SYLLABUS

CURRICULUM AND SYLLABUS FOR FULL TIME

DIPLOMA IN TEXTILE TECHNOLOGY (MAN MADE FIBRE)

Course Code: 1225

2015-2016

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M - SCHEME

DIRECTORATE OF TECHNICAL EDUCATION
GOVERNMENT OF TAMILNADU

DIPLOMA COURSES IN ENGINEERING/TECHNOLOGY
(SEMESTER SYSTEM)
Diploma in Textile Technology (Man Made FIbre)
Syllabus 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.

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During 4th and/or during 7th 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.

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- 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.

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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

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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.

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B. For Practical Subjects:

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

a)	Attendance (Award of marks as same as Theory subjects)	:	**5 Marks**
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**

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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.

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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).

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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 TECHNOLOGY (MAN-MADE FIBRE)

I. SIGNIFICANCE OF THE COURSE

The 3-year Full-Time Diploma programme in Textile Technology (Man-Made Fibre) was introduced in S.S.M. Institute of Textile Technology & Polytechnic College, Komarapalayam in the year 1984 - 85 by Directorate of Technical Education, Chennai. The programme was introduced with the aim of creating technical man-power to meet the human resource needs of the Fibre Manufacturing Industries, Textile Wet Processing Units and Garment Industries which are steadily changing from cotton to synthetic fibres and their blends.

The curriculum for I year is common with the other diploma programmes. The present revised syllabus which will be followed from 2015-2016 batch onwards also conform to the earlier syllabus in terms of the number of units in the curriculum.

Now, in the present syllabus emphasis is given to Fibre Science and Manufacturing (4 Subjects), Spinning (1 subject), Fabric Manufacture (1 subject), Textile Wet Processing (4 subjects), Garment Technology (3 subjects) so as to enable students to get placements in these areas as well as fibre producing industries. The Synthetic Fibre Manufacturing Technology and Advances in Synthetic Fibres are incorporated in the new syllabus for preparing students. Emphasis is also given to Natural Fibres and Regenerated Cellulosic Fibres; Spinning, Weaving, Chemical processing of blends and Garment are also given due importance in this syllabus.

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The curriculum also emphasis industrial exposure and relevance to industrial needs.

The syllabus sub-committee, after lots of deliberations have proposed and drafted the new syllabus which has the following features :

i) The subjects are enriched and updated in the area of the specialisation with the able guidance of the expert members
ii) Topics of industrial importance and relevance are included
iii) Practical content of the programme is increased to the maximum extent possible bringing it to 14 theory courses , 13 practical courses and a project work.
iv) To improve the communication skills of the students, communication and life skill lab is introduced.
v) To improve the computer proficiency of the students, computer application lab is introduced.

THIS NEW SYLLABUS FOR II AND III YEAR IS TO BE FOLLOWED FROM THE ACADEMIC YEAR 2016-2017 ONWARDS.

II. OBJECTIVES OF THE COURSE.

This Diploma programme in Textile Technology (Man-Made Fibres) is aimed at producing technicians for fulfilling the manpower requirements of the various streams of the textile industry like Man Made Fibre manufacturing, Textile Wet processing and Garment industry. Candidates can become Technicians in the fibre manufacturing Industry, Textile Wet processing, Garment industry. He/she can also become Fashion Designer in the Fashion Industry and an entrepreneur of a small scale industry.

Lot of funds is currently flowing for the research activities in the field of Technical Textiles which are mainly made by man made fibres. In such scenario, this course is very much useful to our country in order to produce skilled technical man power to feed such an industry.

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ANNEXURE-I
DIPLOMA IN TEXTILE TECHNOLOGY (MAN MADE FIBRE)

Course code: 1225 **M Scheme**

CURRICULUM OUTLINE

III SEMESTER:

Subject Code	Subject	HOURS PER WEEK			
		Theory Hours	Tutorial (or) Drawing	Practical Hours	Total Hours
36231	Science of Natural Fibres	5			5
36132	Preparation for Textile Processing #	5			5
36633	Apparel Designing - @	5			5
36234	Fibre Analysis-Practical			5	5
36235	Preparation for Textile Processing-Practical			5	5
36236	Apparel Designing-Practical			5	5
30001	Computer Application Practical **			4	4
Seminar		1			1
TOTAL		16		19	35

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Note: # common with Diploma in Textile Processing

@ common with Diploma in Garment Technology

** **common to all Diploma Courses.**

IV SEMESTER:

Subject Code	Subject	HOURS PER WEEK			
		Theory Hours	Tutorial (or) Drawing	Practical Hours	Total Hours
36141	Technology of Yarn Manufacture #	5			5
36142	Technology of Fabric Manufacture #	5			5
36243	Polymer Science and Regenerated Fibres	5			5
36244	Technology of Dyeing of Natural and Man Made Textiles	5			5
36245	Technology of Yarn Manufacture-Practical			5	5
36246	Technology of Fabric Manufacture-Practical			5	5
36247	Technology of Dyeing of Natural and Man Made Textiles-Practical			4	4
Seminar		1			1
TOTAL		21		14	35

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Note: # common with Diploma in Textile Processing

V SEMESTER:

Subject Code	Subject	HOURS PER WEEK			
		Theory Hours	Tutorial (or) Drawing	Practical Hours	Total Hours
36051	Textile Testing*	5			5
36152	Technology of Textile Printing #	5			5
36253	Synthetic Fibre Manufacture	5			5
ELECTIVE-I					
36271	Garment Manufacturing Technology-I	5			5
36072	Technical Textile*				
36255	Textile Testing-Practical			5	5
36256	Garment Manufacturing Technology Practical			5	5
30002	Life and Employability Skill Practical**			4	4
Seminar		1			1
TOTAL		21		14	35

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Note: * common with Diploma in Textile Technology

\# common with Diploma in Textile Processing

** **common to all Diploma Courses.**

VI SEMESTER:

Subject Code	Subject	HOURS PER WEEK			
		Theory Hours	Tutorial (or) Drawing	Practical Hours	Total Hours
36061	Textile Management*	5			5
36262	Technology of Finishing of Natural and Man Made Textiles	5			5
ELECTIVE-II					
36281	Garment Manufacturing Technology-II	5			5
36282	Advances in Synthetic Fibre Manufacture				
36264	Textile Printing – Practical			5	5
36265	Technology of Finishing of Natural and Man Made Textiles-Practical			5	5
36266	Advanced Garment Manufacturing Technology Practical			5	5
36267	Project Work			4	4
Seminar		1			1
TOTAL		16		19	35

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Note: * common with Diploma in Textile Technology

DIPLOMA IN TEXTILE TECHNOLOGY (MAN MADE FIBRE)

Course code: 1225

M Scheme

SCHEME OF EXAMINATION

III SEMESTER:

Subject Code	Subject	Scheme of Exam				
		Duration of Exam (Hours)	Examination Marks			Minimum Marks For Pass
			Internal Assess-ment Mark	Board Exam. Marks	Total Marks	
36231	Science of Natural Fibres	3	25	75	100	40
36132	Preparation for Textile Processing #	3	25	75	100	40
36633	Apparel Designing - @	3	25	75	100	40
36234	Fibre Analysis-Practical	3	25	75	100	50
36235	Preparation for Textile Processing-Practical	3	25	75	100	50
36236	Apparel Designing-Practical	3	25	75	100	50
30001	Computer Applications Practical **	3	25	75	100	50
TOTAL			175	525	700	

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Note: # common with Diploma in Textile Processing

@ common with Diploma in Garment Technology

** **common to all Diploma Courses.**

IV SEMESTER:

Subject Code	Subject	Scheme of Exam				
		Duration of Exam (Hours)	Examination Marks			Minimum Marks For Pass
			Internal Assess-ment Mark	Board Exam. Marks	Total Marks	
36141	Technology of Yarn Manufacture #	3	25	75	100	40
36142	Technology of Fabric Manufacture #	3	25	75	100	40
36243	Polymer Science and Regenerated Fibres	3	25	75	100	40
36244	Technology of Dyeing of Natural and Man Made Textiles	3	25	75	100	40
36245	Technology of Yarn Manufacture-Practical	3	25	75	100	50
36246	Technology of Fabric Manufacture-Practical	3	25	75	100	50
36247	Technology of Dyeing of Natural and Man Made Textiles-Practical	3	25	75	100	50
TOTAL			175	525	700	

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Note: # common with Diploma in Textile Processing

V SEMESTER:

Subject Code	Subject	Scheme of Exam				
		Duration of Exam (Hours)	Examination Marks			Minimum Marks For Pass
			Internal Assess-ment Mark	Board Exam. Marks	Total Marks	
36051	Textile Testing*	3	25	75	100	40
36152	Technology of Textile Printing #	3	25	75	100	40
36253	Synthetic Fibre Manufacture	3	25	75	100	40
ELECTIVE - I						
36271	Garment Manufacturing Technology-I	3	25	75	100	40
36072	Technical Textile*					
36255	Textile Testing-Practical	3	25	75	100	50
36256	Garment Manufacturing Technology Practical	3	25	75	100	50
30002	Life and Employability Skill Practical**	3	25	75	100	50
TOTAL			175	525	700	

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Note: * common with Diploma in Textile Technology

\# common with Diploma in Textile Processing

** **common to all Diploma Courses.**

VI SEMESTER:

Subject Code	Subject	Scheme of Exam				
		Duration of Exam (Hours)	Examination Marks			Minimum Marks For Pass
			Internal Assess-ment Mark	Board Exam. Marks	Total Marks	
36061	Textile Management*	3	25	75	100	40
36262	Technology of Finishing of Natural and Man Made Textiles	3	25	75	100	40
ELECTIVE - II						
36281	Garment Manufacturing Technology-II	3	25	75	100	40
36282	Advances in Synthetic Fibre Manufacture					
36264	Textile Printing – Practical	3	25	75	100	50
36265	Technology of Finishing of Natural and Man Made Textiles-Practical	3	25	75	100	50
36266	Advanced Garment Manufacturing Technology Practical	3	25	75	100	50
36267	Project Work	3	25	75	100	50
TOTAL			175	525	700	

Note: * common with Diploma in Textile Technology

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DIPLOMA IN TEXTILE TECHNOLOGY (MAN MADE FIBRE)

