PO Polytechnic, Ahmadabad 380 015	**1981**
Storey (Joyce)	Manual of Dyes and Fabrics	Thames and Hindson, London	**1981**
Srivastava SB	Recent Process of Textile Bleaching, Dyeing and Finishing	SB Srivastava, S B P Board Consultant, S B P Buildings, 4/45 Roopnagar, Delhi 110 007	**1981**
BTRA	Recent advances in chemistry & technology	Processing of cotton and Manmade textiles	
D.M. Lewis	Wool Dyeing	SDC Publications, UK	
J.K.Aspland	Textile Dyeing and Colouration	AATCC Publications, USA	
Mc Donald	Colour Physics for Industry	SDC Publications, UK	
Franklin Beech	The dyeing of woollen fabric	Abhisheik Publications	
Wilfred Ingamells	Colour for Textiles	SDC Publications, UK	
John shore	Cellulosic dyeing	SDC Publications, UK	

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

III SEMESTER

2015 – 2016 onwards

FIBRE AND CHEMICAL ANALYSIS - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36134

Semester : III Semester

Subject Title : FIBRE AND CHEMICAL ANALYSIS PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
FIBRE AND CHEMICAL ANALYSIS - PRACTICAL	4 Hrs	60 Hrs	25	75	100	3 Hrs

RATIONALE:

Chemicals used in the processing laboratory should be pure and should have 100% strength. Therefore it is essential to acquire practical knowledge in analyzing the water and chemicals for their purity. In addition, fibre analysis is also an important skill to learn.

GUIDELINES

- All the twelve experiments given in the list of experiments should be completed and given for the board practical examination.
- In order to gain in - depth practical knowledge, every student should individually carry out the experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than three students while examining a batch of 30 students during Board Examinations.

ALLOCATION OF MARKS

Procedure	: 20 marks
Calculation	: 25 marks
Result	: 25 marks
Viva voce	: 05 marks
Total	: 75 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. ANALYSIS OF FIBRES IN BLENDS

To analyse the fibres in blends such as Polyester/Cotton and Polyester/Wool and Acrylic/wool.

In this test there are two different compositions of fibres from which the individual compositions of fibres can be analysed. Such as Polyester/Cotton and Polyester/ Wool and Acrylic/wool.

2. ESTIMATION OF HARDNESS, pH AND EFFICIENCY

To estimate the hardness and pH of water. It imparts the knowledge of estimating the hardness and pH of water.

3. ESTIMATION OF PURITY

To estimate the purity of sulphuric acid, hydrochloric acid, caustic soda, sodium carbonate, and sodium hydro sulphite.

This gives the knowledge of estimating the purity of sodium carbonate, caustic soda, sulphuric acid, hydrochloric acid and sodium hydro sulphite.

4. VOLUMETRIC ANALYSIS

To do the volumetric analyze of H_2O_2 (iodimetry) solution.

It gives the knowledge of analyzing the strength of H_2O_2.

5. MEASUREMENT OF SPECIFIC GRAVITY

To measure the specific gravity of given solution by using hydro meter.

In this experiment the specific gravity of given solution can be measured by using hydro meters.

6. **TEST FOR DETERMINING IONIC NATURE**

To do the test for determination of ionic nature of given substance.

In this test ionic nature of given substance can be determined.

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Analysis for individual composition of fibres in blends – Polyester / Cotton fabric.
2. Analysis for individual composition of fibres in blends – Polyester / Wool fabric
3. Analysis for individual composition of fibres in blends – Acrylic / Wool fabric
4. Estimation of total hardness and pH of given water.
5. Estimation of purity of sulphuric acid
6. Estimation of purity of hydrochloric acid
7. Estimation of purity of sodium carbonate
8. Estimation of purity of sodium hydroxide
9. Estimation of purity of sodium hydro sulphite
10. Estimation of strength of given sodium hydrogen peroxide
11. Prepare a given concentrated solution of a solute and measure its specific gravity using hydrometer
12. Test for determining ionic nature of given substance

LIST OF EQUIPMENTS AND THE QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

Materials required (for a batch of 30 students):

1. Lab grade Chemicals
2. Filter Paper – 1 packet
3. pH Paper – 1 packet

Equipments: (for a batch of 30 students):

1. Burettes (50 ml) - 30 Nos
2. Pipettes (10 ml) - 30 Nos
3. Conical Flasks (250 ml & 500 ml) - 30 Nos & 05 Nos
4. Burette Stands - 30 Nos
5. Digital pH Meter - 2 Nos

6. Glass beakers (1lit) - 02 Nos
7. Measuring Jars (100 ml) - 10 Nos
8. Glass funnels - 30 Nos
9. Hydro meters-full range - 5 Nos

SAFETY PRECATIONS TO BE FOLLOWED

1. Wearing the gloves in hand while taking and mixing the dyes stuffs and chemicals
2. Should wear safe foot wear, preferably shoes.
3. Should keep their shirts tucked in.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.
5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machines without doing regular safety checks and closing the safety doors.
8. Exhaust fans should be provided in the laboratory, so that unwanted smell and toxic air can be forced out

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

III SEMESTER

2015 – 2016 onwards

PREPARATION FOR TEXTILE PROCESSING - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36135

Semester : III Semester

Subject Title **:** PREPARATION FOR TEXTILE PROCESSING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours /Semester	Internal Assessment	Board Examination	Total	
PREPARATION FOR TEXTILE PROCESSING - PRACTICAL	**5 Hrs**	**75 Hrs**	**25**	**75**	**100**	**3 Hrs**

RATIONALE:

Preparatory processes such as desizing, scouring, bleaching and mercerizing help to improve absorbency and feel of the fabric. These processes prepare the fabric ready for dyeing, printing and finishing. Practical knowledge on these processes would help to learn the subsequent processes with ease.

GUIDELINES

- All the twelve experiments given in the list of experiments should be completed and given for the board practical examination.
- In order to gain in - depth practical knowledge, every student should individually carry out the experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than three students while examining a batch of 30 students during Board Examinations.

ALLOCATION OF MARKS

Recipe and Procedure	:	20 marks
Calculation	:	20 marks
Result with sample	:	30 marks
Viva voce	:	05 marks
Total	:	75 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. DESIZING

Desizing of given sized cotton fabric by using enzyme desizing method. After desizing, the efficiency of the process will be evaluated by finding the weight loss

2. SCOURING

Scouring of given desized cotton fabric by using NaOH. Scouring is done to remove the natural and added impurities from cotton, wool and polyester blended fabrics.

3. BLEACHING

Bleaching is done to remove the natural colouring matter from cotton and wool. Hydrogen peroxide can be used.

4. DEGUMMING

Degumming of given raw silk by using hot soaping treatment.

To remove the sericin gum from the silk material.

5. COMBINED SCOURING AND BLEACHING

Combined scouring and bleaching process for the given cotton material by using alkali and hydrogen peroxide.

To carry out combined scouring and bleaching process to save energy, time and cost by using alkali and hydrogen peroxide.

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Desizing of given cotton fabric using Enzyme Desizing method and determine the starch content.
2. Scouring of given cotton fabric using Desized cotton fabric and determine the scouring loss.
3. Bleaching of the given scoured cotton fabric with Hydrogen Peroxide.

4. Degumming of given raw silk yarn hank using Soda Ash and Soap.
5. Bleaching of given silk yarn hank using hydrogen peroxide.
6. Scouring of given wool yarn hank using soap and soda ash.
7. Bleaching of given wool yarn hank using hydrogen peroxide.
8. Scouring of given polyester /cotton blended fabric.
9. Bleaching of given polyester /cotton blended fabric
10. Carrying out the combined scouring & bleaching of given cotton material using hydrogen peroxide
11. Carrying out the scouring of given cotton fabric using Enzyme & Alkali and comparing the efficiency with alkali scouring in terms of Drop test.
12. Carrying out the Bleaching of given cotton with H_2O_2 using Na_2SiO_3 Stabilizer, Phosphate & Organic Stabilizer.

LIST OF EQUIPMENTS AND THE QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

Materials required: (for a batch of 30 students):

Grey cotton fabric, silk and wool fabric, P/C blended fabric

Equipments required: (for a batch of 30 students):

Dye bath with 6 pots – 5 Nos

SAFETY PRECATIONS TO BE FOLLOWED

1. Wearing the gloves in hand while taking and mixing the dyes stuffs and chemicals
2. Should wear safe foot wear, preferably shoes.
3. Should keep their shirts tucked in.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.
5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machines without doing regular safety checks and closing the safety doors.
8. Exhaust fans should be provided in the laboratory, so that unwanted smell and toxic air can be forced out

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

III SEMESTER

2015 – 2016 onwards

DYEING OF NATURAL FIBRES - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36136

Semester : III Semester

Subject Title **:** DYEING OF NATURAL FIBRES **–** PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
DYEING OF NATURAL FIBRES - PRACTICAL	**5 Hrs**	**75 Hrs**	**25**	**75**	**100**	**3 Hrs**

RATIONALE:

The dyeing of natural fibre practical imports the practical knowledge about the dyes such as direct, reactive, vat, solublised vat, and sulphur dyes on cotton and Acid and basic on silk and wool. The above mentioned dyes are being carried out in the shade matching laboratory of the textile industries. Almost it covers the above mentioned dyes which are being used in the industry.

GUIDELINES:

All the twelve experiments given in the list of experiments should be completed and given for the end semester practical examination.

In order to develop best skills in handling Instruments/Equipment and taking readings in the practical classes, every two students should be provided with a separate experimental setup for doing experiments in the laboratory.

The external examiners are requested to ensure that a single experimental question should not be given to more than three students while admitting a batch of 30 students during Board Examinations.

ALLOCATION OF MARKS

Procedure	:	20 marks
Calculation	:	20 marks
Result with sample	:	30 marks
Viva voce	:	05 marks
Total	:	75 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

DYEING OF COTTON WITH VARIOUS DYESTUFFS

Dyeing of cotton using water soluble dyes such as Direct dyes, Reactive dyes, (Cold brand, Hot Brand, Vinyl sulphone, ME. etc.,)

Dyeing of cotton using water insoluble dyes such as Vat dyes, Sulphur dyes, Solublised Vat dyes etc.,

To understand the dyeing of cotton with various above mentioned dye stuffs.

DYEING OF SILK & WOOL WITH VARIOUS DYESTUFFS

Dyeing of Silk / Wool using Reactive dyes, Acid dyes, basic dyes etc,

To understand the dyeing of silk / wool with various above mentioned dye stuffs

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Dyeing of cotton with direct dyes.
2. Dyeing of Cotton with Cold brand reactive dyes.
3. Dyeing of Cotton with hot brand reactive dyes.
4. Dyeing of Cotton with Vinyl Sulphone reactive dyes.
5. Dyeing of Cotton with bi functional (ME) reactive dyes.
6. Dyeing of Cotton with Vat dyes.
7. Dyeing of Cotton with Sulphur colours
8. Dyeing of Cotton with Solublised vat dyes.
9. Dyeing of silk with reactive dyes.
10. Dyeing of Silk with acid dyes.
11. Dyeing of Wool with Acid dyes.

12. Dyeing silk with basic dyes

LIST OF EQUIPMENTS AND THE QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

List of Equipments:

1. Dye baths with 6 pots – 5 Nos.
2. Hot plate – 2 Nos.

Materials and the quantity required (for a batch of 30 students):

1. Bleached cotton Hank – 1 kg
2. Bleached Wool & Silk – 100 gms.
3. Bleached cotton Fabric - 5 meters
4. Any one colour from all major dye classes - 100 gms each.

SAFETY PRECATIONS TO BE FOLLOWED

1. Wearing the gloves in hand while taking and mixing the dyes stuffs and chemicals
2. Should wear safe foot wear, preferably shoes.
3. Should keep their shirts tucked in.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.
5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machines without doing regular safety checks and closing the safety doors.
8. Exhaust fans should be provided in the laboratory, so that unwanted smell and toxic air can be forced out

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING /
DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M- SCHEME

III SEMESTER

2015 – 2016 onwards

COMPUTER APPLICATIONS PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU.

DIPLOMA IN COMPUTER ENGINEERING

M- SCHEME

(to be implemented for the student Admitted from the Year 2015-2016 on wards)

(Implemented from the academic year 2016-2017 onwards)

Course Name : For All Branches

Subject Code : 30001

Semester : III

Subject title : COMPUTER APPLICATIONS PRACTICAL

TEACHING & SCHEME OF EXAMINATION:

No. of weeks per Semester: 15 Weeks

Course	Instruction		Examination			
			Max.			Duration
	Hours/ week	Hours/ Semester	Internal Assessment	Board Examination	Total	
COMPUTER APPLICATIONS PRACTICAL	4Hrs	60 Hrs	25	75	100	3Hrs

RATIONALE:

The application of Computer knowledge is essential the students of all disciplines of Engineering in addition to their respective branch of study. The Computer Application Practical course facilitates the necessary knowledge and skills regarding creating, working and maintaining the documents and presentation of documents with audio visual effects ina computer and produces necessary skills in E- Learning and Chatting tools..

OBJECTIVES:

On completion of the following exercises, the students will be able to

- Use the GUI operating systems
- Familiarize and customize the desktop
- Use the different facilities available in the word processor
- Prepare Power Point presentation with different formats
- Expose E-learning tools and chatting tools
- Analyze the datasheet
- Create and manipulate the database

- Create different types of charts
- Prepare PowerPoint presentation
- Understand Internet concepts and usage of e-mail

GUIDELINES:

- All the experiments given in the list of experiments should be completed and all the experiments should include for the end semester practical examination.
- The computer systems should be 1:1ratioforpracticalclasses

SYLLABUS

LAB EXERCISES

SECTION – A

GRAPHICAL OPEARTING SYSTEM

Introduction to GUI OS; Features and various versions of GUI OS & its use; Working with GUI OS; My Computer & Recycle bin ; Desktop, Icons and Explorer; Screen description & working styles of GUI OS; Dialog Boxes & Toolbars; Working with Files & Folders; simple operations like copy, delete, moving of files and folders from one drive to another, Shortcuts &Autostart; Accessories and Windows Settings using Control Panel- setting common devices using control panel, modem, printers, audio, network, fonts, creating users, internet settings, Start button & Program lists; Installing and Uninstalling new Hard ware & Software program on your computer - Copying in CD/DVD settings – Recording Audio files.

Exercises

1. a. Installing screen saver and change the monitor resolution by 1280X960
   b. Setting wall papers
   c. Creating, moving, deleting and renaming a folder
   d. Copy, paste and cut a folder/file
   e. Displaying the properties for a file or folder
2. a. Restoring files and folders from Recycle bin
   b. Creating short cuts for folder/file
   c. Finding a file or folder by name
   d. Selecting and moving two or more files/folders using mouse
   e. Sorting folders/files.

WORD PROCESSING

Introduction to Word Processing – Examples- Creation of new documents, opening document, insert a document into another document. Page setup, margins, gutters, font properties, Alignment, page breaks, header footer deleting, moving, replace, editing text in document. Saving a document, spell checker.

Printing a document. Creating a table, entering and editing, Text in tables. Changing format of table, height width of row or column. Editing, deleting Rows, columns in table. Borders, shading, Templates, wizards, drawing objects, mail merge.

Exercises

3. Create the following table and perform the operations given below

<table>
<tr><th>DAYS</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th><th>7</th><th>8</th></tr>
<tr><td>MON</td><td colspan="2">←TEST→</td><td colspan="3">A: JPP
B:RDBMS</td><td>CA</td><td>RDBMS</td><td>TUT</td></tr>
<tr><td>TUE</td><td>CA</td><td>OOP</td><td>CN</td><td>RDBMS</td><td colspan="3">A: RDBMS
B: JPP</td></tr>
<tr><td>WED</td><td>CN</td><td>RDBMS</td><td>OOP</td><td>RDBMS</td><td colspan="2">COMMUNICATION</td><td>CN</td><td>CA</td></tr>
<tr><td>THU</td><td>OOP</td><td colspan="3">A: JPP
B: RDBMS</td><td>CA</td><td>RDBMS</td><td>CN</td><td>OOP</td></tr>
<tr><td>FRI</td><td colspan="2">COMMUNICATION</td><td colspan="2">A: RDBMS
B: JPP</td><td>OOP</td><td>CN</td><td>RDBMS</td><td>CA</td></tr>
<tr><td>SAT</td><td>OOPS</td><td>RDBMS</td><td>CN</td><td>CA</td><td colspan="4">---------</td></tr>
</table>

4. Create a standard covering letter and use mail merge to generate the customized letters for applying to a job in various organizations. Also, create a database and generate labels for the applying organizations.
5. Create a news letter of three pages with two columns text. The first page contains some formatting bullets and numbers. Set the document background colour and add 'confidential' as the watermark. Give the document a title which should be displayed in the header. The header/ footer of the first page should be different from other two pages. Also, add author name and date/ time in the header. The footer should have the page number.

SPREADSHEET

Introduction to Analysis Package – Examples - Concepts of Workbook & Worksheets; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different Views of Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

Exercises

6. Create a result sheet containing Candidate's Register No., Name, Marks for six subjects. Calculate the total and result. The result must be calculated as below and failed candidates should be turned to red.