ALTERNATIVE SUBJECTS FOR II AND III YEAR

Subject code	L Scheme	Subject code	Alternative Subject in M Scheme
III Semester W.E.F. OCT '16			
26231	Natural Fibre Science	36231	Science of Natural Fibres
26132	Preparation for Textile Processing	36132	Preparation for Textile Processing
26633	Apparel Designing	36633	Apparel Designing
26234	Fibre Analysis-Practical	36234	Fibre Analysis-Practical
26235	Preparation for Textile Processing-Practical	36235	Preparation for Textile Processing-Practical
26236	Apparel Designing-Practical	36236	Apparel Designing-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
26243	Polymer Science and Regenerated Fibres	36243	Polymer Science and Regenerated Fibres
26244	Technology of Dyeing of Natural and Man Made Textiles	36244	Technology of Dyeing of Natural and Man Made Textiles
26245	Technology of Yarn Manufacture-Practical	36245	Technology of Yarn Manufacture-Practical
26246	Technology of Fabric Manufacture-Practical	36246	Technology of Fabric Manufacture-Practical
26247	Technology of Dyeing of Natural and Man Made Textiles-Practical	36247	Technology of Dyeing of Natural and Man Made Textiles-Practical

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Subject code	L Scheme	Subject code	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
26253	Synthetic Fibre Manufacture	36253	Synthetic Fibre Manufacture
	5.4 Elective I		
26271	Garment Manufacturing Technology-I	36271	Garment Manufacturing Technology-I
26072	Technical Textile	36072	Technical Textile
26255	Textile Testing-Practical	36255	Textile Testing-Practical
26256	Garment Manufacturing Technology Practical	36256	Garment Manufacturing Technology Practical
20002	Communication and Life Skill practical	30002	Life and Employability Skill practical
VI Semester – W.E.F. APR '18			
26061	Textile Management	36061	Textile Management
26262	Technology of Finishing of Natural and Man Made Textiles	36262	Technology of Finishing of Natural and Man Made Textiles
	6.3 Elective II		
26281	Garment Manufacturing Technology-II	36281	Garment Manufacturing Technology-II
26282	Advances in Synthetic Fibre Manufacture	36282	Advances in Synthetic Fibre Manufacture
26264	Textile Printing – Practical	36264	Textile Printing – Practical
26265	Technology of Finishing of Natural and Man Made Textiles-Practical	36265	Technology of Finishing of Natural and Man Made Textiles-Practical
26266	Advanced Garment Manufacturing Technology Practical	36266	Advanced Garment Manufacturing Technology Practical
26267	Project Work	36267	Project Work

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Question paper pattern for 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)***

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III SEMESTER

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

M – SCHEME

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III SEMESTER

2015-2016 onwards

SCIENCE OF NATURAL FIBRES

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36231**
Semester : III Semester
Subject Title : **SCIENCE OF NATURAL FIBRE**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
Science of Natural Fibre.	Hours / week	Hours / semester	Assessment mark			Duration
	5	75	Internal	Board exam	Total	
			25	75	100	3 Hrs

Topics and allocation

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Unit	Topic	Time (hrs.)
I	COTTON	14
II	BAST FIBRES	14
III	SILK	14
IV	WOOL	13
V	SPECIAL FIBRES	13
VI	TEST & REVISION	7
	Total	75

RATIONALE:

The exponential growth of Textile has benefited the mankind. In the field of Textile, Fibre is the basic raw material from which we are constructing yarn and fabric. So knowing the various types of natural fibres like cotton, Bast fibres, Silk, Wool and Special fibres are very important to know the properties of the substrate and decide its end uses.

OBJECTIVES

Unit-I - Cotton

- To know about the various classifications of textile fibres their origin and chemical nature etc.
- To know about the chemical composition of Cotton.

Unit-II – Bast Fibres

- To know about the Flax fibre and Jute fibre extraction and their uses.
- To know about the Sisal and Hemp fibres

Unit-III - Silk

- To know about silk producing countries, life cycle and several process to use silk fabric.
- To know about the manufacturing of Spun Silk.

Unit-IV - Wool

- To know about Wool fibre, their origin, wool producing countries and uses etc.
- To study the physical and chemical structure of wool.

Unit-V – Special Fibres

- To know about the production of Bamboo fibre.
- To study the properties and uses of Banana, Pine Apple and Mohair.

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SCIENCE OF NATURAL FIBRE - 36231

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**COTTON:** Definition of Textile Fibre.Essential and Desirable Properties. Classification of textile fibres by origin and nature - Difference between natural and man-made fibres. Names of major cotton producing countries. Brief study of organic cotton. Stages in the growth and development of the cotton fibre during plant growth; physical structure of cotton; chemical composition of raw cotton. Commercial classification of world cottons; Grading of cotton; Important cotton varieties grown in India; Brief note on hybrid cottons. Chemical structure of cellulose, average DP of cotton cellulose. Chemical damage of cellulose - oxycellulose and hydrocellulose. Physical and chemical properties of cotton. Uses of cotton.	14
II	**BAST FIBRES:** Names of common bast fibres. **Jute:** Names of major jute producing countries. Conditions necessary for the growth of Jute; Chamical composition of Jute. Steps in the extraction of the fibre from plant source. Physical and chemical properties of jute. Uses of jute. **Flax:** Names of major flax producing countries. Conditions necessary for the growth of flax; Chamical composition of flax, Steps in the extraction of fibre from plant source. Physical and chemical properties of flax. Uses of flax. Brief note on Sisal, Hemp and Ramie fibres.	14
III	**SILK:** Names of major silk producing countries. Different types of silk, sericulture and life cycle of silk-worm. silk - reeling, throwing and doubling; Types of silk yarn commonly produced. Differences between raw, degummed and weighted silks – Brief study of Degumming and weighting processes, Elementary knowledge about Spun Silk Yarn manufacture. Chemical composition of silk. Physical and chemical properties of silk. Uses of silk.	14
IV	**WOOL:** Names of major wool producing countries. Classification of wool by sheep and by fleece. Systems for grading wool – the American system and the British system. Physical structure of wool. Chemical composition of raw wool. Production of clean wool from raw wool. The importance of Wool marks (Pure New Wool and All-wool). Brief study of the felting of wool and its causes, Physical and chemical properties of wool. Uses of wool.	13

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Unit	Name of the Topic	Hours
V	**SPECIAL FIBRES** Bamboo Fibres – Production flow chart, Properties and Uses. Soya Bean Fibres- Properties and Uses Banana Fibres- Properties and Uses Pineapple Fibres- Properties and Uses Mohair Fibres- Properties and Uses Asbestas Fibre- Properties and Uses	13

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Author	Title	Publisher	Year	Edition
Text books:				
V.A. Shenai	Textile fibres	Vol. I in the series, "Technology of Textile Processing". Sevak publications, Bombay	1997	II
S.P. Mishra	Fibre Science and Technology	New age International (p) Ltd, Daryaganj, New Delhi-110002	2005	II
Reference books:				
E.P.C. Gohle and L.D.Vilensty	Textile Science	CBS publishers and Distributors Delhi, India	1987	II (Indian Edition)
P.W. Moncrieff	Manmade fibres	Newnes – Butterworths.	1975	VI
J. Gordon cook	Hand book of Textile Fibres Vol. 1 & Vol. II	Woodhead Publishing Ltd, England.	2001	V
N.S. Kaplan	Textile Fibres	Abihisek Publications,Chandigarh.	2006	I
Akira Nakamara	Fibre science & Technology	Oxford IBH Publishing Company. New Delhi.	1980	I

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

M – SCHEME

III SEMESTER

2015-2016 onwards

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PREPARATION FOR TEXTILE PROCESSING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY(MMF)
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
			Internal Assessment	Board Examination	Total	
Preparation for Textile Processing	5 Hrs	75 Hrs	25	75	100	3 Hrs

Topics and Allocation of Hours:

Unit	Topic	Time (Hrs.)
I	Basic Textile Chemistry	14
II	Singeing & Desizing	14
III	Mercerization & Scouring	14
IV	Bleaching	13
V	Preparatory process for Non-Cellulosic fibres and drying machines	13
VI	Test & Revision	7
	Total	75

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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.

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PREPARATION FOR TEXTILE PROCESSING – 36132
DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	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
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
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
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

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Unit	Name of the Topic	Hours
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

Author	Title	Publisher	Year
Text books:			
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

www.bihts.com

Reference books:			
Trotman. E.R	Textiles Scouring & Bleaching	Charless Griffins, Com. Ltd. London	1968
Shenai.V.A	Technology of Bleaching & Mercerising	Sevak Publications, Wadala, Mumbai-31	2000
Chakravarthi.R.R & Trivedi	Technology of Bleaching and Dyeing Vol. I Part I	Mahajan Book Depot, Ahemedabad-9	1980
Marsh.J.T	Mercerising	BI Publications, Janapath Delhi-1	1979
Ghokale.S.V. & Dingra.A.K	Maintenance in Chemical Processing AITRA Ahemedabad-15		1984
C.M.Carr	Chemistry of Textile Industry	UMIST, Blackie Academic and Professional	1992
A.Cavaco-Paulo and G.M.Gubitz	Textile Processing with Enzymes	Woodhead Publishing Limited Cambridge, England.	2002
Asimkumar Roychoudhury	Textile Preparation and dyeing	Oxford & IBH Publishing co Pvt.Ltd, New Delhi	1996
G.Nalankilli & A.Edwinsunder	Chemical Preparatory Processes For Textiles.	NCUTE Publication	2004
R.S. Prayag	Bleaching, mercerizing and dyeing.	Prayag Publication	2003
J.Venkat Rao	Gaps Series	NITRA Publications, New Delhi.	2007
Dr.J.V.Rao	Chemicals	NITRA Publications, Ghaziabad.	2007
Dr.J.V.Rao	Auxiliaries	NITRA Publications, Ghaziabad.	2007
TAILFER	Bleaching of linen & cotton yarn fabrics	Abhishek Publications, Chandigar.	1998
Dr.Ashwink Agarwal	Chemical Preparatory Processes in Textiles.	NCUTE Publication	2005
J.R.Modi	Mercerisation	TAI Publications	1996
R.M.Mittal	Bleaching of cotton fabrics	TAI Publications	1996
R.M.Mittal	Processing of Blends	TAI Publications	1996

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

M – SCHEME

III SEMESTER

www.bhils.com

2015-2016 onwards

APPAREL DESIGNING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36633**
Semester : III Semester
Subject Title : **APPAREL DESIGNING**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject Title	Instructions		Examination			
	Hours/Week	Hours/Semester	Marks			Duration
Apparel Designing	5 Hrs	75 Hrs	Internal Assess - ment	Board Examination	Total	
			25	75	100	3 Hrs

Topics and Allocation of Hours:

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Sl.No.	Topic	Time(Hrs)
I	Basics of Apparel Design	14
II	Pattern Layout	14
III	Seam, Seam finishes and Plackets	14
IV	Yoke, Collars and Sleeves	13
V	Cuff, Pockets and Fullness.	13
VI	Test & Revision	7
Total		75

RATIONALE:

Style of every garment needs various design techniques for improvising the garment. The garment construction includes various types of stitches, seams, collars, cuffs, plackets, pockets, neckline finishes and fullness effect. Each and every item is used depending on the style, the personality of the wearer, the occasions and the aesthetics. This subject enriches the knowledge on the design techniques of the various parts of the garment so as to make it perfect and beautiful.

OBJECTIVES:

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

- Understand the importance of Human Anatomy.
- Learn the basics of Measurements, Fabric Details and Garment construction.
- Learn different types of layout, Marker and Marker efficiency.
- Learn different types of Seams.
- Understand the types of Plackets.
- Understand the types of Yokes.
- Study the selection of Collars and Neckline finishes.
- Know about Sleeves and its types.
- Learn different types of Pockets.
- Understand the types of Darts, Pleats and Tucks.
- Understand the types of Gathers Shirrs, Flares and Frills.

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26633 APPAREL DESIGNING
DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**BASICS OF APPAREL DESIGN** Eight head theory and its importance in apparel manufacturing, Garment Construction Tools & Equipment **–** Measuring, Marking, Cutting, Pressing and General tools. Measurements – Importance, Procedure for taking measurements and Various body measurements for Kid's, Lady's & Gent's. Pattern – Definition and importance of paper patterns, Types and its merits and demerits of patterns. Fabric Details – Kinds of fabrics for Garment Constructions- Plain, Striped, Checked, Napped, Pile, one way, Printed designs.	**14 Hrs**
II	**PATTERN LAYOUT** Fabric grains – types of grain and its importance. Principles in pattern making – Pattern layout and its importance – Principles in pattern layout – Different types fabric folding for layout – Special types of Layout – Procedure for economical layout- Insufficient fabric layout – Marshdan layout for bulk production and its importance –Type of Lays – Lay length and marker – Marker efficacy – Lay efficiency.	**14 Hrs**
III	**SEAMS, SEAM FINISHES & PLACKETS** Seams – Definition- Different types of seams- Plain, French, Welt seam, Top stitch seam. Seam finishes- Piped, crossed, Bound and Pinked. Hems – definition – types of hems – Slip, Catch stitch, Invisible, Herring bone. Plackets & Openings – definition- characteristics of good plackets. Types of plackets – One piece, Two pieces, Tailored and Zipper plackets.	**14 Hrs**
IV	**YOKE, COLLARS AND SLEEVES** Yoke – definition- selection of yoke design. Different types of yokes – Partial, Midriff, and Yoke with fullness. Collars – Types of collar like Shirt, Stand, Ruffle, Roll, Shawl, Peter pan, Square and Neck line finishes. Sleeves – types of sleeves such as Plain, Puff, Bell, Circular, Leg-O-mutton, Magyar, and Raglan sleeves.	**13 Hrs**

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Unit	Name of the Topic	Hours
V	**CUFFS, POCKETS AND FULLNESS** Types of cuffs - Round, Gauntlet and pointed. Pockets - Different types of pockets such as Patch, Welt, front Hip and Set in pocket. Fullness – definition, Single and double pointed darts, Relocation of dart by slash and spread method. Types of tucks like pin tuck, cross tuck, piped tuck, shell tuck and importance, Types of pleats like Knife pleat, Box pleat, Kick pleat, Cartridge pleat, Pinch pleat and its importance. Gathers and Frills.	**13 Hrs**

Text Book:

Title	Author	Publisher	Year
Practical clothing construction Part I& II	Mary Mathews	Bhattarans Reprographics (P) Ltd., Chennai.	1974
The Art of Sewing	Anna Jacob Thomas	UBS Publisher,Delhi	2001
Practical dress Design	Enwin, M.D.	The Mac Millan Comp. New York.	1993

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Reference:

Title	Author	Publisher	Year
Complete guide to sewing	Reader's digest sewing guide	The reader's digest Association, Inc. New York.	1976

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

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II YEAR

M – SCHEME

III SEMESTER

2015-2016 onwards

FIBRE ANALYSIS PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36234**
Semester : III Semester
Subject Title : **FIBRE ANALYSIS – PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Fibre Analysis Practical	5	75	25	75	100	3 Hrs

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RATIONALE:

In the field of Textile; Fibre is the basic raw material from which we are manufacturing yarn and fabric. So knowing the identification techniques of the fibres and its properties are very important for the students to decide their end uses.

OBJECTIVES:

Identification of Fibres:

1. To identify the natural and regenerated fibre group of the given material by the dyeing method.
2. To identify the given Natural and Synthetic fibres by the burning tests.
3. To examine the solubility of the given Natural Vegetable and Animal fibres (cotton,silk and wool) using suitable solvents.
4. To examine the solubility of the given Synthetic fibres (viscose rayon, nylon, polyester and acrylic) in suitable solvents.

Determination of Physical Properties of Textile Fibres:

5. To determine the mean cut-length (staple length) of the given fibre by the oiled plate technique.
6. To examine the longitudinal views of the given Natural fibres (cotton, silk, wool and jute) by means of a microscope.
7. To examine the longitudinal views of the given Synthetic fibres (viscose rayon, nylon, polyester and acrylic) by means of a microscope.

8. To determine the mean linear density of the given monofilament synthetic yarns.
9. To determine the mean linear density of the given multifilament synthetic yarns.
10. To determine the mean linear density of the given texturised yarns

Determination of Blend Proportion of P/C blends:

11. To determine the blend proportions of the given P/C fabric.
12. To determine the blend proportions of the given P/V fabric.

GUIDELINES

- All the sixteen experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills every students should be provided with a separate bunch of fibres for exposing the skills in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations.

QUESTION PATTERN AND ALLOCATION OF MARKS

Single experiment is to be given per student

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Experiment Execution	50 marks
Write up	20 marks
Viva	05 marks
Total	75 Marks

FIBRE ANALYSIS – PRACTICAL
(SUBJECT CODE – 36234)

LIST OF EXPERIMENTS WITH OBJECTIVES:

Identification of Fibres:

1. Identification of the natural and regenerated fibre group of the given material by the dyeing method.
2. Identification of the given Natural and Synthetic fibres by the burning tests.
3. Examination of the solubility of the given Natural Vegetable and Animal fibres (cotton,silk and wool) using suitable solvents.
4. Examination of the solubility of the given Synthetic fibres (viscose rayon, nylon, polyester and acrylic) in suitable solvents.

Determination of Physical Properties of Textile Fibres:

5. Determination of the mean cut-length (staple length) of the given fibre by the oiled plate technique.
6. Examination of the longitudinal views of the given Natural fibres (cotton, silk, wool and jute) by means of a microscope.
7. Examination of the longitudinal views of the given Synthetic fibres (viscose rayon, nylon, polyester and acrylic) by means of a microscope.
8. Determination of the mean linear density of the given monofilament synthetic yarns.
9. Determination of the mean linear density of the given multifilament synthetic yarns.
10. Determination of the mean linear density of the given texturised yarns

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Determination of Blend Proportion of P/C blends:

11. Determination of the blend proportions of the given P/C fabric.
12. Determination of the blend proportions of the given P/V fabric.

LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS:

1. Dye bath – 2
2. Glass plate – 4
3. Microscope – 1
4. Bunsen burner – 4
5. Wrap Reel – 1
6. Conical flask – 20
7. Test tube – 20
8. Different types of fibre and blended fabrics.

SAFETY PRECAUTIONS TO BE FOLLOWED:

Students must wear over coat and shoes.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

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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 TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36235**
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			
	Hours /Week	Hours /Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Preparation For Textiles Processing – Practical	5 Hrs	75 Hrs	25	75	100	3 Hrs

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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.

OBJECTIVES:

DESIZING

1. Desize the given fabric using Enzyme Desizing method and determine the starch content.
2. Desize the given fabric using Acid Desizing method and determine the starch content.

SCOURING

3. Scour the given Desized cotton fabric and determine the scouring loss.
4. Scour the wool yarn hank using soap and soda ash.
5. Scour the given polyester /cotton blended fabric.

BLEACHING

6. Bleach the scoured fabric with Sodium Hypochlorite.

7. Bleach the scoured fabric with Hydrogen Peroxide.
8. Bleach the wool yarn hank using hydrogen peroxide.
9. Bleach the given polyester /cotton blended fabric.

DEGUMMING

10. Degum the silk yarn hank using Soda Ash and Soap.

COMBINED SCOURING AND BLEACHING

11. Carry out the combined scouring & bleaching of cotton material using hydrogen peroxide

COMBINED DESIZING, SCOURING AND BLEACHING

12. Carry out the combined Desizing , Scouring , Bleaching of 100% polyester yarn hank

GUIDELINES

- All the fourteen 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.

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QUESTION PAPER PATTERN AND ALLOCATION OF MARKS IN BOARD EXAMINATION

Single experiment is to be given per student

Recipe	: 10 Marks
Procedure	: 30 Marks
Result (based on the sample produced)	: 30 Marks
Viva	: 05 marks
Total	75 Marks

36235 - PREPARATION FOR TEXTILE PROCESSING – PRACTICAL

LIST OF EXPERIMENTS:

DESIZING

1. Desizing the given fabric using Enzyme Desizing method and determine the starch content.
2. Desizing the given fabric using Acid Desizing method and determine the starch content.

SCOURING

3. Scouring the given Desized cotton fabric and determine the scouring loss.
4. Scouring the wool yarn hank using soap and soda ash.
5. Scouring the given polyester /cotton blended fabric.

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BLEACHING

6. Bleaching the scoured fabric with Sodium Hypochlorite.
7. Bleaching the scoured fabric with Hydrogen Peroxide.
8. Bleaching the wool yarn hank using hydrogen peroxide.
9. Bleaching the given polyester /cotton blended fabric.