   Result is Distinction if Total >= 70 %

   First Class if Total > = 60 % and < 70 %

   Second Class if Total >= 50 % and < 60 %

   Pass if Total >= 35 % and < 50 %

   Fail otherwise

   Create a separate table based on class by using auto filter feature.

7. Create a table of records with columns as Name and Donation Amount. Donation amount should be formatted with two decimal places. There should be at least twenty records in the table. Create a conditional format to highlight the highest donation with blue color and lowest donation with red colour. The table should have a heading.

8. Create line and bar chart to highlight the sales of the company for three different periods for the following data.

SALES BAR CHART

Period	Product1	Product2	Product3	Total
JAN	35	40	50	125
FEB	46	56	40	142
MAR	70	50	40	160

SECTION – B

DATABASE

Introduction – Menus – Tool bar – Create – Edit – Save – Data types – Insert – Delete – Update – View – Sorting and filtering – Queries – Report – Page setup – Print.

Exercises

9. Create Database to maintain at least 10 addresses of your class mates with the following constraints

   - Roll no. should be the primary key.
   - Name should be not null

10. create a students table with the following fields: Sr.No, Reg. No, Name, Marks in 5 subjects. Calculate total and percentage of 10 students. Perform the following queries.

    - To find the details of distinction student

- To find the details of first class students
- To find the details of second class students

11. Design a report for the above exercise to print the consolidated result sheet and mark card for the student.

PRESENTATION

Introduction - Opening new presentation, Parts of PowerPoint window – Opening -Saving and closing presentations - Features of PowerPoint, Background design, Word art, Clip art, Drawings,3D settings - Animations, Sound, Views, types of views - Inserting and deleting slides, arranging slides, slides show, rehearsal, setup show, custom show - Creating custom presentations, action setting, auto content wizard, working with auto content wizard

Exercises

12. Make a marketing presentation of any consumer product with at least 10 slides. Use different customized animation effects on pictures and clip art on any four of the ten slides.
13. Create a Presentation about our institution or any subject with different slide transition with sound effect.

INTERNET

Introduction – Getting acquainted with Internet Connection - Browsers – Website URL - Open a website – Net Browsing - Email: Creating E-mail id – Sending , receiving and deleting E-mail - Email with Attachments – CC and BCC - Chatting – Creating Group mail - Google docs – Search Engines – Searching topics .

Most Popular Social Networking Sites : History – Features – Services – Usage of Face book , Twitter and Linkdln.

Transferring data through wifi / bluetooth among different devices.

Introduction to cybercrime – Software Piracy – Viruses – Antivirus Software

Exercises

14. Create an e-mail id and perform the following
    - Write an e-mail inviting your friends to your Birthday Party.
    - Make your own signature and add it to the e-mail message.
    - Add a word attachment of the venue route
    - Send the e-mail to at least 5 of your friends.

15. Create a presentation on Google docs. Ask your friend to review it and comment onit. Use "Discussion" option for your discussions on the presentation.

Hardware and Software Requirements

Hardware Requirements:

- Computers – 36Nos
    - Intel Core i3 Processor
    - 500 GB Hard Disk, 2 MB RAM
    - 14" Monitor
- Projector – 1 Nos
- Laser Printer – 1 No
- Internet Connection – Minimum of 512 KB

Software Requirement

- Any GUI Operating System
- Open Source Software / MS- Office

1. SemesterEndExamination–75 Marks

Content	Max.Marks
Writing Procedure – One Question from Section A	15
Demonstration	15
Results with Printout	5
Writing Procedure – One Question from Section B	15
Demonstration	15
Results with Printout	5
Viva voce	5
Total	**75MARK**

IV SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

IV SEMESTER

2015 – 2016 onwards

TECHNOLOGY OF YARN MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36141

Semester : IV Semester

Subject Title **:** TECHNOLOGY OF YARN MANUFACTURE

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
Technology of Yarn manufacture	5 Hrs	75 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	75	100	

TOPICS AND ALLOCATION OF HOURS

Sl.No.	Topic	Time(Hrs)
1	GINNING, MIXING, BLOW ROOM AND CARDING	14
2	DRAWING AND COMBING	14
3	ROVING AND SPINNING	14
4	DOUBLING, REELING, BUNDLING AND BALING	13
5	REGULAR AND SPECIALTY YARNS	13
6	TEST & REVISION	07
	Total	75

RATIONALE:

To understand about various preparatory processes in spinning like ginning, mixing, blow room, carding, drawing and combing. The students will be taught about ring spinning and post spinning, the students will study the definition and uses of different types of Fancy Yarns processes.

OBJECTIVES:

- To study about the sequence of machines in Blow room lines.
- To study the functions and passage of material through carding
- To study the functions and passage of material through drawing
- To study the functions and passage of material through combing
- To study the functions and passage of material through speed frame.
- To study the functions and passage of material through Ring Frame.
- Brief study about Modern Spinning systems.
- To study the objectives and details of Doubling, Reeling, Bundling and Baling.
- To study the functions and passage of material through 7 Lea Mechanism.
- To study the definition and uses of different types of Fancy Yarns
- To study the manufacturing process of sewing thread.

DETAILED SYLLABUS
CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**GINNING, MIXING, BLOW ROOM AND CARDING** Objects of Ginning, Types of gins. Objects of Mixing & Blending – Objects of Blow room –sequence of Blow room machines for carded yarn and combed yarn manufacture. Sequence and functions of the machines for synthetic fibre processing and their blends – Brief idea about Chute feed system- advantages and disadvantages, Objects of Carding – Principles of carding and stripping actions – passage of material through Modern HP card – salient features of Modern HP card.	**14**
II	**DRAWING & COMBING** Objects of Drawing –Principles of roller drafting –Passage of material through Modern Draw Frame – Features of modern draw frame - Principles of Auto levelers (Open loop and close loop system) - Objects of preparatory machines to Combing - Objects and Sequence of Combing action- Passage of material through the Modern Comber – Salient features of modern comber- Comparison between carded and combed yarns. Definition of semi combed yarn, combing efficiency, uni comb.	**14**
III	**ROVING AND SPINNING** Objects of Speed frame – Passage of material through the Speed Frame- Functions of Drafting system, Flyer, Spindle, False twister. Definition of Flyer lead & Bobbin lead winding. Salient features of modern speed frame. Objects of Ring fame –passage of material through modern ring frame-Functions of Rings & Traveler, S & Z Twist. Salient features of Modern Ring Frame. Objects of Rotor (Open End) Spinning & passage of material through Rotor spinning – Advantages & Limitations. Comparison between ring and OE yarns - Features of DREF 3, Air - jet and Compact spinning systems - Advantages.	**14**
IV	**DOUBLING, REELING, BUNDLING AND BALING** Objects of Doubling – Principles of doubling. Passage of material through Dry and Wet doubling machines – End uses of doubled yarn. Objects of Two for One Twister - Passage of material through Two for One Twister – advantages & disadvantages .Objects of Reeling – Types and Systems of Reeling. Passage of material through 7 Lea reeling machine – Objects of Bundling and Baling – Specifications of bundling & baling.	**13**

V	**REGULAR AND SPECIALTY YARNS** Definition and end uses of Spun yarn - mono & multi-filament yarn - Cable yarns – Slub yarns – Flock or Flake yarns –Boucle yarn – Gimp yarn – Spot and Knot yarns – Loop or Curl yarn– Grandrelle yarns – Spiral or Cork screw yarns – Chenille yarn –Covered yarn – Core yarn –Faciated yarn – Mélange yarns-Elastomeric yarns – Metallic yarns– (No Method of production Details) - Sewing threads – Fibres for sewing threads- Properties required for sewing threads – Process flow chart for cotton and spun polyester sewing thread manufacture.	**13**

TEXT BOOKS:

Author	Title	Publisher	Year
A.V.Mani	Spun yarn technology -volume I & II	Saravana Publications, Madurai	1996
Jaganathan.R	Cotton spinners Hand book	Mahajan Brothers Ahmadabad 380009	--

REFERENCE BOOKS:

SL. NO	Title	Author	Publisher	Year
1	W.A.Hunter	Opening and cleaning	The Textile Institute Manchester, U.K.	**---**
2	W.S.Taggert	Cotton spinning	S.S. Shroff, Bombay	**---**
3	W.Klein	Short Staple Spinning Series Volume I, II & III	The Textile Institute Manchester, U.K.	**1987**
4	Hanter.W.A	Manual of cotton spinning volume IV & V	Textile Institute Manchester	
5	Srinivasamoorthy.H.V	Cotton waste industry	Victoria Jubilee Technical Institute, Matunga, Bombay 400019	

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

IV SEMESTER

2015 – 2016 onwards

TECHNOLOGY OF FABRIC MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36142

Semester : IV Semester

Subject Title **:** **TECHNOLOGY OF FABRIC MANUFACTURE**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
Technology of Fabric Manufacture	5 Hrs	75 Hrs	Internal Assessment	Board Examination	Total	
			25	75	100	3 Hrs

Topics and Allocation of Hours:

Sl.No.	Topic	Time(Hrs)
1	WEAVING PREPARATORY PROCESSES	14
2	WOVEN FABRIC FORMATION	14
3	KNITTED FABRIC FORMATION	14
4	FABRIC STRUCTURES	13
5	NON WOVEN & SPECIAL FABRICS	13
6	TEST & REVISION	07
Total		75

RATIONALE:

Fabric Formation is the second major process in Textile industry in which yarn is converted into fabric. So studying the different techniques of fabric formation like Weaving, Knitting and Non-Woven techniques are very important for a textile technician. Ability to analyse different types of woven and knitted fabric structures is also an essential skill.

OBJECTIVES:

At the end of the study of IV Semester the student will be able to

Unit – I: Weaving Preparatory Processes

- Study about the preparatory processes in weaving.
- Learning the different types of knotting equipment, Splicing and Auto coner.

Unit – II: Woven Fabric Formation

- Know the primary and secondary motions of plain loom.
- Understand the features of different types of shuttleless looms.
- Understand the defects in woven fabric.

Unit – III: Knitted Fabric Formation

- Understand the basic terminology & elements in knitting
- Know the basic principles & working of plain weft knitting machines.

Unit – IV: Fabric Structures

- Know and analyze the different types of woven structure.
- Know and analyze the different types of knit structure.

Unit – V: Non Woven & Special Fabrics

- Have knowledge on Non Woven and its applications.
- Know the definition special fabrics

DETAILED SYLLABUS
CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**Weaving Preparatory Process :** Sequence of processes involved in Weaving preparatory with objectives- winding, warping, sizing - Passage of material in Autoconer- Features of Autoconer- Functions of Tensioners, Slub catchers, Electronic Clearers and Splicer – Comparison between Knotting and Splicing – Advantages of splicing. – Object of Sectional Warping and its salient features - Passage of material in Beam warping - Passage of material in Sizing machine.	14
II	**Woven Fabric Formation** Looms- types- Features of Tappet, Dobby, Jacquard looms – Object of Drawing-In and Denting - Passage of Warp in a conventional Plain loom – Objects of Primary, Secondary & Auxiliary motions in a Plain loom – Features of Automatic Shuttle Loom and Shuttleless Loom - Shuttleless looms Classification (Flexible Rapier, Projectile, Air jet and Water jet) and its advantages - Defects in Woven fabrics - Missing ends, Warp & weft streaks, Floats, Temple marks and Stains.	14
III	**Knitted Fabric Formation** Knitting – Definition, Classification – Uses- Comparison between knitting and weaving - Important Knitting terms - Course, Wales, Texture, Gauge, Loop length, Loop density, Face loop, Back loop- Knitting elements -. Needles (Latch, Beard and Compound), Sinker, Cam- Passage of material in a Circular plain Weft knitting machine - Knitting cycle of Latch needle in plain weft knitting machine- Uses of Double Jersey, Flat and Warp knitting machine. Defects in Weft knit fabrics - Vertical lines, Horizontal lines,	14

	Drop stitches, Distorted stitches and Press off - Comparison between woven and knitted fabrics.	
IV	**Fabric Structures** **Woven Structures:** Definition of Design, Draft, Peg plan – Design, Draft & Peg plan for Plain weave– 4x4 Matt weave– 2/1, 3/1 Twill weave – 5 end Satin weave and Sateen weave – End uses of above fabrics. **Knit Structures:** Knit, Tuck and Miss Stitches – Drawing of Graphical and Needle (Diagrammatic) notation of single jersey Plain, purl and Double jersey Rib. Drawing of Needle (Diagrammatic) notation of Interlock and Lacoste fabrics.	13
V	**Non Woven and Special Fabrics** Non-Woven fabrics – definition - uses - classification of Non Woven Fabrics. Web Formation Techniques – Staple Fibre Webs – Wet laid webs, Dry laid webs, Parallel, Cross and Random laid webs – Continuous Filament webs – Spun laid webs and Melt blown webs. Non Woven Fabric Formations Techniques – Adhesive bonding, Thermal Bonding, Needle punching and bonding of spun laid webs. Definition of Lace fabrics and Braided fabrics.	13

Text books:

Title	Author	Publisher	Year
Principles of weaving	R Marks ATC Robinson	The Textile Institute, Manchester, UK	1976
The Motivate Series	Andrea Wynne	MacMillan Education Ltd, London and Basingstoke.	1997
Cotton Yarn Weaving	Kanungo R.N	Textile Association India, Ahmadabad	1980
Weaving machines, Mechanisms & Management	M K Talukdar P K Sriramulu D.B Ajgaonkar	Mahajan Publications Pvt Ltd, Ahmadabad-9	1998
Modern Weaving Technology	J K Arora	Abhisek Publications, Chandigarh- 17	2008

Principles of Knitting	D B Ajgaonkar	Universal Publishing Corporation	1988
Knitting Technology	David J Spencer	Pergamon Press Oxford	1988
Reference books:			
Warp Knitting	D G B Thomas	Merro Pub. Co. ISA Buld. UK	1976
Textile Fibre to Fabric	Bernard P. Corbman	McGraw –Hill Book co., Singapore.	1983
Yarns and Technical Textiles	K.P.Chellamani	SITRA, Coimbatore	1999
High speed Weaving	Jeyachandran.K	P.S.G.Tech, Coimbatore.	1990

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

IV SEMESTER

2015 – 2016 onwards

DYEING OF MANMADE FIBRES AND BLENDS

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36143

Semester : IV Semester

Subject Title : DYEING OF MANMADE FIBRES AND BLENDS

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 15

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
DYEING OF MANAMADE FIBRES AND BLENDS	5 Hrs	75 Hrs	25	75	100	3 Hrs

Topics and Allocation of Hours:

Unit	Topic	Time (hrs.)
1	PRETREATMENTS OF SYNTHETICS AND BLENDS	**14**
2	DYEING OF POLYESTER	**14**
3	DYEING OF NYLON AND ACRYLICS	**13**
4	DYEING OF BLENDS	**13**
5	DYEING MACHINES	**14**
6	TEST & REVISION	**07**
	Total	**75**

RATIONALE:

This subject covers the pre-treatment and dyeing of synthetic fibres such as Polyester, Nylon and acrylic and blended with natural fibres such as cotton and wool. It helps the students to acquire enough knowledge in this field and the same will help them to work in manmade fibres and blends processing mill. Since today, man-made fibres and blends are mostly used as dress materials as well as industrial purposes.

OBJECTIVES:

- To know how pre-treatment is carried out for synthetics and blends.
- To know about the importance of heat setting of various synthetic fibres
- To know how disperse dyes is applied on polyester material.
- To know how nylon is dyed with acid dyes.
- To know how the acrylic fibre is dyed using cationic dyes.
- To have an idea of dyeing of synthetics and blends
- To know about the working of various dyeing machines
- To know about the garment dyeing and its accessories dyeing machines.

DETAILED SYLLABUS

CONTENTS

UNIT	NAME OF TOPICS	Hours
1	**PRE-TREATMENTS OF SYNTHETICS AND BLENDS** Pre-treatments for 100% Polyester – scouring, heat setting, singeing, bleaching. 100% Nylon – scouring, heat setting, bleaching. 100% Acrylic – scouring, bleaching. Pre-treatments for blends - Polyester / Cotton - desizing, scouring, singeing, mercerizing, heat setting and bleaching. Pre-treatments for Polyester / Wool - removal of heavy oil stains, presetting, scouring, heat setting, brushing, cropping and singeing.	**14**
2	**DYEING OF POLYESTER** Disperse dyes – classification, properties, Mechanism of dyeing. Carriers - characteristics and function. Function of dispersing agents, leveling agents, antifoaming agents, redox buffer. Definition of Tg - Effect of Tg on dyeing of Polyester. Methods of Polyester dyeing - Carrier dyeing, HTHP dyeing, Thermosol dyeing. Various problems involved during dyeing and remedies.	**14**
3	**DYEING OF NYLON AND ACRYLICS** Dyeing of Nylon with acid dyes, Acid metal complex dyes and Disperse dyes. Acrylic dyeing - Function of retarders, Fibre saturation value, Combination value, Dye saturation factor. Effect of Tg on acrylic dyeing. Mechanism of dyeing of acrylics with cationic dyes. Dyeing of acrylic with cationic dyes and disperse dyes.	**13**
4	**DYEING OF BLENDS** Dyeing of Polyester / Cotton blends by single bath and two bath methods using Disperse and Reactive dyes. Dyeing of Polyester / Wool blends by two bath method with Disperse / Acid dyes. Dyeing of Nylon / Cotton blends with Acid / Vat dyes. Dyeing of Acrylic / Cotton blends with Cationic / Reactive dyes. Dyeing of Acrylic / Wool blends with Cationic / Acid dyes.	**13**

5	**DYEING MACHINES** Fibre dyeing machine – Rotary dyeing machine. Yarn dyeing machine - Cheese dyeing machine. Woven fabric dyeing machine - Jet, Beam dyeing machine. Knitted fabric dyeing machines - Air flow. Continuous dyeing machine - Padding mangle. Other dyeing machines – Garment dyeing machine, Button and Zip Dyeing machines.	**14**

TEXT BOOKS:

S. No	Title	Author	Publisher	Year of Publishing
1	Technology of Textile Processing, Technology of Dyeing Ed. 3	Shenai V.A	Sevak Publication, Bombay	1982
2	Chemical processing of Synthetic Fibres and blends	Datye K.V and Vaidhay A.A	John Wiley and Sons, New York.	1982

REFERENCE BOOKS

S. No	Title	Author	Publisher	Year of Publishing
1	Dyeing and Chemical Technology of Textile Fibres	Trotman E.R	Charles Griffin Co Ltd, 42, Dhury Lane, London, WC	1981
2	Technology of Bleaching and Dyeing of Textile Fibres,Vol.1, Part 2	Chakravarthy RR	Mahajan Book Distributors, Ahmadabad	1982
3	Processing of Manmade Fibres	Usenko V	MIR Publishers, Moscow	1975
4	The Theory and practice of wool dyeing	Bird CL	Society of Dyers and Colourists, England	1972

5	Orientation Programme in Chemical Processing for Senior Executives	Achwal, Dixit Joshi and Teli	Textile Association (India), Bombay	1991
6	Maintenance in chemical processing	Gokhle SV and Dhingra A.K	Department of Industry ‘s Textile Mills, Ahmadabad Textile Research Association, PO Polytechnic, Ahmadabad	1984

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

IV SEMESTER

2015 – 2016 onwards

TECHNOLOGY OF TEXTILE FINISHING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36144

Semester : IV Semester

Subject Title **:** TECHNOLOGY OF TEXTILE FINISHING

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours/ week	Hours/ Semester	Marks			Duration
			Internal	Assessment	Board	
TECHNOLOGY OF TEXTILE FINISHING	**5**	**75**	**25**	**75**	**100**	**3 Hrs**

Topics and Allocation of Hours:

Sl.No.	Topic	Time(Hrs)
1	INTRODUCTION TO TEXTILE FINISHING	**14**
2	RESIN FINISHING & ECOFRIENDLY CREASE RECOVERY FINISHES	**14**
3	FUNCTIONAL FINISHES	**14**
4	FINISHING OF PROTEIN, SYNTHETIC FIBRES AND BLENDS	**13**
5	PHYSICAL FINISHES WITH MACHINERIES	**13**
6	TEST & REVISION	**07**
	TOTAL	**75**

RATIONALE:

Physical and chemical finishing processes help to improve the feel, aesthetic appeal, handle and functional property of the textile material. Every textile material needs to be given one or more finishes. A detailed study about various finishes is absolutely necessary for a processing technician.

OBJECTIVES:

1. To know about the comfort aspects of fabrics during wearing.
2. To know the purpose of giving finishes to the fabrics.
3. To gather knowledge of the application of auxiliaries according to the end use of the fabric.
4. To have knowledge on finish recipe formation.
5. To select the type of finishing with respect to our end use requirement.
6. To find out the change in physical properties of the fabric by finishing.

DETAILED SYLLABUS

CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**INTRODUCTION TO TEXTILE FINISHING** Objectives of finishing - Classification of finishing - chemical and mechanical -Types of finishes- durable, semi durable & temporary finishes - softeners-properties, merits & demerits of anionic, cationic, non - ionic & reactive softeners- - Brief study on types of starches for temporary stiff finish – permanent stiff finish – Buckram finish	**14**
II	**RESIN FINISHING & FINISHING WITH OTHER CROSS LINKING AGENTS** Objectives of resin finishing-types of resins(deposition & cross linking type) - N methylol resin structures (DMU, DMEU, DMDHEU & DMPU) - Resin finishing process for 100% cotton – moist cross linking (MXL) and its advantages over conventional dry finishing and dry cross linking process – DP rating and tensile strength loss factor curves - merits and demerits of resin finishing - Eco friendly crease recovery finish with poly carboxylic acid and glyoxal - durable press finish recipe and process for garments..	**14**
III	**FUNCTIONAL FINISHES** Importance of poly ethylene emulsion and silicone emulsion in textile finishing. Difference between water proof and water repellent finish - Application of soil release finish, water repellent finish, flame retardant finish, anti microbial finish, rot and mildew proof finish, UV protection finish and fragrance finish on cotton material – Peach finish - Definition of limiting oxygen index - Bio-polishing with Enzymes .	**14**
IV	**FINISHING OF PROTEIN, SYNTHETIC FIBRES AND BLENDS** Objectives of milling, crabbing and decatising – Anti felting process (chlorination) for wool - Carbonizing of wool – Moth proof finish for wool blends - weighting of silk - scroopy finish, carbonizing of P/C blend - Delustering of rayon - Weight reduction of polyester - pilling and its control – antistatic finish.	**13**

V	**PHYSICAL FINISHES WITH MACHINERIES** Importance of damping – principle of pre shrinking - sanforising machine for pre shrinking - objective of calendaring - types of calendering machines (7 bowl calender, friction & schreiner) - Detailed study of compacting machine. Brief idea on dimensional stability- stenter (pin & clip) - Hot flue dryer, Float dryer – Brief study on foam finishing, surface finishing machines like sueding and raising	**13**

TEXT BOOKS:

Author	Title	Publisher	Year of Publication
Schindler W D and Hauser P J	Chemical Finishing of Textiles	Wood head Publishing Limited	2004
Marsh J.T	Textile finishing	B.I. Publications, New Delhi	1982
Shenai.V.A	Technology of Textile Processing Vol.10 Technology of finishing	Sevak Publications, Wadala, Mumbai-	1987

REFERENCE BOOKS

Author	Title	Publisher	Year of Publication
Hall A.J.	Textile finishing	Iliffe Books Ltd., London	1982
Harrison	Textile finishing	Textile Institute, Manchester	1978
Patel M.B.	Textile Wet Processing Machinery - Part I Bleaching, finishing and mercerizing machines	S.N.Patel, Baroda	1982
Srivatsava. SB	Recent processes of Textile Bleaching, Dyeing and finishing	SBP Board of Consultant Engineers, Delhi	1981
Datye K.V. and Vaidya A.A	Chemical Processing of synthetic fibres and blends	Wiley International Publication, New York	1982
Gokhle SV & Dhingra A.K	Maintenance and chemical processing department of Textile Mill	Ahmadabad Textile Industry Research Association, Ahmadabad	1984

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

IV SEMESTER

2015 – 2016 onwards

DYEING OF MANMADE FIBRES AND BLENDS - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36145

Semester : IV Semester

Subject Title : DYEING OF MAN MADE FIBRES & BLENDS – PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
DYEING OF MAN MADE FIBRES & BLENDS PRACTICAL	5 Hrs	75 Hrs	25	75	100	3 Hrs

RATIONALE:

It helps the students to study the actual conditions and different methods of dyeing of manmade fibres and blends. Students are able to acquire more practical knowledge in dyeing of manmade fibres and blends. They are also to be practiced in sample dyeing machines, which help them to know the difficulties and problems in the dyeing of synthetic fibres and blends. It will be easier for them to work in the industries.

GUIDELINES:

- All the Twelve experiments given in the list of experiments should be completed and given for the board practical examination.
- In order to gain in - depth practical knowledge, every student should individually carry out the experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than three students while examining a batch of 30 students during Board Examinations.

ALLOCATION OF MARKS

Procedure	: 20 marks
Calculation	: 20 marks
Result with sample	: 30 marks
Viva voce	: 05 marks
Total	: 75 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. Dyeing of Polyester, Nylon and Acrylic materials with various dye stuffs

To study the dyeing procedure for polyester, nylon and acrylic materials using their suitable dye stuffs.

2. Dyeing of synthetic blends

To study the dyeing procedure for synthetic blends such as Polyester / Cotton, Polyester / Wool, and Acrylic / Wool using selected dye stuffs.

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Dyeing of Polyester with Disperse dyes by Carrier method
2. Dyeing of Polyester with Disperse dyes by HTHP method.
3. Dyeing of Nylon with Acid dyes.
4. Dyeing of Nylon with Acid metal complex dyes
5. Dyeing of Nylon with Disperse dyes
6. Dyeing of Acrylic with Cationic dyes
7. Dyeing of Acrylic with Disperse dyes.
8. Dyeing of Polyester / Cotton blends with Disperse / Reactive dyes by single bath process
9. Dyeing of Polyester / Cotton blends with Disperse / Reactive dyes by two bath process.
10. Dyeing of Polyester / Wool blends with Disperse / Acid dyes.
11. Dyeing of Polyester / Wool blends with Disperse / Acid metal complex dyes.
12. Dyeing of Acrylic/ Wool blends with Cationic / Acid dyes.

LIST OF EQUIPMENTS AND THE QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

List of Equipments:

1. Dye bath with 6 pots – 5 Nos
2. Heater - 2 nos
3. HTHP dyeing m/c - 2 nos

Materials and the quantity required (for a batch of 30 students)

1. Bleached Polyester material - 3 mts
2. Bleached Nylon material - 3 mts.
3. Bleached Acrylic material - 3 mts
4. Bleached P/C, P/W, N/C, A/C and A/W material -3 mts of each blend

SAFETY PRECATIONS TO BE FOLLOWED

1. Wearing the gloves in hand while taking and mixing the dyes stuffs and chemicals
2. Should wear safe foot wear, preferably shoes.
3. Should keep their shirts tucked in.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.
5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machines without doing regular safety checks and closing the safety doors.
8. Exhaust fans should be provided in the laboratory, so that unwanted smell and toxic air can be forced out

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

IV SEMESTER

2015 – 2016 onwards

TECHNOLOGY OF TEXTILE FINISHING - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36146

Semester : IV Semester

Subject Title **:** TECHNOLOGY OF TEXTILE FINISHING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours /Semester	Internal Assessment	Board Examination	Total	
TECHNOLOGY OF TEXTILE FINISHING – PRACTICAL	**5 Hrs**	**75 Hrs**	**25**	**75**	**100**	**3 Hrs**

RATIONALE:

Every textile material needs to be given one or more finishes. A practical course work study about various finishes is absolutely necessary for a processing student to gain technical insight into various physical and chemical finishing processes

GUIDELINES

- All the twelve experiments given in the list of experiments should be completed and given for the board practical examination.
- In order to gain in - depth practical knowledge, every student should individually carry out the experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than three students while examining a batch of 30 students during Board Examinations.

ALLOCATION OF MARKS

Recipe and Procedure	:	20 marks
Calculation	:	20 marks
Result with sample	:	30 marks
Viva voce	:	05 marks
Total	:	75 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. FINISHING OF COTTON BY USING STARCH, SOFTENER AND RESIN

To impart stiff finish in cotton fabric using starch

To impart soft finish in cotton fabric using softener

To impart the crease recovery behavior in cotton fabric by treatment with resin

2. BACK FILLING DURABLE PRESS FINISH ON THE FABRIC COTTON

To give back filling of the cotton fabric using a suitable recipe.

To impart the durable press finish on the cotton fabric sample using resins

3. APPLICATION OF WATER REPELLENT FINISH AND FLAME RETARDANT FINISH TO THE GIVEN FABRIC SAMPLE

To give water repellent finish to cotton using water repellent chemicals.

To give flame retardant finish to cotton using flame retardant chemicals.

4. ESTIMATION OF WARP WISE / WEFT WISE SHRINKAGE OF THE GIVEN FABRIC

To estimate the warp wise / weft wise shrinkage of the given fabric.

5. IMPARTING SCROOPY FINISH AND WEIGHTING OF SILK

To impart scroopy finish in silk.

To increase the weight of the silk.

6. CARBONIZING OF P/C BLEND

To dissolve the cotton portions from the P/C blend by using 70% H_2SO_4.

7. BIO POLISHING

To give Bio polish on the cotton fabric by using enzymes.

8. ANTI STATIC FINISH ON THE GIVEN MATERIAL

To give anti static finish on the given material.

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Finishing of the given cotton fabric using 2% starch.
2. Finishing of the given cotton fabric using 2% softener.
3. Finishing of the cotton fabric using the given resin.
4. Imparting Durable press finish on the cotton fabric sample using resins.
5. Application of water repellent finish to the given fabric sample.
6. Application of Flame retardant finish to the given fabric sample.
7. Estimation of warp wise / weft wise shrinkage of the given fabric.
8. Imparting scroopy finish for silk.
9. Carry out the Weighting of silk.
10. Carbonizing of P/C blend.
11. Bio polishing using enzymes.
12. Application of anti static finish on the given material.

LIST OF EQUIPMENTS AND THE QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

Materials required: (for a batch of 30 students):

1. Grey silk fabric.
2. P/C blended fabric.
3. Full bleached cotton fabric

Equipments required: (for a batch of 30 students):

1. Laboratory Padding mangle.-1
2. Drying and curing oven with the temperature control.-1

SAFETY PRECATIONS TO BE FOLLOWED

1. Wearing the gloves in hand while taking and mixing the dyes stuffs and chemicals
2. Should wear safe foot wear, preferably shoes.
3. Should keep their shirts tucked in.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.

5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machines without doing regular safety checks and closing the safety doors.
8. Exhaust fans should be provided in the laboratory, so that unwanted smell and toxic air can be forced out

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

M – SCHEME

IV SEMESTER

2015 – 2016 onwards

ENGINEERING UTILITIES - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36147

Semester : IV Semester

Subject Title : ENGINEERING UTILITIES – PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ENGINEERING UTILITIES – PRACTICAL	4 Hrs	60 Hrs	25	75	100	3 Hrs

RATIONALE:

To learn about the engineering aspects of the textile processing machine knowledge about their mechanical, electrical and electronics components is absolutely necessary. This would help the technicians in emergency situations to troubleshoot, while working in the industry.

GUIDELINES

- All the twelve experiments given in the list of experiments should be completed and given for the board practical examination.
- In order to gain in - depth practical knowledge, every student should individually carry out the experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than three students while examining a batch of 30 students during Board Examinations.

Objectives:

To develop basic knowledge and operation of

1. Mechanical equipment and systems like – drives, belt, gear, pumps, bearings, and lubrication systems.
2. Electrical machines – electrical measuring instruments, transformer, alternator, starter with induction motor.
3. Electronic components – Diodes and Rectifiers.

ALLOCATION OF MARKS (for Experiment No. 1 to 5)

Sketch	:	35 marks
Procedure	:	35 marks
Viva voce	:	05 marks
Total	:	75 Marks

ALLOCATION OF MARKS (for Experiment No. 6 to 12)

Circuit diagram	:	20 marks
Connection	:	20 marks
Execution	:	30 marks
Viva voce	:	05 marks
Total	:	75 Marks

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Study of different types of Drives (Belt & Chain).
2. Study of Gear Drives.
3. Study of pumps.
4. Study of bearings.
5. Study of lubrication system.
6. Verification of Ohm's law using Voltmeter and Ammeter
7. Testing of A.C starters
8. Load Test on single phase transformer
9. Load Test on 3 phase alternator.
10. Load Test on 3 phase induction motor.
11. Half wave rectifiers using diodes

12. Full wave rectifiers using diodes

LIST OF EQUIPMENTS AND THE QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

EQUIPMENTS REQUIRED:

Mechanical Lab Equipments. (Mechanical laboratory to be used)

1. Belt drive system, chain drive system.
2. Using auto mobile lab gear driving mechanism to be studied.
3. Various pump system available in FM lab.
4. Electrical and electronics lab equipments:

1. Induction motor- 3 phase - 2 nos.
2. Alternator – 3phase - 1 nos.
3. AC Voltmeter – 5 Nos
4. AC Ammeter – 5 Nos

SAFETY PRECAUTIONS TO BE FOLLOWED

1. Wearing the gloves in hand while taking and mixing the dyes stuffs and chemicals
2. Should wear safe foot wear, preferably shoes.
3. Should keep their shirts tucked in.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.
5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machines without doing regular safety checks and closing the safety doors.
8. Exhaust fans should be provided in the laboratory, so that unwanted smell and toxic air can be forced out

V SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

V SEMESTER

2015 – 2016 onwards

TEXTILE TESTING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36051

Semester : V Semester

Subject Title **:** TEXTILE TESTING

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours /Week	Hours / Semester	Marks			Duration
TEXTILE TESTING	5	75	Internal Assessment	Board Examination	Total	
			25	75	100	3 Hrs

Topics and allocation of hours:

Sl.No.	Topic	Time (hrs.)
1	MOISTURE AND ITS RELATIONS IN TEXTILES	**14**
2	FIBRE TESTING	**14**
3	YARN TESTING	**14**
4	FABRIC TESTING	**13**
5	STATISTICAL QUALITY CONTROL	**13**
6	TEST & REVISION	07
Total		75

RATIONALE:

This subject deals about moisture and its relations in textiles, fibre testing, yarn testing, fabric testing and statistical quality control. After studying this subject, student will be able to understand the principles & working of testing instruments.