DEGUMMING

10. Degumming the silk yarn hank using Soda Ash and Soap.

COMBINED SCOURING AND BLEACHING

11. Carrying out the combined scouring & bleaching of cotton material using hydrogen peroxide

COMBINED DESIZING, SCOURING AND BLEACHING

12. Carrying out the combined Desizing , Scouring , Bleaching of 100% polyester yarn hank

EQUIPMENTS AND MATERIALS REQUIRED (FOR A BATCH OF 30 STUDENTS):

Materials:

1.Woven fabrics – 2 mts
2.Knitted fabrics – 5 mts
3.Desized woven fabrics – 5 mts
4.Required chemicals

Equipments:

1. Dye bath with 6 pots - 10 numbers
2. Laboratory model jigger - 2 numbers
3. Laboratory model winch - 2 numbers

SAFETY PRECAUTIONS TO BE FOLLOWED:

Students must wear over coat and shoes.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

M – SCHEME

III SEMESTER

2015-2016 onwards

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APPAREL DESIGNING PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY(MMF)
Subject Code : **36236**
Semester : III Semester
Subject Title : **APPAREL DESIGNING PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	**Instruction**		**Examination Assessment Marks**				**Exam Duration**
Apparel Designing Practical	Hours/ Week	Hours/ Semester	Internal Marks			Board Exam	Total	
			10	10	5			
	5	75	25			75	100	3 Hrs

RATIONALE:

Style of every garment needs various design techniques for the parts of the garment. The garment construction includes various types of stitches, seams, collars, cuffs, plackets, pockets, neckline finishes and fullness effect. This practical subject provides hands on experience on the preparation of stitches, seams, collars, cuffs, plackets, pockets, neckline finishes and fullness effect that are major items of garment construction.

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OBJECTIVES:

Seams & Hems

1. To Construct different types of Seams and Hems– any three.

Plackets & Pockets

2. To Construct different types of Plackets– any three.
3. To Construct different types of Pockets– any three.

Sleeves

4. To Prepare patterns and Construct Plain, Puff, Leg o Mutton and Bell sleeve.

Collars

5. To Prepare patterns and Construct Shirt collar.
6. To Prepare patterns and Construct Peter pan and Shawl collar.

Darts, Pleats and Tucks

7. To Construct different types of Darts.
8. To Construct Knife, Box, Cartridge and Pinch pleats.
9. To Construct different types of Tucks– any three.

Frills, Gathers & Neck line finishes

10. To Construct different types of Frills and Gathers.
11. & 12. To Construct different types of Neck Line Finishes– any two.

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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 every students should be provided with a separate sewing machines and required attachments for exposing the skills 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.

QUESTION PAPER PATTERN AND ALLOCATION OF MARKS IN BOARD EXAMINATION

Single experiment is to be given per student

Experiment Execution	50 marks
Write up	20 marks
Viva	05 marks
Total	75 Marks

THIRD SEMESTER
36236 - APPAREL DESIGNING PRACTICAL

LIST OF EXPERIMENTS:

Seams & Hems

1. Construction of different types of Seams and Hems– any three.

Plackets & Pockets

2. Construction of different types of Plackets– any three.
3. Construction of different types of Pockets– any three.

Sleeves

4. To Prepare patterns and Construct Plain, Puff, Leg o Mutton and Bell sleeve.

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Collars

5. Preparation of patterns and Construct Shirt collar.
6. Preparation of patterns and Construct Peter pan and Shawl collar.

Darts, Pleats and Tucks

7. Construction of different types of Darts.
8. Construction of Knife, Box, Cartridge and Pinch pleats.
9. Construction of different types of Tucks– any three.

Frills, Gathers & Neck line finishes

10. Construction of different types of Frills and Gathers.
11. & 12. Construction of different types of Neck Line Finishes– any two.

LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS

Equipment required:

Measuring tools
Pattern making tools
Construction tools
General tools
Sewing machines:- Lock stitch- 15 m/cs.
Over lock- 2 m/c.
Flat lock- 1 m/c
Button hole- 1 m/c
Button stitch- 1 m/c

Materials required:

3- 5 meters of fabric/ expt./ batch of 30 students.
Sewing threads:- white and assorted – 30 nos..

SAFETY PRECAUTIONS TO BE FOLLOWED:

Students must wear over coat and shoes.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

M – SCHEME

III SEMESTER

2015-2016 onwards

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COMPUTER APPLICATION - PRACTICAL

Common to all Engineering Branches

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU.

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

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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.

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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

DAYS	1	2	3	4	5	6	7	8
MON	← TEST →		**A**: JPP			CA	RDBMS	TUT
			B:RDBMS					
TUE	CA	OOP	CN	RDBMS	**A**: RDBMS			
					B: JPP			
WED	CN	RDBMS	OOP	RDBMS	COMMUNICATION		CN	CA
THU	OOP	**A**: JPP			CA	RDBMS	CN	OOP
		B: RDBMS						
FRI	COMMUNICATION		**A**: RDBMS		OOP	CN	RDBMS	CA
			B: JPP					
SAT	OOPS	RDBMS	CN	CA	---------			

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.

www.hinls.com

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.

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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

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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**

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IV SEMESTER

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

M – SCHEME

IV SEMESTER

2015-2016 onwards

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TECHNOLOGY OF YARN MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
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	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Technology of Yarn Manufacture	5	75	25	75	100	3 Hrs

Topics and hours allocation

UNIT	TOPIC	TIME(Hrs)
I	Ginning, Mixing, Blow room and Carding	14
II	Drawing and Combing	14
III	Roving and Spinning	14
IV	Doubling, Reeling, Bundling and Baling	13
V	Regular and Specialty yarns	13
VI	Test & Revision	7
	Total	**75**

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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.

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TECHNOLOGY OF YARN MANUFACTURE - 36141
DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	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

www.knimble.com

Sl. No	Title of the book	Author	Publisher	Year of Publishing
Text books:				
1	Spun yarn technology - volume I & II	A.V.Mani	Saravana Publications, Madurai	1996
2	Cotton spinners Hand book	Jaganathan.R	Mahajan Brothers Ahmedabad 380009	--
Reference books:				
1	Opening and cleaning	W.A.Hunter	The Textile Institute Manchester, U.K.	**---**
2	Cotton spinning	W.S.Taggert	S.S. Shroff, Bombay	**---**
3	Short Staple Spinning Series Volume I, II & III	W.Klein	The Textile Institute Manchester, U.K.	**1987**
4	Manual of cotton spinning volume IV & V	Hanter.W.A	Textile Institute Manchester	1
5	Cotton waste industry	Srinivasamoorthy.H. V	Victoria Jubilee Technical Institute,Matunga, Bombay 400019	3

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

M – SCHEME

IV SEMESTER

2015-2016 onwards

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TECHNOLOGY OF FABRIC MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
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
			Internal Assessment	Board Examination	Total	
Technology of Fabric Manufacture	5 Hrs	75 Hrs	25	75	100	3 Hrs

Topics and Allocation of Hours:

Sl.No.	Topic	Time(Hrs)
I	Weaving Preparatory Processes	14
II	Woven Fabric Formation	14
III	Knitted Fabric Formation	14
IV	Fabric Structures	13
V	Non Woven & Special Fabrics	13
VI	Test & Revision	7
Total		75

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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 III 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 Autoconer.

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

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TECHNOLOGY OF FABRIC MANUFACTURE - 36142
DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Weaving Preparatory Processes** 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 Hrs**
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 Hrs**
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, Drop stitches, Distorted stitches and Press off - Comparison between woven and knitted fabrics.	**14 Hrs**
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 Hrs**

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Unit	Name of the Topic	Hours
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 Hrs**

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Title	Author	Publisher	Year
Text books:			
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, Ahmedabad	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

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

www.binils.com

M – SCHEME

IV SEMESTER

2015-2016 onwards

POLYMER SCIENCE AND REGENERATED FIBRES

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36243**
Semester : IV Semester
Subject Title : **POLYMER SCIENCE AND REGENERATED FIBRES**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
Polymer Science and Regenerated FIbres	Hours / week	Hours / semester	Assessment mark			Duration
	5	75	Internal	Board exam	Total	
			25	75	100	3 Hrs

TOPICS AND ALLOCATION

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Unit	Topic	Time (hrs.)
I	Fundamentals of Polymer Science	14
II	Fundamentals of Fibre Formation, Essential and Desirable properties of Fibres	14
III	Viscose Rayon	14
IV	Polynosic Rayon and High-Tenacity (HT) Viscose Rayon:	13
V	Eco friendly and Cellulose Ester fibre	13
VI	Test & Revision	7
Total		**75**

RATIONALE:

The exponential growth of Textile has benefited the mankind. In the field of Textile, Fibre is the basic raw material from which we are manufacturing yarn and fabric. So studying the polymer science, the manufacturing process of various types of regenerated fibres like viscose, high tenacity viscose, polynosic, cellulose acetate and their properties are very important to decide its end uses.

OBJECTIVES:

Unit-I - Fundamentals of Polymer Science

- To know about the different types of monomers, polymers and co-polymers
- To know about the types of Polymerization

Unit-II – Fundamentals of Fibre Formation, Essential and Desirable properties of Fibres

- To know about the different types of molecular weight, concept of Crystallinity and orientation in the fibres
- To study about the polymerization process and spinning methods.

Unit-III - Viscose Rayon

- To know about manufacturing process of Viscose Rayon
- To know about the chemical and physical properties of Viscose Rayon

Unit-IV - Polynosic Rayon and High-Tenacity (HT) Viscose Rayon

- To know about manufacturing process of Polynosic Rayon and HT Viscose Rayon.
- To know about the chemical and physical properties of Polynosic Rayon and HT Viscose Rayon.