OBJECTIVES

- To know the relationship of moisture with textile and related terms & definitions.
- To understand the principle and the methods of determining the moisture in the atmosphere and the textile materials.
- To know the properties and their importance of fibre this is the raw material for all the textile goods.
- To understand the principles and the methods of testing the fibres to determine their basic characteristics.
- To know the properties and the importance of the yarn.
- To understand the principles and the methods of testing the yarn to determine its properties
- To know the quality characteristics of the fabric required for different end uses.
- To study the principles and the methods of testing the fabric to determine their quality characteristics.
- To study the statistical methods involved in controlling the quality of the textile products during their manufacture
- To learn about the application of the statistical methods to suit textile processes.

DETAILED SYLLABUS
CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**MOISTURE AND ITS RELATIONS IN TEXTILES** Humidity and its importance in Textiles - Definitions of Absolute Humidity, Relative Humidity, Standard Testing atmospheric condition, Measurement of Humidity - Wet and dry bulb Hygrometer, Definition of Moisture content, Moisture regain - Estimation of moisture content and regain using Conditioning oven and Shirley Moisture meter, Standard regain – Definition - standard regain values of cotton, viscose, silk, wool, nylon and polyester - Effect of moisture regain on fibre properties	14
II	**FIBRE TESTING** Length – Importance of fibre length - Definition of effective length - Methods of measuring fibre length by Baer Sorter and Digital Fibro graph. Fibre fineness - Importance of fibre fineness - Methods of measuring fibre fineness by Sheffield micronaire instrument. Fibre maturity – Importance, measurement of fibre maturity by sodium hydroxide swelling method - Maturity ratio and Maturity coefficient. Fibre strength - Importance and method of measuring fibre strength by Stelometer. Estimation of trash content by Shirley Trash Analyser. Fibre Quality Index - Brief idea about High volume instrument and Advanced Fibre Information System(AFIS)	14
III	**YARN TESTING** Yarn count – Determination of yarn count by Auto sorter and Beesley balance - Importance of CSP and RKM - Importance of Twist - Estimation of yarn twist – single yarn, doubled yarn. Importance of yarn strength - Principle of working of yarn strength testers – CRE,CRL and CRT - Working of single yarn strength tester of pendulum lever type, lea strength tester and principle of Instron tester. Yarn irregularities – thick, thin, slub, nep - Methods of Assessing yarn evenness by yarn - appearance board and Uster Evenness Tester - Brief study of Uster classimate.	14

IV	**FABRIC TESTING** Crimp-Definition, Importance – Shirley crimp tester. Study of Shirley stiffness tester and Shirley crease recovery tester. Definition of fabric handle, serviceability, abrasion, pilling and drape. Importance of fabric tensile strength, tearing strength and bursting strength. Study of fabric tensile strength tester. Definition of Fabric Air Permeability and Fabric Air Resistance	13
V	**STATISTICAL QUALITY CONTROL** Classification and Tabulation of Data - Frequency Diagram – Histogram and frequency polygon. Measures of Central tendency - Mean, Median, Mode. Simple Calculation of Mean, Median, Mode. Measures of dispersion - Mean Deviation, Percent Mean Deviation, Standard Deviation and Co-efficient of variation. Simple calculation of MD, PMD, SD & CV. Normal distribution curve and its properties. Quality Control Chart - Definition, use, Construction of control chart for Averages and Ranges.	13

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TEXT BOOKS:

S. No	Title	Authors	Publisher	Year
1	Hand Book of Textile Testing and quality Control	E.B.Groover and D.S.Hamby	Mohinder Singh Sejwal (for Wiley Eastern Ltd New Delhi, India	1960
2	Hand Book of Methods of Test for Cotton Fibers Yarn and Fabrics	V.Sundaram and R.L.N.Iyengar	CTRL., Mumbai	1988
3	ISI Hand book of Textile Testing		Indian Standard Institution, New Delhi, India	1982

REFERENCE BOOKS:

S.No	Title	Authors	Publisher	Year
1	Principles of Textile Testing	J.E.BOOTH	Butterworth Scientific London	1996
2	The Characteristics of Raw Cotton Vol II Part-I in the series manual of Cotton Spinning	E.Lord	The Textile Institute and Butterworth, England	1961
3	Methods of Test for Textiles – B.S. Hand book No.11,	B.S.I	British Standards Institution, London, England	1963
4	Method of Test for Textiles BS Hand book NO 11,	B.S.I	British Standards Institution, London, England	1963
5	Statistical methods	Gupta	S.Chand & Co, New Delhi	1983
6	An Outline of statistical methods for use in the Textile Industry	A.Brearley & D.R.Cox	WIRA, LEEDS,U.K.	1974
7	Theory and problems of Statistics	M.R.Spiegel	McGraw Hill, International Book company New York, London	1972

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

V SEMESTER

2015 – 2016 onwards

TECHNOLOGY OF TEXTILE PRINTING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36152

Semester : V Semester

Subject Title : **TECHNOLOGY OF TEXTILE PRINTING**

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 15

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TECHNOLOGY OF TEXTILE PRINTING	5 Hrs	75 Hrs	25	75	100	3 Hrs

Topics and Allocation of Hours:

Unit	Topic	Time (hrs.)
1	INTRODUCTION TO TEXTILE PRINTING	14
2	DIRECT STYLE OF PRINTING	14
3	DISCHARGE & RESIST STYLES OF PRINTING	14
4	ADVANCED TEXTILE PRINTING	13
5	PRINTING MACHINES	13
6	TEST & REVISION	07
	Total	75

RATIONALE

After the preparation of textile materials, it is to be sent for printing. Technology of textile printing covers the second main division of Textile Processing Industries. It contains the direct style of printing, Discharge and resist style of printing involves background colour application, print paste recipe formulation for colour and white, fixation and washing treatments. Also it includes advanced textile printing and printing machines, this enable the students to acquire adequate knowledge in printing subjects to suit them in a better position in the printing industries.

OBJECTIVES

- To learn the principles of printing, basics like repeat, use of squeegees, screen mesh number, colour consumption idea etc.,
- To know the various ingredients of printing paste, their role, types of thickeners and uses.
- To understand methods and styles of printing
- To learn in a detailed manner about various direct styles of printing, after processes machineries and washing.
- To learn the principles of discharge and resist style of printing, mechanisms, comparisons, merits and demerits of each style.
- To know the popular discharge and resist styles applied for 100% cotton and polyester materials.
- Specific study with reference to hosiery printing, precautions and various fancy styles for garment printing
- To study the working of transfer printing, table screen printing, garment printing machines, advanced CAD systems, modern engraving and ink jet printing systems.
- To acquire knowledge on rotary and flat screen preparations, working of rotary and flat bed printing machines, printing defects.
- Specific study with reference to Batik, Tie & Dye, IKAT, Kalamkari & Crimping styles.

DETAILED SYLLABUS

CONTENTS

UNIT	NAME OF TOPICS	Hours
1	**INTRODUCTION TO TEXTILE PRINTING** Definition of Textile printing - Differences between printing & dyeing - Fabric requirements for printing – Definition of methods of printing (Flat, Rotary). Definition of styles of printing (Direct, Discharge, Resist Style) – Key Terminology in printing – Repeat (Basic design, M/c Screen repeat), stepping up pattern, squeegees and its types, mesh number and its importance, bolting cloth, coverage of design and factors involved in estimation of colour paste consumption. List of printing paste Ingredients – functions with examples - Classification of thickeners - Requirements to be a good thickener - Brief study on thickeners like CMC, Sodium Alginate, Guar gum, gum tragacanth, synthetic thickeners.	14
2	**DIRECT STYLE OF PRINTING** Direct style of printing - Definition – Advantages and Disadvantages - Printing with Pigments. Reactive dyes printing by steaming and silicate padding – camouflage printing using Vat dyes– precautions -printing with Disperse dyes on polyester by HTHP and HT steaming methods, Direct style of printing on Nylon and Silk with Acid and Metal Complex dyes, Printing of acrylics with cationic dyes - Various fixation methods and its importance for prints, Fixation machines - Working of star ager, HTHP ager, loop ager and its latest development - Washing and its importance.	14
3	**DISCHARGE & RESIST STYLES OF PRINTING** Discharge style of printing – Definition - Colour and White Discharge – Brief study on discharging agents - White and colour discharge printing styles on reactive ground with vat dyes. Precautions - Pigment discharge print on reactive ground - White and colour discharge printing styles on Polyester with Disperse ground. Problems associated with Discharge style of printing. Resist printing - Definition – Colour and white resist - General idea	14

	of resist style printing mechanism - Mechanical resisting - Batik and Tie &Dye - Chemical resist - Pigment resist on reactive ground - Alkali resist on polyester	
4	**ADVANCED TEXTILE PRINTING** Various forms of Hosiery Printing – Tubular printing – problems, precautions and advantages, slit open printing –gumming, cutting m/c, advantages. Fancy styles - Khadi (White and Colour) printing, PVC and Non PVC Plastisols Inks, pearl prints, glitters, metallic prints (Gold and Silver), Flock printing by Electro static method, High density printing, Puff and suede print, Fluorescent and foil print. Transfer printing – principles of Sublimation, Advantages & Limitations. Working of Garment Printing m/c. Table screen printing - limitations and advantages - Principles and applications of CAD systems – Advantages. Introduction, Principles, Line diagram and working of Ink Jet Printing m/c, Advantages and limitations	**13**
5	**PRINTING MACHINES** Screen preparation for flat bed and rotary screen printing machines – Working of roller printing machines, working of fully automatic flat bed printing machine. Working of Rotary printing m/c. Comparison of Rotary and flat bed printing machines. Brief study on special printing styles like IKAT printing, Kalamkari printing, Burnt out styles, Capsule printing, crimp and crepon style. Various printing defects with respect to Fabric, Paste, and screen preparation, Machines (Table, Flat Bed and Rotary printing machines), Fixation and Washing.	**13**

TEXT BOOKS:

S. No	Title	Author	Publisher	Year of Publishing
1	Technology of Textile Printing	Prayag. R. S.	Mrs. Prayag 127 Belgium Rd, Dharwad	1986
2	Principles of Cotton printing edition - 2	Kale.D.G	Mahajan Book Depot, Ahmedabad-9	1976
3	Technology of	Shenai.V.A	Sevak	1982

	Textile Processing Vol. IV		Publications, Mumbai	
4	Textile Dyeing & Printing	M.K.Khandelwal & M.L.Chauhan	Ritu Publications, Jaipur	2005

REFERENCES:

S. No	Title	Author	Publisher	Year of Publishing
1	Manual of Tex. Printing	Storey	Thomson Hudson Ltd, London	1979
2	Digital Printing of Textiles	H.Ujiie	Wood head Publishing Ltd., England	2004
3	Printing-Gaps	J.V.Rao	NITRA, New Delhi	2006
4	Textile Printing	Miles. LWC	SDC Perkin House, England	1981
5	Chemical Processing of Synthetic Fibres and Blends	Datye. K.V.& Vaidya	John Wiley & Sons Publications, New York	1984
6	Dyeing & Printing	Cockett. S.R	Sir. Issac Pitman & Sons Canada Ltd, Toronto	1964
7	ICI Manual for printing		ICI publication	
8	An introduction to Textile printing	W. Clarke	Wood head Publishing Ltd., England	1964

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

V SEMESTER

2015 – 2016 onwards

QUALITY ASSURANCE IN TEXTILE PROCESSING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36153

Semester : V Semester

Subject Title : **QUALITY ASSURANCE IN TEXTILE PROCESSING**

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 15

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
QUALITY ASSURANCE IN TEXTILE PROCESSING	5 Hrs	75 Hrs	25	75	100	3 Hrs

Topics and Allocation of Hours:

Unit	Topic	Time (hrs.)
1	QUALITY TESTS IN PREPARATION	14
2	QUALITY TESTS IN COLOURATION	14
3	QUALITY TESTS IN FINISHING	14
4	PURITY OF CHEMICALS AND DYES	13
5	CONCEPT OF ECO FRIENDLY PROCESSING	13
6	TEST & REVISION	07
	Total	75

RATIONALE:

This subject covers the testing and quality of finished goods. This subject helps to find out the purity of chemicals and dyes which are mostly used in textile processing mill.

By studying the subject student will become as a quality control officer. This subject covers how to control all the textile processes such as desizing, scouring, mercerising, bleaching, printing and finishing process.

Objectives:

To have overall view of various process control & quality control measures in textile wet processing.

To know the various tests involved in wet processing.

To acquire complete knowledge in understanding material quality tests required in fabric preparation.

To understand the concept of fastness of dyed and printed material

To know the test methods to test fastness to different fastness agencies

To know the method of rating of fastness properties

To learn the test methods involved in finished fabrics

To know about the property changes due to finishing

To study the efficiency of stiffness and resin finishing

To learn the procedures of testing quality of various chemicals and auxiliaries

To get an idea about the test methods involved in testing purity of chemicals and dyes

To learn the basic principle of computer colour matching

To enable the student identify the dyes

To understand basic concept of eco friendly processing

To have a thorough understanding of banned dyes & chemicals and their alternatives

To know about the various international certification, agencies

DETAILED SYLLABUS
CONTENTS

UNIT	NAME OF TOPICS	Hours
1	**QUALITY TESTS IN PREPARATION** Need for quality control in textile wet processing. Flow charts indicating process control and quality control tests to be carried out in desizing, scouring, mercerizing, bleaching, souring, dyeing, printing and finishing. Identification and estimation of residual starch. Determination of weight loss during desizing and scouring. Estimation of residual wax content and total wax content by soxhlet extract method. Determination of barium activity number. Absorbency tests by Drop test method and Wicking height method. Determination of whiteness and whiteness retention.	**14**
2	**QUALITY TESTS IN COLOURATION** Fastness requirements for coloured material to meet their end uses. Grey scale and its use in assessing fastness. Determination of fastness to washing. Determination of fastness to dry & wet rubbing. Determination of light fastness to artificial light. Determination of fastness to acid and alkaline perspiration. Determination of fastness to hot pressing. Determination of fastness to dry cleaning and sublimation. Determination of fastness to Saliva.	**14**
3	**QUALITY TESTS IN FINISHING** Determination of efficiency of water proof finished fabric. Determination of efficiency of sanforized fabric. Determination of efficiency of flame proof finished fabric. Determination of efficiency of stiffening by bending length method. Determination of efficiency of resin finishing by crease recovery angle (CRA). Estimation of residual formaldehyde in resin finished fabric. Evaluation of	**14**

	efficiency of wetting agent by sinking time method. Evaluation of efficiency of detergents by foam stability.	
4	**PURITY OF CHEMICALS AND DYES** Estimation of purity of Sodium carbonate, Sodium hydroxide, Sodium hydro sulphite, Sulphuric acid and Hydrochloric acid. Estimation of available chlorine in Hypochlorite solution. Estimation of strength of Hydrogen peroxide. Estimation of purity of dyes by dyeing trails. Identification of dyes in powder form (Direct, Reactive, Vat, Acid, Basic and Disperse). Identification of dyes on cellulosic fibre (Direct, Reactive, Vat), protein fibre (Acid and Basic) and synthetic fibre (Disperse). Principles of computer colour matching. Advantages of computer colour matching system and its limitations.	**13**
5	**CONCEPT OF ECO FRIENDLY PROCESSING** Necessity of eco-friendly processing. Concept of eco-friendly processing. German ban – List of banned amines and chemicals. Possible sources of contamination of red listed chemicals, alternatives. Brief study on Eco labeling, Eco-auditing and Eco - management. Tolerance limits of chemicals and auxiliaries in the export fabrics. Brief study on ISO 9000, ISO 14000 certification and SA 8000 certification.	**13**

TEXT BOOKS

S. No	Title	Author	Publisher	Year of Publishing
1	Evaluation of Textile Chemicals, Edn.3	Dr. V.A Shenai	Sevak Publications, Wadala	1980
2	Technology of Textile Processing, Vol.8	Dr. V.A Shenai	Sevak Publications, Wadala	1980

3	Toxicity of dyes and Intermediates	Dr. V.A Shenai	Sevak Publications, Mumbai	1982

REFERENCE BOOKS

S. No	Title	Author	Publisher	Year of Publishing
1	ISI Handbook of Textile Testing	Indian Standard Institution (Delhi)	Indian Standards Instn., New Delhi	1982
2	Chemical processing of synthetic and blends	Vaidya A.A, and Datye	John Wiley and Sons, New York	
3	Understanding science and Technology of colour	Dr.Narendra, S.Ganagakhedkar	Rutu Prakashan, Mumbai	
4	Colour Harmony	Hideakichijiwa	Colour Harmony	
5	Instrumental Colour Measurements and Computer Aided colour matching for textiles	H.S.Shah, R.S.Gandhi	Mahajan book Distributes, Ahmedabad	

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

V SEMESTER

2015 – 2016 ONWARDS

APPAREL MERCHANDISING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN TEXTILE PROCESSING
M-SCHEME
(To be implements from the students admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN PROCESSING

Subject Code : 36671

Semester : V Semester

Subject Title : APPAREL MERCHANDISING

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
APPAREL MERCHANDISING	5 Hrs	75 Hrs	Internal Assessment	Board Examination	Total	
			25	75	100	3 Hrs

Topics and Allocation of Hours:

Sl.No.	Topic	Time(Hrs)
I	INTRODUCTION TO MERCHANDISING	14
II	RETAIL MERCHANDISING	14
III	VISUAL MERCHANDISING	14
IV	MERCHANDISE PLANNING	13
V	MARKETING TECHNIQUES & SALES PROMOTION	13
	TEST & REVISION	07
Total		75

RATIONALE:

Apparel merchandising is the common word prevailing in the Garment Industry. Every export unit is having merchandising wing. The officials in this wing are responsible for the execution of orders right from receiving orders to despatching of goods. This subject gives an in-depth knowledge on various types of merchandising, the planning, the nature of work of a merchandiser along with the marketing techniques and sale promotion activities.