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Unit-V – Eco friendly and Cellulose Ester fibre

- To know about manufacturing process of Lyocell and Cellulose Acetate
- To know about the chemical and physical properties of Lyocell and Cellulose Acetate

POLYMER SCIENCE AND REGENERATED FIBRES - 36243
DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**FUNDAMENTALS OF POLYMER SCIENCE:** Definitions of monomer, polymer, co-monomer, oligomer, copolymer, repeat unit, mer weight, polymerisation, degree of polymerisation and polymer molecular weight. Classification of fibre forming polymer. Types of polymer - linear, branched and network polymers - types of copolymers - alternating, random, block and graft copolymers - thermoplastic and thermosetting polymers. Types of polymerisation reactions - addition and condensation type polymerizations. Requirements of a fibre forming polymer to be useful as apparel fibre.	14
II	**FUNDAMENTALS OF FIBRE FORMATION, ESSENTIAL AND DESIRABLE PROPERTIES OF FIBRES:** Concept of average molecular weight and molecular weight distribution in fibre forming polymers - types of molecular weights – number average and weight average. Concept of crystallinity and orientation in textile fibres. Polymerisation processes - principles of bulk, solution, suspension, gas-phase and solid-phase polymerisation methods. Spinning methods - melt, dry and wet spinning techniques and their applications. Concept of drawing - neck formation; draw ratio - concept of heat setting- definitions of glass transition temperature (Tg) and melting point (Tm) – Tg and Tm for Polyester, Nylon, Acrylic fibres.	14
III	**VISCOSE RAYON:** Introduction to rayon - Names of various rayons. Chemical structure, repeat unit, degree of polymerisation of viscose, Detailed study of manufacture of viscose rayon from pulp sheet,Chemical reaction in the manufacturing of viscose rayon. Study of manufacture of viscose stable fibre and viscose filament yarn. Principles of wet spinning – study of coagulation spinning of viscose rayon yarn. Function of gadet wheels. Physical and chemical properties of viscose rayon fibre. Uses of the rayon fibre.	14
IV	**POLYNOSIC RAYON, HIGH-TENACITY (HT) VISCOSE RAYON AND CUPRAMMONIUM RAYON:** Chemical structure and degree of polymerisation of polynosic rayon.Chemical reaction in the manufacture of polynosic rayon. Process sequence in the manufacture of spinning polynosic rayon. Physical and chemical properties of polynosic rayon. Uses of the polynosic rayon fibre. Changes in the regular viscose process for the production of HT viscose rayon yarn; properties and uses of HT yarn. Cuprammonium Rayon – Definition. Outline of Cuprammonium Rayon fibre manufacture – Properties and uses of Cuprammonium Rayon. Disadvantages of Viscose Rayon.	13

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Unit	Name of the Topic	Hours
V	**CELLULOSIC ESTER FIBRE:** **Eco-friendly rayon:** Outline of Lyocell fibre production, Properties of Lyocell, Uses of Lyocell. Brief study of Modal Fibre manufacturing,properties and uses. **Cellulose-ester fibres:** Cellulose acetate - outline of the manufacturing process, properties and uses. Cellulose Tri Acetate fibre - outline of the manufacturing process, properties and uses.	13

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Author	Title of the book	Publishers	Year
Text books:			
V.R.Gowariker	Polymer Science	New Age International(p)Ltd Publications, New Delhi	1986
E.P.G. Gohi	Handbook of Rayon	Century Rayon Bombay	1970
Reference Books :			
R.W.Moncreff	Man Made Fibres	Butter Worth and Co. Publishers Ltd 88 LingswayWC 2B6AB London.	1979
H.F.Mark, S.M. Atlas & E.Cernia	Man Made Fibres - Science and Technology (Vol1,2,3)	Interscience Publishers New York.	1967
Ludwig Harman	Polyester fibres - Chemistry and Technology	Noyes Data Corporation New Jersey 07656 USA.	1972
Marshall Sitting	Polyester Fibre Manufacture	Noyes Data CorporationNew Jersey 07656 USA.	1971
Marshall Sitting	Synthetic fibres from Petroleum	Noyes Data Corporation New Jersey 07656 USA.	1967
Fred w.villmeyer	Tex book of polymer science	A-wiley Interscience Publications, Newyork	1994

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

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II YEAR

M – SCHEME

IV SEMESTER

2015-2016 onwards

TECHNOLOGY OF DYEING OF NATURAL & MAN MADE TEXTILES

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36244**
Semester : IV Semester
Subject Title : **TECHNOLOGY OF DYEING OF NATURAL & MAN MADE TEXTILES**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Technology of Dyeing of Natural and Man Made Textiles	5	75	25	75	100	3 Hrs

TOPICS AND HOURS ALLOCATION

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UNIT	TOPIC	TIME(Hrs)
I	Soluble Dyes for Cotton	14
II	Insoluble and Ingrain Dyes for Cotton	14
III	Disperse Dyes	14
IV	Acid and Basic Dyes and Blend dyeing	13
V	Quality Assurance in Preparation and Colouration	13
VI	Test & Revision	7
	Total	**75**

RATIONALE:

Dyeing is the important process to provide aesthetic feel to the textile fabric which are made from natural, regenerated and synthetic fibres and their blends. So studying the different methods and mechanism of dyeing techniques and various types of dyes available in the market for the above referred fibres are must for the students.

OBJECTIVES:

Unit 1 : Soluble Dyes for Cotton

- To know the basic terminology used in the dyeing industry.
- In depth study of reactive dye is being given to do cotton dyeing.

Unit 2 : Insoluble and Ingrain dyes for Cotton

- To study about the basic mechanism of dyeing of cotton using insoluble dyes (Vat and sulphur dye) and Ingrain dyes.
- To compare the application mechanism of Insoluble dyes.

Unit 3 : Disperse Dyes

- To impart the knowledge of dyeing of polyester using disperse dye
- Various types of dyeing of Polyester is added to get the best out of the available resources in the industry.

Unit 4 : Acid and Basic Dyes and Blend Dyeing

- Dyeing mechanism and the role of auxiliaries used in dyeing of Acid and Basic dyes is being studied so as to dye acrylic and silk..
- In order to dye the blended fabric, mechanism of commonly used dyes and combination is being studied.

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Unit 5 : Quality Assurance in Preparation and Colouration

- This unit will give an idea about the efficiency of the preparatory processes and the extent to which the fibres get damaged.
- This chapter is giving the knowledge of the ability of the dye to withstand in different environment (like washing, rubbing etc.)
- By knowing this one can control the dyeing conditions to get optimum result in the given class of dyes.

TECHNOLOGY OF DYEING OF NATURAL AND MAN MADE TEXTILES - 36244
DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**SOLUBLE DYES FOR COTTON:** Definition: Chromophore, Auxochrome and Chromogene, Hue, Solublising group - Affinity, Substantivity, Exhaustion, Percentage Shade and M:L ratio- Classification of dyes - Direct dyes- Properties and its application on cotton. Reactive dyes - Properties, Mechanism of dyeing Nucleophilic substitution and Nucleophilic addition, Exhaust dyeing for cold brand and Hot Brand, pad-silicate method for Vinyl sulphone dyeing - Stripping. e-control process for continuous dyeing with reactive dyes. Bifunctional Dyes (HE and ME) - Definition and Application procedures for cotton .	14
II	**INSOLUBLE AND INGRAIN DYES FOR COTTON:** Properties of Vat dyes. Types of vat dyes. Application procedure using Leuco Vat process. Advantages and Disadvantages of Vat Dyes. Sulphur dyes - Properties of sulphur dyes and its application procedure for cotton. Bronziness and Acid Tendering. Brief study about Azoic Dyes.	14
III	**DYES FOR SYNTHETIC FIBRES:** Disperse dyes - Properties. Function of Dispersing agents, Levelling agents, Antifoaming agents, Sequestering agent, Redox buffer. Definition of Tg – Tg value for polyester, Nylon and Acrylic fibres. Characteristics of Carriers, Carrier dyeing, HTHP dyeing using Beam-Jet, Thermosol dyeing. Dyeing of Nylon with Disperse Dyes using exhaust method. Dyeing of Acrylics with Disperse Dyes using exhaust method.	14
IV	**ACID AND BASIC DYES AND BLEND DYEING:** Acid dyes- Properties and its application mechanism on Wool, Silk and Nylon. Basic dyes - Properties. – Fibre saturation value and Dye saturation Factor - Function of retarders – Exhaust Dyeing method of acrylic with basic dyes. Dyeing of the blends: Polyester/Cotton – Single bath and Two bath method using Disperse and Reactive dyes.Polyester/Wool-Two bath method using Disperse and Acid dyes.	13

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Unit	Name of the Topic	Hours
V	**QUALITY ASSURANCE IN PREPARATION AND COLOURATION:** Brief about Oxidative Degradation of cotton – Absorbency tests by Drop test method – Determination of Whiteness & Whiteness retention – Determination of barium activity number. Brief idea about AATCC, SDC, Multi Fibres, ASTMD. Determination of fastness to Washing - Determination of fastness to lighting - Determination of fastness to Dry & Wet Rubbing - Determination fastness to Dry cleaning. Features of Computer Colour matching.	13

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Author	Title	Publisher	Year
Text books:			
Shenai V.A	Chemistry of Dyes and Principles of Dyeing Ed. 3 (Technology of Textile Processing series Vol. 2)	Sevak Publications, 306, Sri Hanuman Industrial Estate, GC Ambedkar Road, Wadala, Bombay 400 031	1983
Shenai V.A	Technology of Dyeing (Technology of Textile Processing series Vol. I)	Sevak Publications, 306, Sri Hanuman Industrial Estate, GC Ambedkar Road, Wadala, Bombay 400 031	1980
Trotman E.R	Dyeing and Chemical Technology of Textile Fibres	Charles Griffin & Co, 42, Dhury lane, London WC2	1980
References books:			
Chakravarthy RR and Trivedi S.S	Technology of Bleaching and Dyeing of Textile Fibres Vol 1, Part 1	Mahajan Book Publi shers, Supermarket Basement, Near Nataraj Cinema, Ashram Road, Ahmedabad 380 009	1979
Gokhle S.V. and Shah.R.C	Cotton Piece dyeing	Ahmedabad Textile Industries Research Assn. (ATIRA), PO Polytechnic, Ahmedabad 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
Prayag R.S	The bleaching and dyeing of cotton material	Weaver's Service Cent., 15A, Mamparamanand Marg, Near Roxy Cinema, Bombay 400004	1983
BTRA	Recent advances in chemistry & technology	Processing of cotton and Man made textiles	
M.L.Gulrajani	Dyeing of Polyester and its Blends	IIT, Textile Department, NewDelhi	1987
D.M. Lewis	Wool Dyeing	SDC Publications, UK	1992

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

M – SCHEME

IV SEMESTER

www.binils.com

2015-2016 onwards

TECHNOLOGY OF YARN MANUFACTURE - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36245**
Semester : IV Semester
Subject Title :**TECHNOLOGY OF YARN MANUFACTURE - PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Technology of Yarn Manufacture-Practical	5	75	25	75	100	3 Hrs

RATIONALE:

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This practical is helpful to determine speed of the various parts of the machines from blowroom to ring spinning. So the students will have hands on experience in the spinning machines.

OBJECTIVES:

BLOWROOM:

To draw the blow room line for 100% cotton and P/C blend.

CARDING

To estimate the speeds of Licker-in, Cylinder in a carding machine.
To estimate the speeds of Doffer and Feed Roller in a carding machine.

DRAWFRAME

To Sketch the driving arrangement of a draw frame and calculate the speed of the various parts.

COMBER

To sketch the driving arrangement of a comber and calculate the speed of the comber cylinder.

SPEED FRAME

To draw the gearing diagram of a simplex machine and calculate the spindle speed.
To draw the gearing diagram of a simplex machine and calculate the speed of the drafting rollers and draft.

RING FRAME

To draw the gearing diagrams of the given ring frame and calculate the spindle speed.
To draw the gearing diagrams of the given ring frame and calculate the speeds of the drafting rollers and draft.
To draw the gearing diagrams of the drafting roller in ring frame machine and calculate the draft in different drafting zone.

POST SPINNING PROCESS

To draw the gearing diagram of the given doubling frame and calculate the spindle speed.
To draw the gearing diagram of the 7-lea mechanism and calculate speeds of swift.

GUIDELINES

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- 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 every students should be provided with a required machines for exposing the skills in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations.

QUESTION PAPER PATTERN AND ALLOCATION OF MARKS IN BOARD EXAMINATION

Single question is to be given per student

Diagram/Gearing	30 marks
Calculation	30 marks
Experiment / Result	10 marks
Viva	05 marks
Total	75 Marks

TECHNOLOGY OF YARN MANUFACTURE - PRACTICAL
36245

LIST OF EXPERIMENTS :

BLOWROOM:

1. Drawing the blow room line for 100% cotton and P/C blend.

CARDING

2. Estimation of the speeds of Licker-in, Cylinder in a carding machine.
3. Estimation o the speeds of Doffer and Feed Roller in a carding machine.

DRAWFRAME

4. Sketching the driving arrangement of a draw frame and calculating the speed of the various parts.

COMBER

5. Sketching the driving arrangement of a comber and calculating the speed of the comber cylinder.

SPEED FRAME

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6. Drawing the gearing diagram of a simplex machine and calculating the spindle speed.
7. Drawing the gearing diagram of a simplex machine and calculating the speed of the drafting rollers and draft.

RING FRAME

8. Drawing the gearing diagrams of the given ring frame and calculating the spindle speed.
9. Drawing the gearing diagrams of the given ring frame and calculating the speeds of the drafting rollers and draft.
10. Drawing the gearing diagrams of the drafting roller in ring frame machine and calculating the draft in different drafting zone.

POST SPINNING PROCESS

11. Drawing the gearing diagram of the given doubling frame and calculating the spindle speed.
12. Drawing the gearing diagram of the 7-lea mechanism and calculating the speeds of swift.

LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS:

EACH ONE MACHINE)

1. Carding Machine.
2. High Speed Draw frame
3. High Production speed frame
4. High Speed Ring Spinning Frame
5. Ring doubler
6. 7 Lea Reeling machine

SAFETY PRECAUTIONS TO BE FOLLOWED:

The students are instructed

1. To do the activities which are pertaining only to the specific experiments they are doing
2. To maintain their work place clean and tidy
3. To handle the tools and other gauges properly and with due care.
4. Not to wander from place to place unnecessarily
5. Students must wear over coat and shoes.

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TECHNOLOGY OF YARN MANUFACTURE - PRACTICAL
36245

MODEL QUESTION PAPER:

1. Draw the blow room line for 100% cotton and P/C blend and write the important settings and speeds of the beaters.
2. Estimate the speeds of Licker-in, Cylinder in a carding machine.
3. Estimate the speeds of Doffer and Feed Roller in a carding machine.
4. Sketch the driving arrangement of a draw frame and calculate the speed of the drafting rollers.
5. Sketch the driving arrangement of a comber and calculate the speed of the comber cylinder.
6. Draw the gearing diagram of a simplex machine and calculate the spindle speed.
7. Draw the gearing diagram of a simplex machine and calculate the speed of the drafting rollers.
8. Draw the gearing diagrams of the given ring frame and calculate the spindle speed.
9. Draw the gearing diagrams of the given ring frame and calculate the speeds of the drafting rollers.
10. Draw the gearing diagram of drafting roller in Ring frame machine and calculate draft in different drafting zone.
11. Draw the gearing diagram of the given doubling frame and calculate the spindle speed.
12. Draw the gearing diagram of the 7-lea mechanism and calculate speeds of swift.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

M – SCHEME

IV SEMESTER

2015-2016 onwards

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TECHNOLOGY OF FABRIC MANUFACTURE - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36246**
Semester : IV Semester
Subject Title : **TECHNOLOGY OF FABRIC MANUFACTURE – PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Technology of Fabric Manufacture - Practical	5	75	25	75	100	3 Hrs

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RATIONALE:

This practical is helpful to provide good exposure to the different types of fabric structures of woven as well as the knitted fabrics. This practical is helpful to practically know about the basic function of plain power loom.

OBJECTIVES:

Plain Power Loom:

To set the cone over-pick mechanism.
To set the Tappet shedding mechanism.

Woven Fabric Analysis:

To analysis Woven Fabric for the following design

Plain, 4/4 Mat, Twill , Pointed Twill, Herringbone, Satin, Sateen, Honey Comb and
Huck-a-back

Knitted Fabric Analysis:

To analysis Knitted Fabric for the following design

Plain, Rib and Interlock

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 every students should be provided with a required machines/ fabric of various design for exposing the skills in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations.

QUESTION PAPER PATTERN AND ALLOCATION OF MARKS IN BOARD EXAMINATION

Single experiment is to be given per student

Diagram/Design,Draft and Pegplan	30 marks
Calculation/cloth particulars	30 marks
Result	10 marks
Viva	05 marks
Total	75 Marks

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TECHNOLOGY OF FABRIC MANUFACTURE – PRACTICAL
36246

LIST OF EXPERIMENTS

1. Setting the cone over-pick mechanism.
2. Setting the Tappet shedding mechanism.
3. Analysing the given cloth- Plain
4. Analysing the given cloth – 4/4 Mat
5. Analysing the given cloth – Twill
6. Analysing the given cloth – Pointed Twill
7. Analysing the given cloth – Satin
8. Analysing the given cloth – Sateen
9. Analysing the given cloth – Honey Comb
10. Analysing the given cloth – Huck-a-back
11. Analysing the given cloth – Plain
12. Analysing the given cloth – Rib

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LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS:

1. Plain power loom – 1 No
2. Plain power loom with Tappet Shedding– 1 No
3. Cloth samples for basic weaving structure analysis

SAFETY PRECAUTIONS TO BE FOLLOWED:

Students must wear over coat and shoes.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

II YEAR

M – SCHEME

IV SEMESTER

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2015-2016 onwards

TECHNOLOGY OF DYEING OF NATURAL & MAN MADE TEXTILES - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36247**
Semester : IV Semester
Subject Title : **TECHNOLOGY OF DYEING OF NATURAL & MAN MADE TEXTILES - RACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Technology of Dyeing of Natural & Man Made Textiles- Practical	4	60	25	75	100	3 Hrs

RATIONALE:

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Dyeing is the important process to provide aesthetic feel to the textile fabric which are made from natural, regenerated and synthetic fibres and their blends. This practical is helpful to practically know about dyeing method of soluble and insoluble dye for cotton hanks. It also includes dyeing of some Man Made textile mainly silk and polyester dyeing

OBJECTIVES:

DYEING OF COTTON

To dye the given cotton hanks with Direct dyes, Vat dyes, Cold Brand Reactive dyes, Hot Brand Reactive dyes and Remazol dyes.

DYEING OF FABRICS MADE FROM ANIMAL FIBRES

To dye the wool with acid dyes.
To dye the silk with acid dyes.

DYEING OF FABRICS MADE SYNTHETIC FIBRES AND BLENDS

To dye the Nylon with Disperse dyes.
To dye the Polyester with Disperse dyes.
To dye the Acrylics with Cationic dyes.
To dye the Polyester-Cotton blend with disperse / reactive dyes.

To dye the Polyester-Cotton blends with disperse / reactive dyes by single bath process.

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 every students should be provided with a required dyes and fabric/yarn for exposing the skills 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.

QUESTION PAPER PATTERN AND ALLOCATION OF MARKS IN BOARD EXAMINATION

Single experiment is to be given per student

Recipe	10 marks
Procedure/Process sequence	20 marks
Calculation	20 marks
Result (based on the sample produced)	20 marks
Viva Voce	05 marks
Total	75 Marks

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TECHNOLOGY OF DYEING OF NATURAL & MAN MADE TEXTILES – PRACTICAL
36247

LIST OF EXPERIMENTS :

DYEING OF COTTON

1. Dyeing the given cotton hanks using Direct dyes.
2. Dyeing the given cotton hanks using Vat dyes.
3. Dyeing the given cotton hanks with Cold Brand Reactive dyes.
4. Dyeing the given cotton hanks with Hot Brand Reactive dyes.
5. Dyeing the given cotton hanks using Remazol dyes.

DYEING OF FABRICS MADE FROM ANIMAL FIBRES

6. Dyeing the given wool with acid dyes.
7. Dyeing the given silk with acid dyes.

DYEING OF FABRICS MADE SYNTHETIC FIBRES AND BLENDS

8. Dyeing the given Nylon with Disperse dyes.
9. Dyeing the given Polyester with Disperse dyes.
10. Dyeing the given Acrylics with Cationic dyes.
11. Dyeing the given Polyester-Cotton blend with disperse / reactive dyes using double bath process .
12. Dyeing the given Polyester-Cotton blends with disperse / reactive dyes by single bath process.

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LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS:

1. HT HP Beaker Dyeing Machine (Water)-1
2. Beaker Dye Bath with Electrical Heater -3
3. HT HP Beaker Dyeing Machine (Oil) -1
4. Soft Flow Dyeing Machine – 10 Kg Capacity-1
5. Padding Mangle -1
6. Jigger -2
7. Winch -2
8. Drying Oven with Temperature Control-1
9. Electrical Hot Air Drier-1

SAFETY PRECAUTIONS TO BE FOLLOWED:

Students must wear over coat and shoes.