OBJECTIVES:

At the end of the study of V Semester the student will be able to

- Understand the merchandising procedures.
- Learn the functions of merchandiser.
- Understand the retail merchandising procedures.
- Learn the prizing procedures.
- Understand the visual merchandising procedures.
- Learn the trends in visual merchandising.
- Understand the merchandising plan.
- Learn to prepare merchandising calendar and activities.
- Learn the marketing techniques.
- Understand the advertising techniques.
- Learn the sales promotion techniques.

DETAILED SYLLABUS

Contents

Unit	Name of the Topic	Hours
I	**INTRODUCTION TO MERCHANDISING** Merchandising – Definition – Principles & Techniques – Role of merchandiser – Skills of Merchandiser - Functions of Merchandiser – Types of approval - Sampling – Types of samples- development sample, salesman sample, Approval sample, Preproduction sample, Production sample, shipment sample – Check points for a proper approval – Approving sewing operations and various processes. Product Research – Product Development – Planning – Presentation.	**14 Hrs**
II	**RETAIL MERCHANDISING** Introduction to Retail Merchandising – Types of retail merchandising- Department stores – Discounters – Off-price retailers – Outlet source – Close out - Warehouse clubs. Garment Costing – Fabric consumption – Sewing thread consumption - CMT charges for various styles – Costing of woven garment full Sleeve shirt and Trouser– Costing of Knitted garment - T shirt, night gown. Retail pricing – Mark up – Price point – Markdown – Promotional pricing – Deceptive pricing – Non-store retailing – Mail order Merchants – E Tailing – Tele shopping.	**14 Hrs**
III	**VISUAL MERCHANDISING** Definition – Elements of Visual Merchandising – Displays – Principles of Displays – Window display – Interior Display – Mannequins – Department displays – Signs – Lighting – Fixtures. Special events –The Environments of visual presentation– Trends in visual merchandising – Small store applications – Boutique - Assessment of Visual Merchandising Programme	**14 Hrs**
IV	**MERCHANDISE PLANNING** Merchandising plan – Planning sales goals –Buying plan – Assortment Planning – Open to buy – Purpose of a six months plan, Elements of a six month plan – Analysis of previous merchandising plan and developing a new plan - Planning components - Merchandising calendar and scheduling. Direct order - Merchant order - CMT order - Vendor and sub-contractor - Requirement of a purchase order – Amendment sheet – Types of Buyer and buying offices- Buyer seller meet.	**13 Hrs.**

V	**MARKETING TECHNIQUES & SALES PROMOTION** Marketing – definition - principles – objectives - strategies – Advertisement Techniques – Broadcast Advertising – Radio advertising – Television Advertising – Advantages & Disadvantages – Magazines – Out-of-home advertising – Direct mail. Advertisement effectiveness. Brief study of E marketing. Sales promotion approaches, effectiveness -Distribution channels – Consumer behaviour in fashion.	**13 Hrs**

Text Book:

Title	Author	Publisher	Year
Marketing Management	Philip. Kotler Kevin Lane Keller	Prentice Hall	2006
Fashion Marketing & Merchandising	Manmeet Sodhia	Kalyani Publishers	
Fashion buying & Merchandising Management	Tim Jackson & David Shaw	Palgrave Master Series	2001
Apparel Manufacturing	Ruth E. Glock Grace I. Kunz	A Simson & Schuster company, Singapore	1995

Reference:

Title	Author	Publisher	Year
Export management	Balagopal.T.A.S	Himalaya Publishing House, Bombay.	1984
Inside the fashion business	Kitty G. Dicerson	Dorling Kindesley(India) Pvt Ltd., New Delhi	2007
Fashion Retailing	Ellen Diamond	Dorling Kindesley(India) Pvt Ltd., New Delhi	2007
Foundations of advertising Theory & Practice	Chunnawala Sethia	Himalaya Publishing House, Bombay	1985
Retail Merchandising	Ernest H Rich	Merrill Publishing company	
Fashion Sales Promotion	Pamela M.Phillips	A Simson & Schuster company , New Jersy	1985
Fashion Marketing	Mike Easey	Blackwell Publishing	2005
Fashion Marketing	Hines & Bruce	Butter worth - Heinemann	2006
Merchandise Buying and Management	Donnellecen John	Fairchild Publication Inc., NY	1999

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

V SEMESTER

2015 – 2016 onwards

ECO FRIENDLY TEXTILE PROCESSING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36172

Semester : V Semester

Subject Title **:** ECO – FRIENDLY TEXTILE PROCESSING

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours/ week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ECO – FRIENDLY TEXTILE PROCESSING	5	75	25	75	100	3 Hrs

Topics and Allocation of Hours:

Unit	Topic	Time (Hrs)
1	IMPACT OF TEXTILE PROCESS CHEMICALS ON ECOLOGY	**14**
2	ECO STANDARDS	**13**
3	ECO TESTING	**13**
4	ENVIRONMENT FRIENDLY PROCESSING	**14**
5	CLEAN TECHNOLOGY FOR FUTURE	**14**
6	TEST & REVISION	**07**
	TOTAL	**75**

RATIONALE:

Any technology should have the concern for environment. Textile processing involves the usage of lot of harmful chemicals. Alternative processes that use eco-friendly chemicals have to be taught to face the global competition.

OBJECTIVES:

1. To know about the various problems due to pollution
2. To have an idea about the need for eco friendly textile processing and banned chemicals.
3. To learn about the importance of eco standards.
4. To learn about the importance of eco labelling and various labels and ISO 14000 & SA 8000 certification processes.
5. To study briefly about the analysis of red listed chemicals.
6. To have an idea about the various instruments involved in analysis of eco parameters.
7. To know the effects of banned chemicals.
8. To learn about the importance of natural dyes.
9. To learn about the application of eco-friendly chemicals and enzymes in textile processing.
10. To learn the various clean technology options.
11. To know the specific advantages and features.

DETAILED SYLLABUS

CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**IMPACT OF TEXTILE PROCESS CHEMICALS ON ECOLOGY** Pollution - definition - Types - Impact of pollution on environment- Pollution capability of chemicals and products used in processing - pollution load at every stages of processing – Pollution associated with various colouration process - Need for eco-friendly processing- Important issues in exports- Red listed chemicals - Possible sources of contamination of various red listed chemicals- German Laws – Ban on amines and Azo dyes-List of banned amines and chemicals.	**14**
II	**ECO STANDARDS** Need for Eco - standards. Eco standards – European & USA. Permissible limits (norms) of chemicals, pH, colour fastness and heavy metals by different eco-standards such as MST, OEKOTEX, CLEANFASHION, STEILMANN & - Eco-labeling and labels - Eco-auditing - Eco-management - ISO 14000 – SA 8000 - Natural Textiles – Organic Cotton – GOTS & organic exchange certification –APEO , NPEO & OPEO Limitations	**13**
III	**ECO TESTING** Toxic substances used in processing and safe alternatives- Principles and procedures involved in the estimation of pH, pesticides, Residual formaldehyde, carcinogenic dyes, chlorinated phenols, phthalates, organo tin and heavy metals, – Consequences of presence of above compounds in Textiles – permissible limits – eco testing of antimicrobial finish with triclosan.	**13**

IV	**ECO FRIENDLY PROCESSING** Eco-friendly dyeing of sulphur dyes - Eco-friendly per-acetic acid bleaching - Eco friendly pigment printing & discharge Printing. Organic stabilizer – Application of Diazo sensitizer in screen preparation – Application of Eco-friendly preservatives – Non PVC, Non Phthalate, Plastizol inks**,** Formaldehyde free dye fixing agents. Enzymes and their role. Application of Enzymes in Desizing, Scouring & Peroxide killing on cotton material, Degumming of silk - Application of Enzymes in finishing – eco friendly crease recovery finish, stone wash effect by Bio-polishing	**14**
V	**CLEAN TECHNOLOGIES FOR FUTURE** Clean technology – Sustainable development – Ozone bleaching, RF drying, Microwave assisted dyeing, Ultrasonic assisted processing, Supercritical CO_2 dyeing, importance of energy & water conservation – Energy audit - Basics & application scope of Nano technology in textiles - Occupational diseases & safety measures in Textile units.	**14**

TEXT BOOKS:

Author	Title	Publisher	Year of Publication
V.A.Shenai	Azo dyes Facts & Figures	Sevak Publications, Mumbai	1987
V.A.Shenai	Toxicity of dyes and Pigments	Sevak Publications, Mumbai	1987
Prof. M.L.Gulrajani and Deepti Gupta	Natural Dyes	IIT, Delhi	1996

REFERENCE BOOKS

Author	Title	Publisher	Year of Publication
Book of papers	Environmental issues - Technology options for Textile Industry	IIT, New Delhi	1998
Book of papers	Eco-friendly textiles - Challenges to the textile industry	Textiles Committee, Mumbai	
NCUTE (Programme Series)	Eco-friendly textile wet processing	IIT, New Delhi	2001
Prof. A. Richard Horrocks	Eco-Textile 98, Sustainable Development – Proceedings	Wood head Publishing Ltd	1999
A.Wynne	The Motivate - Textiles	Macmillan Education Ltd	
Translated from Chinese	Silk Dyeing and Finishing Handbook	Oxford and IBH publishing Company Private Ltd	
J.W.Weaver	Analytical Methods For a Textile Laboratory	AATCC Publications	

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

V SEMESTER

2015 – 2016 onwards

TECHNOLOGY OF TEXTILE PRINTING PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36155

Semester : V Semester

Subject Title : TECHNOLOGY OF TEXTILE PRINTING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 15

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TECHNOLOGY OF TEXTILE PRINTING PRACTICAL	5 Hrs	75 Hrs	25	75	100	3 Hrs

RATIONALE:

Printing is one of the important processes which require high degree of skill and perfection. Practical knowledge on various styles of printing and their application techniques is needed to have a perfect understanding.

GUIDELINES:

- All the twelve experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills in handling Instruments/Equipment and taking readings in the practical classes, every two students should be provided with a separate experimental setup for doing experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than three students while admitting a batch of 30 students during Board Examinations

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Direct style of printing on cotton with hot brand reactive dyes by steaming method.
2. Direct style of printing using pigments on cotton, P/C blends using water base substitute paste.
3. Direct style of printing on polyester using disperse dyes. (Print – Dry – HTHP steaming method)
4. Printing with white and colour khadi pastes (Print – Dry – cure)
5. Printing with Metallic powder pastes (Silver and gold)
6. Tie & dye – resist style of Coloration using reactive dyes. (white & multi colour effect)
7. Batik style of printing (white & colour resist) using cold brand reactive dyes / azoic dyes.
8. White and Vat colour discharge printing on reactive dyed / padded cotton fabric.
9. White and pigment discharge printing on reactive dyed / padded cotton fabric.
10. White and pigment resist printing on reactive ground.
11. Burnt out style of printing on P/C blend (white / pastel dyed)
12. Analysis of printed design for number of colours, style of printing, method of printing, repeat and colour estimation for given meterage.

Note: All experiments include Printing, Fixation &Washing treatment wherever applicable.

LIST OF EQUIPMENTS AND QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

Materials required: (for a batch of 30 students):

1. RFD Cotton fabric
2. P/C Blend fabric
3. Polyester fabric
4. Nylon fabric
5. Dyes & Pigments
6. Chemicals and auxiliaries
7. PVA adhesive solution

Equipments required: (for a batch of 30 students):

1. Printing Table -1 with 5 meter length
2. Printing screens--10
3. Curing Oven-1
4. Baby Steamer-1
5. Printing Blocks-2
6. High speed stirrer -4
7. Squeegees -10

SAFETY PRECATIONS TO BE FOLLOWED

1. Wearing the gloves in hand while taking and mixing the dyes stuffs and chemicals
2. Should wear safe foot wear, preferably shoes.
3. Should keep their shirts tucked in.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.
5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machines without doing regular safety checks and closing the safety doors.
8. Exhaust fans should be provided in the laboratory, so that unwanted smell and toxic air can be forced out

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

V SEMESTER

2015 – 2016 onwards

QUALITY ASSURANCE IN TEXTILE PROCESSING - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36156

Semester : V Semester

Subject Title : QUALITY ASSURANCE IN TEXTILE PROCESSING – PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
QUALITY ASSURANCE IN TEXTILE PROCESSING - PRACTICAL	5 Hrs	75 Hrs	25	75	100	3 Hrs

RATIONALE:

Testing for various quality and efficiency of finished goods which are prepared by desizing, scouring, mercerizing, bleaching, dyeing, printing and finishing. In Quality Assurance in Textile Processing practical, the students will be given practice to handle the instruments and testing procedure to improve their skill in quality assurance.

GUIDELINES:

- All the twelve experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills in handling Instruments/Equipment and taking readings in the practical classes, every two students should be provided with a separate experimental setup for doing experiments in the laboratory.

- ❖ The external examiners are requested to ensure that a single experimental question should not be given to more than three students while admitting a batch of 30 students during Board Examinations.

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Estimation of the scouring loss of the given scoured fabric
2. Estimation of the efficiency of detergents by sinking time method.
3. Estimation of barium activity number of mercerized cotton.
4. Identification of dye in powder form. (Direct, Reactive, Vat, Acid, Basic and Disperse)
5. Evaluation of purity of reactive dyes using virtual method by dyeing trials.
6. Estimation of dry and wet rubbing fastness of dyed material.
7. Estimation of wash fastness (any one test from ISO 1 to 5)
8. Estimation of perspiration fastness of dyed material.
9. Estimation of dry cleaning fastness of dyed material.
10. Evaluation of stiff finished fabric for stiffness using bending length tester.
11. Evaluation of crease recovery finished fabric for crease recovery angle.
12. Estimation of flammability of flame retardant finished fabric.

LIST OF EQUIPMENTS AND QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

Material required:

1. Desized fabric - 1 meter.
2. Bleached fabric - 2 meter.
3. Any one colour from all major dyes - 100 gm each.
4. Dyed and printed fabric - 2 meters each dyed and printed from one colour of all major dyes.
5. Stiff finished fabric - 1 meter.
6. Resin finished fabric - 1 meter.
7. Flame proof finished fabric - 1 meter.

Equipments Required:

1. Necessary chemicals.
2. Laundro meter – 1 No
3. Crock meter – 2 Nos
4. Crease recovery tester – 2 Nos
5. Perspiro meter – 2 Nos
6. Soxhlet extractor – 2 Nos

SAFETY PRECATIONS TO BE FOLLOWED

1. Wearing the gloves in hand while taking and mixing the dyes stuffs and chemicals
2. Should wear safe foot wear, preferably shoes.
3. Should keep their shirts tucked in.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.
5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machines without doing regular safety checks and closing the safety doors.
8. Exhaust fans should be provided in the laboratory, so that unwanted smell and toxic air can be forced out

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING /
DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M- SCHEME

V SEMESTER

2015 – 2016 onwards

LIFE AND EMPLOYABILITY SKILLS PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING – SYLLABUS – M Scheme

(Being implemented from the Academic Year 2016-2017 onwards)

Course Name : **All Branches of Diploma in Engineering and Technology and Special Programmes**

Subject Code : **30002**

Semester : **IV /V**

Subject Title : **LIFE AND EMPLOYABILITY SKILLS PRACTICAL**

Teaching and Scheme of Examination: **No. of Weeks per Semester**: **15 Weeks**

Subject	Instruction		Examination			
			Marks			
	Hours/ Week	Hours/ Semester	Internal assessment	Board Examination	Total	Duration
Life and Employability Skills	4 Hours	60 Hours	25	75	100	3 Hours

Topics and Allocation of Hours:

Sl. No.	Section	No. of Hours
1	**Part – A** Communication	30
2	**Part – B** Entrepreneurship, Project Preparation, Productivity, Occupational Safety, Health, Hazard, Quality Tools& Labour Welfare	20
3	**Part – C** Environment, Global Warming, Pollution	10
TOTAL		60

RATIONALE

Against the backdrop of the needs of the Industries, as wells as based on fulfilling the expectations of the Industries, the Diploma Level students have to be trained directly and indirectly in toning up their competency levels. Proficiency in Communication only, equips them with confidence and capacity to cope with the employment. Hence, there is a necessity to focus on these in the curriculum. At the end of the Course, the student is better equipped to express himself in oral and written communication effectively.

SPECIFIC INSTRUCTIONAL OBJECTIVES

1. **Emphasize and Enhance Speaking Skills**

2. **Increase Ability to Express Views & Opinions**

3. **Develop and Enhance Employability Skills**

4. **Induce Entrepreneurship and Plan for the Future**

5. **Expose & Induce Life Skills for Effective Managerial Ability**

LIFE AND EMPLOYABILITY SKILLS PRACTICAL

SYLLABUS

Unit	Topics	Activity	Hours
I	**Communication, Listening, Training, Facing Interviews, Behavioural Skills**	-- instant sentence making – say expressions/phrases-- self- introduction/another higher official in company – describe/explain product – frame questions based on patterns – make sentences based on patterns	**30**
II	**Entrepreneurship, Project Preparation, Marketing Analysis, Support & Procurement**	-- prepare an outline of a project to obtain loan from bank in becoming an entrepreneur – prepare a resume	**10**
III	**Productivity – comparison with developed countries, Quality Tools, Circles, Consciousness, Management, House Keeping**	-- search in the website -- prepare a presentation – discuss & interact	**05**
IV	**Occupational Safety, Health Hazard, Accident & Safety, First-Aid,Labour Welfare Legislation, Welfare Acts**	-- search in the website -- prepare a presentation – discuss & interact	**05**
V	**Environment, Global Warming, Pollution**	-- taking down notes / hints – answering questions -- fill in blanks the exact words heard	**10**

LEARNING STRUCTURE **100 Marks**

-- Focus more on Speaking & Listening Skills
-- Attention less on Reading & Writing Skills
-- Apply the skills in fulfilling the Objectives on Focused Topics

a) Listening **25 Marks**

1. Deductive Reasoning Skills (taking down notes/hints) **10**
2. Cognitive Skills (answering questions) **10**
3. Retention Skills (filling in blanks with exact words heard) **05**

b) Speaking Extempore/ Prepared **30 Marks**

1. Personality/Psychological Skills (instant sentence making) **05**
2. Pleasing & Amiable Skills (say in phrases/expressions) **05**
3. Assertive Skills (introducing oneself/others) **05**
4. Expressive Skills (describe/explain things) **05**
5. Fluency/Compatibility Skills (dialogue) **05**
6. Leadership/Team Spirit Skills (group discussion) **05**

c) Writing & Reading **20 Marks**

1. Creative & Reasoning Skills (frame questions on patterns) **05**
2. Creative & Composing Skills (make sentences on patterns) **05**
3. Attitude & Aim Skills (prepare resume) **05**
4. Entrepreneurship Skills (prepare outline of a project) **05**

d) Continuous Assessment (Internal Marks) **25 Marks**

(search,read, write down, speak, listen, interact & discuss)

1. Cognitive Skills (Google search on focused topics)
2. Presentation Skills& Interactive Skills (after listening, discuss)

Note down and present in the Record Note on any 5 topics **10 Marks**
Other activities recorded in the Record note **10 Marks**
Attendance **05 Marks**

INTERNAL MARKS **25 MARKS**

EXTERNAL MARKS AT END EXAMINATION **75 MARKS**

MODEL QUESTION

Time: 3 Hours **Maximum Marks: 75**

A. LISTENING — 25 Marks

1. Listen to the content and take down notes/hints — 10
2. Listen to the content and answer the following questions. — 10
3. Listen to the content and fill in the blanks the exact words heard. — 05

B. SPEAKING — 30 Marks

1. Say in a sentence instantly on hearing the word(5 words, one after another). — 05
2. Say any five expressions commonly used in communication. — 05
3. Imagine, a consultant has come to your department.
   Introduce him to your subordinates. — 05
4. Explain/describe the product you are about to launch in the market. — 05
5. Speak with your immediate boss about the progress you have made. — 05
6. Discuss within the group on the topic of focus in the syllabus. — 05

C. WRITING & READING — 20 Marks

1. Frame new questions from the pattern given by changing sets of words with your own. — 05

a.	When	do	you	return?
b.	How	is	his performance?	
c.	Where	has	the manager	gone?
d.	What	is	the progress	today?
e.	Why	are	the machines	not functioning?

2. Make sentences from the pattern given by changing sets of words with your own. — 05

a.	The workers	are	on strike		
b.	The labourers	are paid	well	in this factory	
c.	There	is	a rest room	for the workers	
d.	These	are	the new products	launched	by our company

3.

e.	Almost everyone	come	to the company	on motorbikes	

Prepare a resume for the post of Department Manager. 05

4. Prepare an outline of a project to obtain a loan. (Provide headings and subheadings) 05

I. Guidelines for setting the question paper:

A. LISTENING :

ONLY TOPICS related to
POLLUTION /
ENVIRONMENT /
GLOBAL WARMING are to be taken.
These topics are common for all the three types of evaluation.

B. SPEAKING :

1. WORDS of common usage
2. Fragments – expression of politeness, courtesy, cordiality
3. Introduce yourself as an engineer with designation or
   Introduce the official visiting your company/department

4. Describe/Explain the product/machine/department
5. Dialogue must be with someone in the place of work.
6. Group of six/eight
   Discuss the focused topic prescribed in syllabus

C. WRITING & READING:

1. Provide five different structures.
   Students are to substitute at least one with some other word/words
2. Provide five different structures.
   Students are to substitute at least one with some other word/words
3. Provide some post related to industries.
4. Outline of the project (skeleton/structure)
   Only the various headings and subheadings
   Content is not needed

II. Guidelines for recording the material on the Focused Topics in the Record note.

Write in the record note, **on any five topics**, from the list of topics given below. **10 Marks**
(5 topics x 10 marks = 50 marks. Thus, the **Average of 5 topics is 10 Marks)**

1. Productivity in Industries – Comparison with developed countries
2. Quality Tools, Quality Circles and Quality Consciousness
3. Effective Management
4. House Keeping in Industries
5. Occupational Safety and Hazard
6. Occupational Accident and First Aid
7. Labour Welfare Legislations
8. Labour Welfare Acts and Rights
9. Entrepreneurship
10. Marketing Analysis, Support and Procurement

LABORATORY REQUIREMENT:

1. An echo-free room
2. Necessary furniture and comfortable chairs
3. A minimum of two Computers with internet access
4. A minimum of two different English dailies
5. A minimum of Three Mikes with and without cords
6. Colour Television (minimum size – 29")
7. DVD/VCD Player with Home Theatre speakers
8. Smart board
9. Projector

Suggested Reading:

1. Production and Operations Management by S.N. Chary, TMH
2. Essentials of Management by Koontz &Weihrich, TMH
3. Modern Production / Operations Management by E.S. Buffa and R.K. Sarin, John Wiley & Sons
4. Production Systems: Planning, Analysis and Control by J.L.Riggs, 3rd ed., Wiley.
5. Productions and Operations Management by A.Muhlemann, J.Oakland and K.Lockyer, Macmillan
6. Operations Research - An Introduction by H.A.Taha, Prentice Hall of India
7. Operations Research by J.K.Sharma, Macmillan
8. Business Correspondence & Report Writing by R.C. Sharma and K.Mohan, TMH
9. How to prepare for Group Discussion & Interview (With Audio Cassette) by Prasad, TMH
10. Spoken English – A self-learning guide to conversation practice (with Cassette)
11. Introduction to Environmental Engineering by Mackenzie, L. Davis and A. David, Cornwell, McgrawHill, 3rd Ed.

12. Environmental Engineering by Peary, Rowe and Tchobanoglous, McgrawHill
13. Total Quality Management – An Introductory Text by Paul James, Prentice Hall
14. Quality Control and Applications by Housen&Ghose
15. Industrial Engineering Management by O.P. Khanna

VI SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

VI SEMESTER

2015 – 2016 onwards

TEXTILE MANAGEMENT

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36061

Semester : VI Semester

Subject Title **:** TEXTILE MANAGEMENT

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
TEXTILE MANAGEMENT	5	75	Internal Assessment	Board Examination	Total	
			25	75	100	3 Hrs

Topics and allocation of hours:

Sl.No.	Topic	Time (hrs.)
1	INTRODUCTION TO MANAGEMENT, SITE SELECTION, PLANT LAY OUTS	**13**
2	PRODUCTION AND FINANCIAL MANAGEMENT	**14**
3	HUMAN RESOURCE MANAGEMENT	**14**
4	SUPERVISORY AND SAFETY MANAGEMENT	**13**
5	EXPORT AND CONTEMPORARY MANAGEMENT	**14**
6	TEST & REVISION	**07**
Total		**75**

Rationale:

To study the fundamental concept in personal management, production management and export marketing management.

To enhance the knowledge for the supervisory job in textile mills, their authority and responsibility will be taught to the students.

To improve the knowledge in inventory control in stores and also financial management techniques will be taught to the students.

Objectives

- To know about the fundamentals of management and the various functions of personnel management.
- To have knowledge about components and systems of wage payment.
- To know about the various labour welfare activities in a textile mill.
- To know about the layouts and industrial buildings, factors influencing selection of site.
- To know about productivity, labour and machine productivity and the factors affecting them.
- To know about the role of supervisor in a textile unit, causes and precautions and prevention of industrial accidents and safety devices used in textile mills.
- To know about inventory control and the methods adopted, material handling in textile mills.
- To know about financial management, cost and its components, calculation of Ex mill price and break even analysis.
- To know about export policy of India, export promoting agencies and their functions, export order processing and export pricing methods.

DETAILED SYLLABUS

CONTENTS

UNIT	NAME OF TOPICS	Hours
1	**INTRODUCTION TO MANAGEMENT, SITE SELECTION, PLANT LAY OUTS** Definition of Management. Functions of management – Organising, Staffing, Directing, Controlling. Organisation structure-line, staff, line and staff, committee organisation. Selection of site-advantage and disadvantages and various factors of site selection for various textile industries. Importance and types industrial buildings, lightings, ventilations and humidification. Control of air, water and land pollution in textile industry. Plant layout-process, product, combined and fixed layouts-their merits and demerits. Type of layout suitable for spinning, weaving, textile processing and garment industries	13
2	**PRODUCTION AND FINANCIAL MANAGEMENT** Factors affecting production. Productivity- Factors affecting productivity. Labour productivity and machine productivity. Work Study–Method Study and Work Measurement. Procedures of method study and work measurement. Importance of Material handling and various machineries of it in textile industry. Production Planning and Control (PPC) – Functions of PP&C. Inventory control - Economic Order Quantity (EOQ), ABC and VED Analysis. Financial Management – Capital Cost and Working Capital - Sources of Finance. Elements of Cost - Method of calculating Ex Mill Price. Break even analysis. Depreciation. Enterprise Resource Planning (ERP)	14
3	**HUMAN RESOURCE MANAGEMENT** Importance of Human Resource management in an industry. Man power planning –Definition of job analysis and job description – methods of job description and job analysis. Recruitment – Sources, merits and demerits. Selection process in recruitment. Training of Employees – advantages and types of training. Wages and its Components-Basic pay, DA, HRA, bonus, incentive. Method of wage payment- time rate, piece rate, combination of time and piece rate. Incentives – types and their merits and demerits. Labour Welfare activities – Role of Labour Welfare Officer. Labour grievances - causes and effects of grievances. Grievance handling procedures. Grievance handling mechanisms.	14

4	**SUPERVISORY AND SAFETY MANAGEMENT** Define Supervision-Role of supervisor, characteristics of effective supervision. Role and characteristics of leadership. Difference between leader and manager. Motivation- need, importance and types of motivation-Maslow's theory, XYZ theory in motivation. Communication- Principle of effective communication - types of communication - barriers of communication. Labour welfare activities with respect to factories act. Industrial safety- Causes for accidents, preventive measures. Guards and safety devices in textile mill. Types of fire and fire prevention. Application of 5 S and Kaizen principles for effective supervision.	13
5	**EXPORT AND CONTEMPORARY MANAGEMENT** Importance and benefits of international marketing. World Trade Organisaiton (WTO) – functions of WTO. Various export promotion measures by government of India. Functions of TEXPROCIL, AEPC, PEDEXIL, HEPC, Textile committee, Textile commissioner's office. Export procedure-receipt of confirmed order-export production-export documentation - Export incentives. Importance of Shipping bill and bill of lading. Export finance –pre shipment finance and post shipment finance. Letter of Credit. Export price composition. Export pricing-Ex factory, Free Along Side (FAS), Free On Board (FOB), Cost Insurance Freight (CIF) and Franco pricing. Management Information System (MIS),Just In Time (JIT),Total Quality Management (TQM),	14

TEXT BOOKS:

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	Principles of Management	P.C.Tripathi	Tata McGraw Publishing Company Ltd, New Delhi	2001
2	Management of Textiles	Dudega.V.D	Trade Press, Textile Industry ,Ahmadabad	1981

REFERANCE BOOKS:

S.NO	TITLE	AUTHOR	PUBLISHERS
1	Principles Of Management	P.C. Tripathi	Tata McGraw Publishing Company Ltd, New Delhi
2	Management Of Textiles	Dudega.V.D	Trade Press, Textile Industry ,Ahmadabad
3	Industrial Engineering	A P Verma	S K Kataria.
4	Personnel Management Of Human Resources	Mamoria. C.B	Himalaya Publishing House, Mumbai
5	Organisation Theory & Behaviour	Luthans. F	Printece Hall Of India
6	Management Of Textile	Ormerod. A	Butter Worth &Company
7	Industrial Eng. & Management Science	Bauga. T.R; et.al	Khanna Publisher New Delhi
8	Business Management Theory	Singa. J.C & Mugali.V.N	R. Chand & Co, New Delhi
9	Costing In Textile Mills	SITRA	SITRA, Coimbatore
10	Export Management	T A S Balagopal	Himalaya Publishing House, Mumbai
11	Industrial Organisation and Engineering Economics	S C Sharma, T R Banga	Khanna Publisher New Delhi

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

VI SEMESTER

2015 – 2016 onwards

GRAMENT MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M -SCHEME

(to be Implements from the student Admitted from the year 2015-2016 onwards)

Course Name	:	DIPLOMA IN TEXTILE PROCESSING
Subject Code	:	36062
Semester	:	VI Semester
Subject Title	:	GARMENT MANUFACTURE

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
GARMENT MANUFACTURE	5 Hrs	75Hrs	25	75	100	3 Hrs

Topics and allocation

Sl. No	Topic	Time (hrs.)
1	MEASUREMENTS, PATTERNS AND TOOLS FOR GARMENT CONSTRUCTION	14
2	DRAFTING AND PATTERN LAYOUT	14
3	CUTTING AND GARMENT CONSTRUCTION	14
4	PACKING AND QUALITY REQUIREMENTS	13
5	FASHION DESIGN	13
6	TEST & REVISION	07
Total		75

RATIONALE:

To understand the Textile industry and the market, an effort is made to equate the products' features with the requirement of the Markets. In order to achieve this objectives a broad sweep various subjects in the entire textile spectrum is elaboratedto the level of the diploma students..