V SEMESTER

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

V SEMESTER

2015-2016 onwards

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TEXTILE TESTING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36051**
Semester : V Semester
Subject Title : **TEXTILE TESTING**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15

Subject	Instruction		Examination			
	Hours / week	Hours / semester	Assessment mark			Duration
			Internal	Board exam	Total	
Textile Testing	5	75	25	75	100	3 Hrs

Topics and Allocation of Hours:

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Sl.No	Topic	Time (hrs.)
1	MOISTURE & 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	7
Total		75

RATIONALE:

This subject deals about moisture and its relations in textiles, fibre testing, yarn testing, fabric testing and stastical 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.

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- 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.

V SEMESTER - 36051 - TEXTILE TESTING

DETAILED SYLLABUS - Contents: Theory

Unit	Name of the Topic	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

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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 Spining	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 Newyork,London	1972

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

V SEMESTER

2015-2016 onwards

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TECHNOLOGY OF TEXTILE PRINTING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36152**
Semester : V Semester
Subject Title : **TECHNOLOGY OF TEXTILE PRINTING**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15

Subject	Instruction		Examination			
Technology of Textile Printing	Hours / Week	Hours / Semester	Assessment Marks			Duration
	5	75	Internal	Board Exam	Total	
			25	75	100	3 Hrs

TOPICS AND ALLOCATION:

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Unit	Topic	Time (Hrs.)
I	Introduction to Textile Printing	14
II	Direct Style of Printing	14
III	Discharge and Resist Styles of Printing	14
IV	Advanced Textile Printing	13
V	Printing Machines	13
VI	Test & Revision	7
	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.

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36152 TECHNOLOGY OF TEXTILE PRINTING
DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**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**
II	**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**
III	**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 of resist style printing mechanism - Mechanical resisting - Batik and Tie &Dye - Chemical resist - Pigment resist on reactive ground - Alkali resist on polyester	**14**

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Unit	Name of the Topic	Hours
IV	**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**
V	**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**

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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 Textile Processing Vol. IV	Shenai.V.A	Sevak Publications, Mumbai	1982
4	Dyeing Printing & Textile	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, NewDelhi	2006
4	Textile Printing	Miles. LWC	SDC Perkin House, England	1981
5	Chemical Processing of Synthetic Fibres and Blends	Datye. K.V.& Vaidya	JohnWiley & Sons Publications, New York	1984
6	Dyeing & Printing	Cockett. S.R	Sir. Issac Pitman & Sons Canada Ltd, Torontto	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 TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

V SEMESTER

2015-2016 onwards

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SYNTHETIC FIBRE MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36253**
Semester : V Semester
Subject Title : **SYNTHETIC FIBRE MANUFACTURE**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Synthetic Fibre Manufacture	5	75	25	75	100	3 Hrs

Topics and hours allocation

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UNIT	TOPIC	TIME(Hrs)
I	Fundamentals of Polymer Production and Spinning	14
II	Nylon	14
III	Polyester	14
IV	Acrylic & Polyolefins	13
V	High Performance Fibres	13
VI	Test & Revision	7
	Total	**75**

RATIONALE:

The exponential growth of Textile has benefited the mankind. In the field of Textile, Fibre is the basic raw material from which we are manufacturing yarn and fabric. So studying the fundamentals of polymer production and spinning of various types of the synthetic fibres like nylon, polyester, acrylic and polyolefins and their properties are very important to decide its end uses.

OBJECTIVES:

Unit-1-Fundamentals of Polymer Production and Spinning

To study about the fundamentals of Polymer production.

To know principles of melt spinning.

Unit-2-Nylon

To study about the production of Nylon 6, Nylon6,6 and their mechanism of polymerization.

To know the propertie s and application of the above said nylon fibres.

Unit-3-Polyester

To study about the plolymerisation of polyester and its raw material.

To know about the different way of polyester manufacturing process.

Unit-4-Acrylic and Polyolefins

To study about the raw materials of Acrylic and the dry and wet spinning processes.

To study about the raw materials of Polyolefins and spinning processes.

Unit-5-High Performance Fibres

To study about the production and properties of aromatic polyamides.

To study about the Chemical resistant fibre, Glass fibres and Nano fibres.

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SYNTHETIC FIBRE MANUFACTURE - 36253
DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**FUNDAMENTALS OF POLYMER PRODUCTION AND SPINNING:** Definition of various unit operations involved in polymer preparation - brief study of mixing, filtration, distillation, absorption, extraction, humidification, dehumidification, crystallisation and drying. Principles of melt spinning - spinnability of liquids, rheology of melt spinning - Brief study of single screw extruder - filter - manifold - modern spin pack assembly - metering pumps - modern spinnerets assembly - quenching chamber and its significance in fibre formation - take-up - Spin finish application. Spin drawing processes - UDY, POY and FOY, differences between fully drawn yarn (FDY or FOY) and partially oriented yarn (POY). Modern developments in melt spinning - H4S.	14
II	**NYLON:** Nylon 6 – caprolactum raw material – chemical structure, repeat unit, degree of polymerization – polymerization mechanism of caprolactum - brief study of poly addition and followed by polycondensation. Study of production of chips and manufacture of continuous nylon yarn. Brief study of nylon 6 – batch and continuous method of manufacture. Study of drawing of nylon 6. Names of manufacturers of Nylon 6. Study of nylon 6 fibre properties and its applications. Nylon 6,6 – hexa methylene diamine and adipic acid structure – polymerization mechanism of nylon6,6. Preparation of nylon salt and spinning of nylon6,6 continuous filament yarn. cold drawing of nylon 6,6 fibre. Names of manufacturers of Nylon 6,6 fibres in India. Study of Nylon 6,6 fibre properties and its applications.	14
III	**POLYESTER:** Polyester - Raw materials – Di methyl terepthalate (DMT), Terepthalic acid and Ethylene glycol – structure. Production of polymer chips – DMT route – mechanism of polymerization - ester interchange and polycondensation . PTA route - mechanism of polymerization. Manufacture of polyester staple fibre and filament yarn. Brief study of batch and continuous reactors for PET spinning - study of fibre properties and its applications. Names of manufacturers of PSF, PFY in India.	14
IV	**ACRYLIC AND POLYOLEFINS:** Acrylic - Raw materials - classification of acrylic polymer - polymerisation methods - types of co-monomers used in polymerisation. Spinning of acrylic fibre - principles involved in wet and dry spinning of acrylic fibres - dope preparation - study of fibre formation in dry and wet spinning – Properties and uses of acrylic fibre - names of manufacturers of acrylic fibres in India. Polyolefins - Classification. Polyethylene - raw material- LDPE and HDPE- Polypropylene - raw material - properties and applications.	13

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Unit	Name of the Topic	Hours
V	**HIGH PERFORMANCE FIBRES:** Brief idea of the principle of dry jet wet spinning – Brief study about the production, properties and applications of aromatic polyamides - Nomex, Kevlar. Brief study about Carbon Fibres production, properties and it's uses - Glass Fibres properties and its uses- List of Ceramic fibres and chemically resistant fibres and it's application. Brief study of Nano fibres.	13

Author	Title of the book	Publishers	Year
Text books:			
R.W.Moncrieff	Man Made Fibres	Butter Worth and Co. Publishers Ltd 88 LingswayWC 2B6AB London.	1979
H.F.Mark, S.M. Atlas & E.Cernia	Man Made Fibres - Science and Technology	Interscience Publishers New York.	1967
J.W.S Hearle	High Performance Fibre	Textile Institute, UK – Woodhead publication Ltd.	2001
A.A.Vidhya	Production of Synthetic Fibres	Prentice Hall of India Private Ltd.New Delhi.	1988
Reference Books :			
Ludwig Harman	Polyester fibres - Chemistry and Technology	Noyes Data Corporation New Jersey 07656 USA.	1972
Marshall Sitting	Polyester Fibre Manufacture	Noyes Data CorporationNew Jersey 07656 USA.	1971
Marshall Sitting	Synthetic fibres from Petroleum	Noyes Data Corporation New Jersey 07656 USA.	1967
Dr.R.S.Gandhi	A guide to crimping / texturing technology	MANTRA Publications Ahmedabad.	1990
Hearle	Acrylonitrila Polymer Manufacture	Ellis Horwood Ltd Torondo	1985
V.P.GUPTHA	Polyethline Terephthalate	Textile Institute, UK	1980
J.J.Prey	Man Made Textile Encyclopedia	Textile Book publication, London	1959
M.L.Gulkarni	Polyester Textiles	Textile Association India(TAI)	1980

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

V SEMESTER

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2015-2016 onwards

ELECTIVE – I

1. GARMENT MANUFACTURING TECHNOLOGY - I

2. TECHNICAL TEXTILE

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5.4 ELECTIVE– I

5.4.1. GARMENT MANUFACTURING TECHNOLOGY - I

5.4.2 TECHNICAL TEXTILE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36271**
Semester : V Semester
Subject Title : **GARMENT MANUFACTURING TECHNOLOGY - I**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
			Assessment Marks			Duration
	Hours/Week	Hours/Semester	Internal	Board Exam	Total	
Garment Manufacturing Technology-I	5	75	25	75	100	3 Hrs

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Topics and hours allocation

UNIT	TOPIC	TIME(Hrs)
I	Pattern Drafting and Construction - I	14
II	Pattern Drafting and Construction - II	14
III	Pattern Drafting and Construction - III	14
IV	Cutting and Production Systems	13
V	Sewing System	13
VI	Test & Revision	7
	Total	**75**

RATIONALE:

Garment manufacturing technology is very much important for textile technicians in order to manufacture the internationally acceptable quality garments for various styles and sizes. So knowing about the pattern making, pattern layout, marking, cutting, various production systems and sewing are mandatory to have proper control in garment making.

OBJECTIVES:

Unit-1-Pattern Drafting and Construction - I

To study about the pattern making of children, ladies and gents wear.
To know the cloth requirements for the given style.

Unit-2-Pattern Drafting and Construction - II

To study about the pattern making of T-Shirt, Night wear, salwaar, kameeze and chudidhar.
To know about the cloth consumption for the above said styles.

Unit-3- Pattern Drafting and Construction - III

To study about the different types of laying.
To study about the different types of Layout.