OBJECTIVES:

1. To know about human anatomy, pattern making and garment making tools
2. To understand pattern layout & cutting
3. To familiarize with sewing, embroidery & clothing construction
4. To know about pressing, packing & quality control
5. To understand fashion design concept

DETAILED SYLLABUS
CONTENTS

Unit	Name of the Topic	Hours
1	**MEASUREMENTS, PATTERNS AND TOOLS FOR GARMENT CONSTRUCTION** Flow chart for garment manufacturing process in garment industry. Eight head theory of human anatomy and its uses. Measurements – importance, Measurements to be taken for children's, Ladies, and Gent's wear. Paper patterns - importance – Types - Commercial patterns and personal patterns - Principles of pattern drafting –Principles of Pattern grading. Tools required for garment making – Measuring tools, Cutting tools - Pattern making tools - Pressing tools.	14
2.	**DRAFTING AND PATTERN LAYOUT** Pattern making of 'A' line frock - Ladies skirt - Gent's half sleeve shirt - Ladies nightwear. Fabrics used in garment manufacture – Plain, Striped, Plaid, Printed and one way. Rules for pattern layout – types of Layout (length wise Cross wise, partial length wise, partial cross wise, combined fold and open layout). Special layouts for asymmetrical, striped, checked and one way designs – Types of Lay. Lay length and Marker planning.	14
3	**CUTTING AND GARMENT CONSTRUCTION** Objects of spreading & cutting - Importance of cutting - Brief study on types of cutting machines – Straight knife - Band knife - Round knife -LASER cutting. Cutting defects. Sewing Machine Parts and its function. Stitches – Brief study of Lock stitch, Chain stitch, 3 threads over lock, 5 thread flat lock. Brief study of different types of Seams – Plain, bound flat & Slot seam. Construction of 'A' line frock, Ladies skirt, Gent's half sleeve shirt and Ladies nightwear.	14

4	**PACKING AND QUALITY REQUIREMENTS** Types of pressing and its objects. Packing materials, Different methods of Packing. Assortment pack - Ratio pack, Colour wise pack, Size wise pack. Methods of fabric inspection - Study of 4 point and 10 point system. Types of Inspection – Raw Material Inspection - Quality requirements for sewing thread, zippers, linings and buttons – Brief study of in process inspection and Final inspection. Brief study of Garment defects. Accepted Quality Level (AQL) – Sampling size and levels. Acquiring ISO certification for the Garment Industry. Objects of Organic cotton certification and GOTS	13
5	**FASHION DESIGNING** Elements of Design – Line, Shape, Texture, Colour and Value. Principles of Design – Balance, Proportion, Emphasis, Rhythms and Harmony. Pigment theory of colours – Primary, Secondary and Tertiary colours. Color dimension (Hue, Intensity, Value, Tint, Shade and Tone) - Warm and Cool Colors. Design – Different types of structural designs and decorative designs on dress. Basic concepts of Fashion show.	13

TEXT BOOKS:

S.NO	Author	Title	Publisher	Edition	Year
1	Carr and Lathem	The Technology of Clothing Manufacture	Blackwell Publication Oxford UK	2nd Indian Reprint	2004
2	Gerry Cooklin	Introduction to Clothing Manufacture	Blackwell Publication Oxford UK	2nd Indian Reprint	2005
3	Pradip V.Metha & Satish.K. Bharadwaj	Managing Quality in the Apparel Industry	New Age International Publishing, New Delhi	1st Edition Reprint	2006

REFERENCE BOOKS:

S.NO	Author	Title	Publisher	Edition	Year
1	Anna Jacob Thomas	The Art of Sewing	UBS Publishers, New Delhi	6th Reprint	2001
2	Mary Mathews	Practical clothing constructions Part I & II	Paprinpack Printers, Chennai	Ist Edition	1985
3	Erwine Mabel.D	Clothing for Moderns	Macmillan Pub. Co., New York.	Ist Edition	1979
4	Virgin Stolpe Lewis	Comparative clothing construction Techniques	Surjeet Publications, Delhi	Ist Edition	1984

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

VI SEMESTER

2015 – 2016 onwards

WATER, EFFLUENT TREATMENT AND POLLUTION CONTROL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE PROCESSING

Subject Code : 36181

Semester : VI Semester

Subject Title : **Water, Effluent Treatment & Pollution Control**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours/ week	Hours / Semester	Marks			Duration
WATER, EFFLUENT TREATMENT & POLLUTION CONTROL	5	75	Internal Assessment	Board Examination	Total	3 Hrs
			25	75	100	

Topics and Allocation of Hours:

Sl.No	Topic	Time (Hrs)
1	INTRODUCTION TO ENVIRONMENT & POLLUTION IMPACT	**14**
2	WATER TREATMENT- I	**14**
3	WATER TREATMENT – II	**13**
4	EFFLUENT TREATMENT	**14**
5	POLLUTION CONTROL	**13**
6	TEST & REVISION	**07**
	TOTAL	**75**

RATIONALE:

Textile processing involves the usage of lot of harmful chemicals. Effluents discharged from the processing industry would cause severe damage to the ecosystem. Methods to treat this effluent to a safe level and zero discharge technology are essential for a textile processing technician.

OBJECTIVES:

- To understand component of environment, ecosystems, bio diversity, food chain relations.
- Textile industry contributes to major water, air, soil and noise pollution.
- To learn about environmental impact, awareness on harmful effects of effluent, sources and specific characteristics of various textile related industrial effluent.
- To impart knowledge on water characteristics, drinking water parameters and discharge standards.
- To learn the need for softening and various practical methods available.
- To realize the effects of various constituents of water in processing and boiler feed water

DETAILED SYLLABUS
CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**INTRODUCTION TO ENVIRONMENT AND POLLUTION IMPACT:** Environment - Definition, bio sphere, components: biotic, abiotic, food chain, producer, consumer, decomposer interrelationship. Biodiversity – types – importance of bio diversity - Eco system types - impact of man on environment, effects of urbanization-Environmental pollution - definition - classification of pollution- brief definitions on Air, Water, Land, Noise, Nuclear pollution-Sources & harmful effects of water pollution-A detailed study of effluents discharged by fibre manufacturing industries, Textile processing industries, - Origin, characteristics and various mode of treatments	**14Hrs**
II	**WATER TREATMENT – I** List of important characteristics of water, definitions, list of major effluent discharge parameters,- Drinking water parameters, constituents of water and their effects in textile processing - Boiler feed water problems, causes, effects and remedies- Boiler feed water parameters – water softening – need, detailed study of various softening methods – Cat ion exchange softening, softening by sequestering agents and Demineralization with schematic diagram for removal of carbon di oxide and silica, usage of membranes for water softening – Nano filtration, reverse osmosis.	**14 Hrs**
III	**WATER TREATMENT – II** Uses of water, sources of water, treatment process for industrial and drinking water with line diagrams – Removal of colour and turbidity (coagulation, flocculation, settling and filtration methods) sterilization, list of modern sterilization agents - Analysis of water – principles and methods – colour, pH value, suspended solids, total hardness calcium and magnesium) by EDTA titrimetric methods - Determination of dissolved oxygen by iodimetry, Determination of BOD, COD, TDS. Importance of coliform count.	**13 Hrs**

IV	**EFFLUENT TREATMENT** Specific characteristics of effluent water from various textile processing operations like sizing, desizing, scouring, mercerizing, bleaching, Coloration process (dyeing and printing) – combined effluent –Need for specific Segregation of effluents - Various stages of Effluent Treatment – objectives and definition. Detailed study on Primary Treatment – Screening, equalization, neutralization, coagulation and flocculation, settling by clarification, sludge handling (solar beds, filter press). Secondary treatments – Activated sludge process, Anaerobic digestion, and Activated carbon filter -Tertiary Treatment - Micro filtration, Ultra filtration, Nano filtration, Reverse osmosis, membrane fouling-definition, Solar evaporation and thin film evaporation principle, Role of MEEP and crystallizer , Principle of modern methods – Electro chemical coagulation, chlorination, Ozonization, Combined Anaerobic, aerobic biological treatment – concept of Zero Liquid Discharge - Full flow chart for ZLD plant for a typical textile effluent treatment plant system.	**14 Hrs**
V	**POLLUTION CONTROL** Role of Central Pollution Control Board - Air pollution – sources and effects of air pollutants on human health, Brief study on Global warming, Acid rain, Ozone layer depletion, Climate change- means for combating air pollution effects, Air pollution control methods, names only- ambient air quality standards. Noise pollution – sources, ill effects- Auditory and Non auditory, Noise pollution control measures and standard noise levels in decibels. Steps involved in Solid waste management - Sustainable developments –definition – Agenda 21 principles.	**13 Hrs**

TEXT BOOKS

Author	Title	Publisher	Year of Publication
Badma Varker	Textile Effluent	NCUTE Publications , New Delhi	2002
Dr.R.J.Ranjith Daniels	Environmental Studies	Wiley Precise Textbook	2009
S.S. Dara & S.Chand	Environmental Chemistry and Pollution Control	S Chand & Company Ltd.	1993

REFERENCE BOOKS

Author	Title	Publisher	Year of Publication
R.Venugopal Rao	Principle of Environmental Science and Engineering	PHI Learning Pvt. Ltd.	2009
Gerard Kiley	Environmental Engineering	The Mcgraw Hill Company	2007
V.A.Shenai	Toxicity of dyes and Pigments	Sevak Publications, Mumbai	1987

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

VI SEMESTER

2015 – 2016 onwards

ADVANCES IN TEXTILE PROCESSING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36182

Semester : VI Semester

Subject Title : ADVANCES IN TEXTILE PROCESSING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 15

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ADVANCES IN TEXTILE PROCESSING	5 Hrs	75 Hrs	25	75	100	3 Hrs

Topics and Allocation of Hours:

Unit	Topic	Time (hrs.)
1	KNIT PROCESSING	13
2	GARMENT PROCESSING & DENIM PROCESSING	13
3	CONTINUOUS PROCESSING TECHNIQUES	14
4	NANO TECHNOLOGY	14
5	PLASMA TECHNOLOGY	14
6	TEST & REVISION	07
	Total	75

RATIONALE:

Advances in textile processing covers knit processing, garment processing, denim processing, continuous processing, nano technology and plasma technology will give the knowledge in latest machines and the process of the textile processing industries. This will give enough knowledge for the students to work in the industries.

OBJECTIVES:

To acquire knowledge in knit processing sequence

To differentiate the knit processing from woven fabric processing

To impart knowledge in garment processing

To know about various special effects produced on garments

To educate in the field of continuous processing

To have an idea about various continuous processes being practiced

To impart knowledge about the new technology i.e. Nanotechnology

To know about the application of nanotechnology in textiles

To have knowledge about types of plasma and their characteristics

To study about the application of plasma reactors in textiles.

DETAILED SYLLABUS

CONTENTS

UNIT	NAME OF TOPICS	Hours
1	**KNIT PROCESSING** Sequence of knit processing operations - Stitching, reversing, singeing, scouring, mercerizing, bleaching, dyeing and finishing. Machines - knit tube reversing machine, tubular singeing, tubular mercerizing, Working of Soft flow, Air flow, Balloon padder, Tumble drier, Slit opening machine, compacting machine. Processing of lycra blends.	**13**
2	**GARMENT PROCESSING AND DENIM PROCESSING** Garment processing - Pros and cons of garment dyeing - Rotary drum dyeing. Speciality effects on garments - stone washing, bio polishing, sandblasting, acid wash, embossing and dry finishing. Denim processing and continuous dyeing of warp yarn using indigo dyes and Sulphur black. Socks dyeing.	**13**
3	**CONTINUOUS PROCESSING TECHNIQUES** Continuous combined scouring and bleaching of cotton fabrics (Pad – steam method). Continuous dyeing – cold pad batch, Pad – dry pad - steam process for bi functional reactive dyes. Continuous dyeing of cotton with Vat dyes (Pad – dry - pad - steam). Continuous preparation for P/C blends. Continuous dyeing for P/C blends using disperse and reactive dyes. Continuous weight reduction of PET. E control processes. Brief study on auto dispensing systems.	**14**
4	**NANO TECHNOLOGY** Definition, top down and bottom up approaches to produce nano technology, nano fibres. Comparison between nano tech finishing with conventional finishing. Functional finishes - UV protection, flame retardency, antibacterial, antistatic, water, oil and stain repellency, soil resistance, wrinkle resistance. Commercially successful finishes - Nano – tex, Nano – sphere, Nano – pell, Nano	**14**

	– touch, Nano – dry.	
5	**PLASMA TECHNOLOGY** Plasma - Definition, types, characteristics and classification. Application of plasma in textiles - Fabric preparation and finishing. Effects of plasma on textile substrates - surface energy, wetting and wicking, cohesive and adhesive properties. Surface modification of fibres - cotton, wool and polyester. Plasma polymerization on textile substrates. Limitations of plasma treatments.	**14**

TEXT BOOKS:

S. No	Title	Author	Publisher	Year of Publishing
1	Denim washes	Dr.J.V. Rao	NITRA	
2	Denim - a fabric for all	Dr. M.S. Parmer, Dr.Jai Prakash, S.S.Satsangi	NITRA	

REFERENCE:

S. No	Title	Author	Publisher	Year of Publishing
1	Nano fibres and nano technology in textiles	Brown & Stevens	Wood head Publishing limited, U.K	2007
2	Plasma technology for textiles	Shishoo	Wood head Publishing limited, U.K	2007

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING
DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

VI SEMESTER

2015 – 2016 onwards

GARMENT MANUFACTURE PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36064

Semester : VI Semester

Subject Title **:** GARMENT MANUFACTURE PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours /Week	Hours /Semester	Marks			Duration
GARMENT MANUFACTURE PRACTICAL	4	60	Internal Assessment	Board Examination	Total	
			25	75	100	3 Hrs

Rationale:

The diploma students should necessarily have basic practical skills and knowledge to get their work done in their carreer in the industry and trade, where they are going to get absorbed either as technicians or administrators or entrepreneurs. This is achieved by introducing practical experiments with hands on experience in the specified subjects.

GUIDELINES:

- All the experiments given in the list of experiments should be completed and given for the Board Practical Examination.
- To develop best skills in handling Instruments / Equipments and taking readings in the practical classes, every batch of students should be

provided with a separate experimental setup for doing experiments in the laboratory.

- The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Practical Examinations.

OBJECTIVES:

1. To learn the fundamentals of pattern drafting.
2. To understand the concepts of garment making.
3. To familiarize them with colour theory and fashion concepts.

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

Drawing

1. Drawing Ladies high fashion dress and make it decorative.

Preparing samples

2. Preparing hand embroidery samples with running, back & chain stitches.
3. Preparing stem and satin stitches.

Pattern Drafting

4. Preparing pattern for Basic T-shirt.
5. Preparing pattern for A-line frock.
6. Preparing pattern for Ladies skirt
7. Preparing pattern for Ladies nightwear.
8. Preparing pattern for Gent's shirt with full sleeve.

Construction

9. Using the given paper pattern, construction of A- line frock.
10. Using the given paper pattern, construction of ladies skirt.
11. Using the given paper pattern, construction of ladies nightwear.
12. Using the given paper pattern, construction of Gents shirt with full sleeve.

QUESTION PAPER PATTERN & ALLOCATION OF MARKS

Single experiment is to be given per student

Experiment	50 marks
Write up / diagram	20 marks
Viva - Voce	05 marks
Total	75 Marks

EQUIPMENT LIST:

S.No.	Name of Equipments
1	Lock Stitch Pedal Sewing Machine – 10 Nos.
2	3-Thread Over lock – 1 No.
3	Steam Iron Box – 1 No.
4	Drafting & Cutting Table – 1 No.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

VI SEMESTER

2015 – 2016 onwards

SHADE MATCHING IN DYEING AND PRINTING PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code : **36165**

Semester : VI Semester

Subject Title : SHADE MATCHING IN DYEING AND PRINTING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours /Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
SHADE MATCHING IN DYEING AND PRINTING - PRACTICAL	6	90	25	75	100	3 Hrs

RATIONALE:

Shade matching in dyeing and printing is one of the skillful technique and essential to master in this profession. A laboratory level matching practice would be helpful in building the essential skills to become a perfect technician.

GUIDELINES

- All the twelve experiments given in the list of experiments should be completed and given for the board practical examination.
- In order to gain in - depth practical knowledge, every student should individually carry out the experiments in the laboratory.

- The external examiners are requested to ensure that a single experimental question should not be given to more than three students while examining a batch of 30 students during Board Examinations.

ALLOCATION OF MARKS

Procedure:	15 marks
Calculation:	20 marks
Result with Dyed sample:	35 marks
Viva voce:	05 marks
Total	75 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. PREPARATION OF SELF SHADES

To prepare self shades using cold, vinyl sulphone and bi-functional reactive dyes (light, medium and dark shades)

2. PREPARATION OF COMPOUND SHADES USING TWO DIFFERENT COLOURS

To prepare compound shades using two different Reactive cold brand, Reactive vinyl sulphone colours and Reactive bi-functional colours in different proportions.

3. PREPARATION OF COMPOUND SHADES USING THREE DIFFERENT COLOURS

To prepare compound shades using three different Reactive bi-functional and Reactive vinyl sulphone dyes in 60/20/20, 40/40/20 and 30/30/40 proportions.

4. MATCHING OF COMPOUND SHADES

To match the compound shades using two different Reactive cold brands, Reactive bi-functional and vinyl sulphone dyes for the given sample.

5. PREPARATION OF PRINTING SHADE CARDS

To prepare the printing shade cards two different Reactive colours and two pigment colours in different combinations.

6. PRINTED SHADE MATCHING

To match the given printed sample using two Reactive colours and two pigment colours

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Preparations of self shade using cold and vinyl sulphone Reactive Dyes (Light, Medium and Dark Shades).
2. Preparations of self shade using bi-functional Reactive Dyes (Light, Medium and Dark Shades).
3. Preparations of compound shades (using 2 different vinyl sulphone reactive colours in different proportions).
4. Preparations of compound shades (using 2 different bi-functional reactive colours in different combinations).
5. Preparation of compound shades using 3 different vinyl sulphone Reactive colours in 60/20/20, 40/40/20 & 30/30/40 proportions.
6. Preparation of compound shades using 3 different bi-functional colours in 60/20/20, 40/40/20 & 30/30/40 proportions.
7. Matching of compound shades using vinyl sulphone Reactive Dyes for the given sample.
8. Matching of compound shades bi-functional Reactive Dyes for the given sample.
9. Preparation of printing shade Card (using 2 Reactive dyes in different combinations).
10. Preparation of printing shade Card (using 2 pigment colours in different combinations).
11. Printed shade matching using 2 Reactive dyes.
12. Printed shade matching using 2 pigments colours.

LIST OF EQUIPMENTS AND THE QUANTITY REQUIRED FOR A BATCH OF 30 STUDENTS

List of Equipments:

1. Dye baths with 6 pots – 15 Nos.
2. Hot plate – 2 Nos.
3. Printing Table -1 with 5 meter length
4. Printing screens--10
5. Curing Oven-1
6. Baby Steamer-1
7. Printing Blocks-2
8. High speed stirrer -4
9. Squeegees -10

Materials and the quantity required (for a batch of 30 students):

1. Bleached cotton hank – 1 Kg
2. Bleached cotton Fabric - 5 meters
3. Any one colour from all major dye classes - 100 gms each.

SAFETY PRECATIONS TO BE FOLLOWED

1. Wearing the gloves in hand while taking and mixing the dyes stuffs and chemicals
2. Should wear safe foot wear, preferably shoes.
3. Should keep their shirts tucked in.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.
5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machines without doing regular safety checks and closing the safety doors.
8. Exhaust fans should be provided in the laboratory, so that unwanted smell and toxic air can be forced out

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

VI SEMESTER

2015 – 2016 onwards

TEXTILE TESTING PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36166

Semester : VI Semester

Subject Title **:** TEXTILE TESTING – PRACTICAL

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours /Week	Hours /Semester	Marks			Duration
Textile testing practical	5	75	Internal Assessment	Board Examination	Total	
			25	75	100	3 Hrs

RATIONALE:

Textile testing practical covers enough knowledge about analysis of individual composition of yarn defects, lea strength, tensile strength single and ply yarn twist and analysis of woven and knitted fabric. This enables the students to learn complete knowledge about textile testing. This will help them to work in testing laboratory of textile industries.

GUIDELINES

- All the twelve experiments given in the list of experiments should be completed and given for the board practical examination.
- In order to gain in - depth practical knowledge, every student should individually carry out the experiments in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than three students while examining a batch of 30 students during Board Examinations.

List of experiment

- To understand the working of various textile testing instruments (Fibre, yarn and fabrics).

Fibre testing

- Identification of fibres.

Yarn Testing

- Determination of count by using Beesley balance.
- Determination of single yarn twist by tension type twist tester.
- Determination of ply yarn twist by take up twist tester.
- Determination of Lea strength and CSP.
- Determination of yarn appearance grade as per ASTM visual examination method.

Fabric testing

- Determination of fabric tensile strength by tensile strength tester (Warp way & Weft way).
- Determination of fabric tearing strength (Warp way & Weft way).
- Analysis of woven fabrics and knitted fabrics for their quality particulars

ALLOCATION OF MARKS

Experiment	50 marks
Write up / diagram / calculations	20 marks
Viva	05 marks
Total	75 Marks

List of equipments: -

Beesley balance – 2

Tension type Twist tester – 2

Take up type Twist tester – 2

Lea strength tester – 1

Yarn appearance winder – 1

Ballistic tester – 1

GSM Cutter – 1

Material required: - For a batch of 30 students.

1. Various types of fibres each – 250 gms
2. Cotton yarn – ½ kg
3. Cotton fabric – 3 meters
4. Knitted fabric – 3 meters

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. IDENTIFICATION OF FIBRES

To study about the identification of fibres by burning and solvent test

2. DETERMINATION OF TWIST FOR SINGLE AND PLY YARN

To understand the estimation of twist characteristics of single and ply yarn

3. DETERMINATION OF YARN DEFECTS

To study about the yarn defects using ASTM black board tester

4. DETERMINATION OF LEA STRENGTH & TENSILE STRENGTH OF FABRIC

To study about the lea strength of yarn by using lea strength tester and the tensile strength of fabrics using tensile strength tester

5. ANALYSIS OF WOVEN FABRICS AND KNITTED FABRICS

To make analysis of woven fabrics and knitted fabrics for their quality particulars

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Identification of fibres by burning test.
2. Identification of fibres by solvent test.
3. Determination of count of fabric by using beesley balance.
4. Determination of twist for single yarn.
5. Determination of twist for ply yarn
6. Determination of lea strength by lea strength tester.
7. Determination of yarn defects by using ASTM black board tester
8. Determination of tensile strength of fabrics by tensile strength tester.
9. Determination of fabric tearing strength (Warp way & Weft way)
10. Analysis of woven fabrics for ends / inch, picks/ inch, warp count, weft count, and weight of the fabric per square meter
11. Calculate the Cost of fabric per meter for the given Striped / Checked fabric.
12. Analysis of knitted fabrics for wales / inch, course / inch, stitch density, loop length and GSM.

SAFETY PRECATIONS TO BE FOLLOWED

1. Wearing the gloves in hand while taking the chemicals
2. Should wear safe foot wear, preferably shoes.
3. Should keep their shirts tucked in.
4. Should inform the staff in charge immediately if they find any unsafe condition in the machine.
5. Should not wear loose shirts.
6. Should not open the doors and covers while the machine is running.
7. Should not start running a machines without doing regular safety checks and closing the safety doors.
8. Exhaust fans should be provided in the laboratory, so that unwanted smell and toxic air can be forced out

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

VI SEMESTER

2015 – 2016 onwards

PROJECT WORK

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 36167

Semester : VI Semester

Subject Title **:** PROJECT WORK

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Industrial Training		Examination			
	Days / Week	Weeks / Semester	Marks			Duration
PROJECT WORK	4	60	Internal Assessment	Board Examination	Total	
			25	75	100	3 Hrs

Minimum Marks for Pass is 50 out of which minimum 35 marks should be obtained out of 75 marks in the board Examination alone.

OBJECTIVES:

- Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment
- Get exposure on industrial environment and its work ethics.
- Understand what entrepreneurship is and how to become an entrepreneur.
- Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
- Carry out cooperative learning through synchronous guided discussions within

the class in key dates, asynchronous document sharing and discussions, as well as to prepare collaborative edition of the final project report.

- ❖ Understand the facts and importance of environmental management.
- ❖ Understand and gain knowledge about disaster management

INTERNAL ASSESSMENT:
The internal assessment should be calculated based on the review of the progress of the work done by the student periodically as follows.

Detail of assessment	Period of assessment	Max. Marks
First Review	6th week	10
Second Review	12th week	10
Attendance	Entire semester	5
Total		25

EVALUATION FOR BOARD EXAMINATION:

Details of Mark allocation	Max Marks
Marks for Report Preparation, Demo, Viva-voce	65
Marks for answers of 4 questions which is to be set by the external examiner from the given question bank consisting of questions in the following two topics Disaster Management and Environmental Management. Out of four questions two questions to appear from each of the above topics i.e. 2 questions x 2 topics = 4 questions 4 questions x 2 ½ marks = 10 Marks	10
Total	**75**

DETAILED SYLLABUS

ENVIRONMENTAL & DISASTER MANAGEMENT

1. ENVIRONMENTAL MANAGEMENT

Introduction – Environmental Ethics – Assessment of Socio Economic Impact – Environmental Audit – Mitigation of adverse impact on Environment – Importance of Pollution Control – Types of Industries and Industrial Pollution.

Solid waste management – Characteristics of Industrial wastes – Methods of Collection, transfer and disposal of solid wastes – Converting waste to energy – Hazardous waste

management Treatment technologies.

Waste water management – Characteristics of Industrial effluents – Treatment and disposal methods – Pollution of water sources and effects on human health.

Air pollution management – Sources and effects – Dispersion of air pollutants – Air pollution control methods – Air quality management.

Noise pollution management – Effects of noise on people – Noise control methods.

2. DISASTER MANAGEMENT

Introduction – Disasters due to natural calamities such as Earthquake, Rain, Flood, Hurricane, Cyclones etc – Man made Disasters – Crisis due to fires, accidents, strikes etc – Loss of property and life..

Disaster Mitigation measures – Causes for major disasters – Risk Identification – Hazard Zones – Selection of sites for Industries and residential buildings – Minimum distances from Sea – Orientation of Buildings – Stability of Structures – Fire escapes in buildings - Cyclone shelters – Warning systems.

Disaster Management – Preparedness, Response, Recovery – Arrangements to be made in the industries / factories and buildings – Mobilization of Emergency Services - Search and Rescue operations – First Aids – Transportation of affected people – Hospital facilities – Fire fighting arrangements – Communication systems – Restoration of Power supply – Getting assistance of neighbors / Other organizations in Recovery and Rebuilding works – Financial commitments – Compensations to be paid – Insurances – Rehabilitation.

LIST OF QUESTIONS

1. ENVIRONMENTRAL MANAGEMENT

1. What is the responsibility of an Engineer-in-charge of an Industry with respect to Public Health?
2. Define Environmental Ethic.
3. How Industries play their role in polluting the environment?
4. What is the necessity of pollution control? What are all the different organizations you know, which deal with pollution control?
5. List out the different types of pollutions caused by a Chemical / Textile / Leather / Automobile / Cement factory.
6. What is meant by Hazardous waste?
7. Define Industrial waste management.
8. Differentiate between garbage, rubbish, refuse and trash based on their composition and source.

9. Explain briefly how the quantity of solid waste generated in an industry could be reduced.
10. What are the objectives of treatments of solid wastes before disposal?
11. What are the different methods of disposal of solid wastes?
12. Explain how the principle of recycling could be applied in the process of waste minimization.
13. Define the term 'Environmental Waste Audit'.
14. List and discuss the factors pertinent to the selection of landfill site.
15. Explain the purpose of daily cover in a sanitary landfill and state the minimum desirable depth of daily cover.
16. Describe any two methods of converting waste into energy.
17. What actions, a local body such as a municipality could take when the agency appointed for collecting and disposing the solid wastes fails to do the work continuously for number of days?
18. Write a note on Characteristics of hazardous waste.
19. What is the difference between municipal and industrial effluent ?
20. List few of the undesirable parameters / pollutants anticipated in the effluents from oil refinery industry / thermal power plants / textile industries / woolen mills / dye industries / electroplating industries / cement plants / leather industries (any two may be asked)
21. Explain briefly the process of Equalization and Neutralization of waste water of varying characteristics discharged from an Industry.
22. Explain briefly the Physical treatments "Sedimentation" and "Floatation" processes in the waste water treatment.
23. Explain briefly when and how chemical / biological treatments are given to the waste water.
24. List the four common advanced waste water treatment processes and the pollutants they remove.
25. Describe refractory organics and the method used to remove them from the effluent.
26. Explain biological nitrification and de-nitrification.
27. Describe the basic approaches to land treatment of Industrial Effluent.
28. Describe the locations for the ultimate disposal of sludge and the treatment steps needed prior to ultimate disposal.
29. List any five Industries, which act as the major sources for Hazardous Air Pollutants.
30. List out the names of any three hazardous air pollutants and their effects on human health.
31. Explain the influence of moisture, temperature and sunlight on the severity of air pollution effects on materials.
32. Differentiate between acute and chronic health effects from Air pollution.
33. Define the term Acid rain and explain how it occurs.

34. Discuss briefly the causes for global warming and its consequences
35. Suggest suitable Air pollution control devices for a few pollutants and sources.
36. Explain how evaporative emissions and exhaust emissions are commonly controlled.
37. What are the harmful elements present in the automobile smokes? How their presence could be controlled?
38. What is the Advantage of Ozone layer in the atmosphere? State few reasons for its destruction.
39. Explain the mechanism by which hearing damage occurs.
40. List any five effects of noise other than hearing damage.
41. Explain why impulsive noise is more dangerous than steady state noise.
42. Explain briefly the Source – Path – Receiver concept of Noise control.
43. Where silencers or mufflers are used ? Explain how they reduce the noise.
44. Describe two techniques to protect the receiver from hearing loss when design / redress for noise control fail.
45. What are the problems faced by the people residing along the side of a railway track and near to an Airport? What provisions could be made in their houses to reduce the problem?

2. DISASTER MANAGEMENT

1. What is meant by Disaster Management? What are the different stages of Disaster management?
2. Differentiate Natural Disasters and Man made Disasters with examples.
3. Describe the necessity of Risk identification and Assessment Surveys while planning a project.
4. What is Disasters recovery and what does it mean to an Industry?
5. What are the factors to be considered while planning the rebuilding works after a major disaster due to flood / cyclone / earthquake? (Any one may be asked)
6. List out the public emergency services available in the state, which could be approached for help during a natural disaster.
7. Specify the role played by an Engineer in the process of Disaster management.
8. What is the cause for Earthquakes? How they are measured? Which parts of India are more vulnerable for frequent earthquakes?
9. What was the cause for the Tsunami 2004 which inflicted heavy loss to life and property along the coast of Tamilnadu ? Specify its epicenter and magnitude.
10. Specify the Earthquake Hazard Zones in which the following towns of Tamilnadu lie: (a) Chennai (b) Nagapattinam (c) Coimbatore (d) Madurai (e) Salem.
11. Which parts of India are experiencing frequent natural calamities such as (a) heavy rain fall (b) huge losses due to floods (c) severe cyclones

12. Define basic wind speed. What will be the peak wind speed in (a) Very high damage risk zone – A, (b) High damage risk zone, (c) Low damage risk zone.
13. Specify the minimum distance from the Sea shore and minimum height above the mean sea level, desirable for the location of buildings.
14. Explain how the topography of the site plays a role in the disasters caused by floods and cyclones.
15. Explain how the shape and orientation of buildings could reduce the damages due to cyclones.
16. What is a cyclone shelter ? When and where it is provided ? What are its requirements ?
17. What Precautionary measures have to be taken by the authorities before opening a dam for discharging the excess water into a canal/river ?
18. What are the causes for fire accidents ? Specify the remedial measures to be taken in buildings to avoid fire accidents.
19. What is a fire escape in multistoried buildings ? What are its requirements ?
20. How the imamates of a multistory building are to be evacuted in the event of a fire/Chemical spill/Toxic Air Situation/ Terrorist attack, (any one may be asked).
21. Describe different fire fighting arrangements to be provided in an Industry.
22. Explain the necessity of disaster warning systems in Industries.
23. Explain how rescue operations have to be carried out in the case of collapse of buildings due to earthquake / blast / Cyclone / flood.
24. What are the necessary steps to be taken to avoid dangerous epidemics after a flood disaster?
25. What relief works that have to be carried out to save the lives of workers when the factory area is suddenly affected by a dangerous gas leak / sudden flooding ?
26. What are the difficulties faced by an Industry when there is a sudden power failure? How such a situation could be managed?
27. What are the difficulties faced by the Management when there is a group clash between the workers? How such a situation could be managed?
28. What will be the problems faced by the management of an Industry when a worker dies because of the failure of a mechanical device due to poor maintenance? How to manage such a situation ?
29. What precautionary measures have to be taken to avoid accidents to labourers in the Industry in a workshop / during handling of dangerous Chemicals / during construction of buildings / during the building maintenance works.
30. Explain the necessity of medical care facilities in an Industry / Project site.
31. Explain the necessity of proper training to the employees of Industries dealing with hazardous products, to act during disasters.
32. What type of disaster is expected in coal mines, cotton mills, Oil refineries, ship yards and gas plants?

33. What is meant by Emergency Plan Rehearsal? What are the advantages of such Rehearsals?
34. What action you will take when your employees could not reach the factory site because of continuous strike by Public Transport workers?
35. What immediate actions you will initiate when the quarters of your factory workers are suddenly flooded due to the breach in a nearly lake / dam, during heavy rain?
36. What steps you will take to avoid a break down when the workers union of your Industry have given a strike notice?
37. List out few possible crisis in an organization caused by its workers? What could be the part of the middle level officials in managing such crisis?
38. What types of warning systems are available to alert the people in the case of predicted disasters, such as floods, cyclone etc.
39. Explain the necessity of Team work in the crisis management in an Industry / Local body.
40. What factors are to be considered while fixing compensation to the workers in the case of severe accidents causing disability / death to them?
41. Explain the legal / financial problems the management has to face if safely measures taken by them are found to be in adequate.
42. Describe the importance of insurance to men and machinery of an Industry dealing with dangerous jobs.
43. What precautions have to be taken while storing explosives in a match/ fire crackers factory?
44. What are the arrangements required for emergency rescue works in the case of Atomic Power Plants?
45. Why residential quarters are not constructed nearer to Atomic Power Plants?

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VII SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

M – SCHEME

VII SEMESTER

2015 – 2016 onwards

INDUSTRIAL TRAINING & VIVA VOCE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING (SANDWICH)

M - SCHEME

(To be implemented from the student admitted from the year 2015-2016 onwards)

Course Name **:** DIPLOMA IN TEXTILE PROCESSING (SANDWICH)

Subject Code **:** 36192

Semester : VII Semester

Subject Title **:** INDUSTRIAL TRAINING & VIVA VOCE

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Industrial Training		Examination			
	Days / Week	Weeks / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
INDUSTRIAL TRAINING & VIVA VOCE	5	75	25	75	100	3 Hrs

Each student has to undergo industrial Training in Textile Industries for a period of 16 weeks during VII Semester.

ALLOCATION OF MARKS:

TIME: 3 HRS.	MAX.MARKS: 100
Industrial Review I (6th week)	10
Industrial Review II (12th week)	10
Attendance	05
Total	25
Board Examination	
Report preparation	45
Viva Voce	30
Total	75