Unit-4-Cutting & Production Systems

To study about the different types of cutting machines.
To study about the different system of garment production.

Unit-5-Sewing

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To study about the different types of Garment stitches.
To know about the function of special attachments.

ELECTIVE: I - GARMENT MANUFACTURING TECHNOLOGY – I – 36271
DETAILED SYLLABUS

Contents: Theory

UNIT	TOPIC	TIME(Hrs)
I	**PATTERN DRAFTING AND CONSTRUCTION - I** Pattern Drafting for Children's wear – Under wear – Sun suit – 'A' line frock – with style description, fabric selection and construction procedure.	14
II	**PATTERN DRAFTING AND CONSTRUCTION - II** Pattern making for Gent's wear – Half sleeve shirt – Shorts - Pleated trouser – 'T' shirt – with style description, fabric selection and construction procedure.	14
III	**PATTERN DRAFTING AND CONSTRUCTION - III** Pattern making for ladies wear – Night wear – ladies shirt - Salwar – Kameez – Chudidhar - with style description, fabric selection and construction procedure. Brief study of Pattern Grading – Definition and purpose. Brief study of Computerized Pattern Drafting.	14
IV	**CUTTING AND PRODUCTION SYSTEMS:** Object of Spreading process – Types of spreading – Manual & Automatic Spreading. Cutting process – Importance of cutting – Brief study of different types of cutting machines –Straight Knife – Band Knife – Die cutter – Laser cutting. Different systems of Mass Production – Group System – Band System – Individual and line Finishing System.	13
V	**SEWING:** Sewing machines – Different types – Parts and functions of Basic Lock Stitch sewing machine – Function of different types of Feed system in sewing machines – Selection of Thread and needle – Needle size and types – Classification & Classes of stitches – Uses of lock stitch – Chain stitch – 3 thread over lock – 5 thread flat lock stitch – Blind stitch. Sewing defects – causes and remedies. Fusing – Functions of Special attachments (Foots & Guides).	13

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Text Book:

Title	Author	Publisher	Year
The Art Of Sewing	Anna Jacob Thomas.	Ubs Publishers, Delhi.	2001
Practical Clothing Constructions Part I & II	Mary Mathews	Paprinpack Printers,Chennai.	1985
Zarapkar System of Cutting.	K.R.Zarapkar	Navneet Publications (I) Ltd.,Dantali. Gujarat.	2005

Reference:

Title	Author	Publisher	Year
Metric Pattern Cutting For Children's Wear	Winfred Aldrich	Blackwell science	1991
Pattern Design For Children's Clothes	Gloria Mortimer-Dunn	BT Batsford Ltd,London	1996
Clothing For Moderns	Erwine	Macmillan Pub.Co., New York.	1979
Comparative Clothing Construction Techniques	Virginn Stolpe Lewis	Surjeetpublications Delhi.	1984
Art In Everyday Life	Harriet Goldstein Vetta Goldstein	Oxford & IBH Publishing	2003

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STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36072**
Semester : V Semester
Subject Title : **TECHNICAL TEXTILES**

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	
Technical Textiles	5 Hrs	75 Hrs	25	75	100	3 Hrs

Topics and Allocation of Hours:

Sl.No	Topic	Time (hrs.)
1	INTRODUCTION	14
2	MEDICAL TEXTILES	14
3	GEO TEXTILES	14
4	FUNCTIONAL CLOTHING	13
5	TRANSPORTATION TEXTILES	13
6	TEST & REVISION	7
TOTAL		75

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RATIONALE:

To suit the present industrial need , this new subject is introduced. It is one of the versatile field for job opportunity. To understand the basic concepts in Medical textiles, Geo textiles, Filtration, Agro , Sports and Transportation textiles are taught to the students.

OBJECTIVES:

- To know about the Technical textiles and classification of technical textiles.
- .To know about the Medical textiles and classification of medical textiles, characteristics of material used.
- To know about the geo textiles and function of geo textiles.
- To know about the functional clothing and classification of protective clothing.
- To know about the Transportation textiles. Fibre and yarns used in the Transportation textiles.

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V SEMESTER - 36072 - **TECHNICAL TEXTILES**
DETAILED SYLLABUS - Contents: Theory

Unit	Name of the Topic	Hours
I	**INTRODUCTION:** Introduction to technical textiles – Definition – Difference between technical textiles and other textiles – classification of Technical textiles and applications (Agriculture, Horticulture, Civil, Medical, Geo Textrile, Transportation, Safety and sports) Types of fibres used and properties Ultra fine, Micro fibres, Nano fibres, Hollow fibres, Aramid fibres, Carbon, Nomex, Kevlar and Glass fibres.	14
II	**MEDICAL TEXTILES:** Definitions – characteristics of material used.- classification of surgical textiles – Application - Fibres used in Non-implantable materials like wound dressing, Bandage and gauze cloth. Fibres used in implantable materials like vascular graft, sutures and heart valves. Fibre requirements for Extra corporeal devices such as skin, lever and kidney. Fibre requirements in healthcare and hygiene products such as surgical gowns, masks and wipes.	14
III	**GEO TEXTILES** Geo Textile: Definition – geo textile properties – physical, mechanical, hydraulic, environmental. Function of geo textiles (separation, Filtration reinforcement, drainage and protection) Types of Geo textiles:- Brief study of Geo grids, Geo membranes - Woven and Non Woven geo textile products.Application of geo textiles – Road work, railway work, erosion control, Drainage systems.	14
IV	**FUNCTIONAL CLOTHING:** Definition – classification – safety and Protective Clothing (Environmental hazard) – Fibres used, properties and application of High temperature clothing **–** flame protective clothing – chemical Protective Clothing – Electro Protective Clothing - High visibility clothing, - Defense clothing (Camouflage dress, Bullet proof, Non visibility clothing, tent and parachute) – Application and fibres uses in Sports wear	13

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Unit	Name of the Topic	Hours
V	**TRANSPORTATION TEXTILES** Introduction – Fibre requirement and applications seat belts, Air bags, seat cover. Applications, Fibres and Yarns used Conveyor and Transmission belt. Fibres and Yarns used in Tyre cods fabrics. Fibre and yarns used in industrial hoses, Textiles in car, Train, air craft and marine applications.	13

TEXT BOOKS:

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	Fiber materials for Advanced Technical Textile	T. Matsuo	CRC publication,	2008
2	Industrial Application of Textiles for Filtration and coated fabrics	Pushpa B., and Sengupta, A.K	Textile progress, Vol.14,	1992

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REFERENCE BOOKS:

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	Hand book of Technical Textiles	A R Horrocks and S C Anand	The Textile Institute, Manchester, U.K., , Woodhead Publishing limited, Cambridge England.	2000
2	Handbook of Industrial Textiles	Sabit Adanur, Wellington sears	Technomic publishing company, Inc, Lancaster, U.S.A. ISBN:1-56676-340-1,	1995.
3	Geotextiles	N..M John	Blackie, London, ISBN: 0-216-91995-9,	1987
4	Medical Textiles	S. Anand	Text. Inst., , ISBN: 185573317X	1996

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

V SEMESTER

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2015-2016 onwards

TEXTILE TESTING - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36255**
Semester : V Semester
Subject Title : **TEXTILE TESTING - PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours / week	Hours / semester	Assessment mark			Duration
			Internal	Board exam	Total	
Textile Testing Practical	5	75	25	75	100	3 Hrs

RATIONALE:

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- To enhance the practical knowledge of testing textile fibre, yarn and fabric and analyzing the data.
- To handle the various testing instruments for fibre, yarn and fabric.

OBJECTIVES:

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

Fibre testing

- To have practical knowledge in the textile testing areas.
- Determination of fibre length using Baer Sorter.
- Determination of trash content by Trash Analyser.
- Determination of fibre fineness by Sheffield Micronaire.

Yarn Testing

- Determination of count by cutting and weighing method.
- Determination of single yarn twist by tension type twist tester.
- Determination of ply yarn twist by take up twist tester.
- Determination of single yarn strength.
- 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).
- Determination of bending modulus by stiffness tester for given sample of
- fabric (Warp way & Weft way).
- Estimation of bursting strength of a given fabric.
- Determination of crease recovery angle in warp way & weft way.

Guidelines:

- All the 12 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 / equipments and taking readings in the practical classes, every two students should be provided with a separate equipment set up 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 Examinations.

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QUESTION PAPER PATTERN AND ALLOCATION OF MARKS IN BOARD EXAMINATION

Single experiment is to be given per student

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

36255 TEXTILE TESTING – PRACTICAL

LIST OF EXPERIMENTS:

1. Determination of fibre length using Baer Sorter.
2. Determination of fibre fineness by Micronaire.
3. Determination of count of yarn by cutting and weighing method.
4. Determination of single yarn twist by tension type twist tester.
5. Determination of ply yarn twist.
6. Determination of single yarn strength, Lea strength and CSP.
7. Determination of yarn appearance grade as per ASTM visual examination method.
8. Determination of fabric tensile strength by tensile strength tester (Warp way & Weft way).
9. Determination of fabric tearing strength (Warp way & Weft way).
10. Determination of fabric stiffness by stiffness tester (Warp way & Weft way).
11. Determination of crease recovery angle in warp way & weft way
12. Determination of crimp in warp & weft yarn for the given fabric sample.

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List of equipment:

Baer Sorter, Fibre fineness tester, Tension type Twist tester, Lea strength tester, Yarn appearance winder, Fabric tensile strength tester, Elmendorf tearing strength tester, Ballistic tester, Fabric thickness tester, Quadrant balance, Crease recovery tester and Stiffness tester – each 1 no, physical balance – 2no.

Material required: - For a batch of 30 students.

1. Cotton fibre - 2.0 Kgs
2. Roving bobbin - 5 bobbins
3. Yarn - 100 cops any count
4. Fabric - 30 metres

Manual: Laboratory manual.

SAFETY PRECAUTIONS TO BE FOLLOWED:

Students must wear over coat and shoes.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

V SEMESTER

2015-2016 onwards

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GARMENT MANUFACTURING TECHNOLOGY - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36256**
Semester : V Semester
Subject Title : **GARMENT MANUFACTURING TECHNOLOGY – PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Garment Manufacturing Technology - Practical	5	75	25	75	100	3 Hrs

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RATIONALE:

Style of every garment needs various design techniques for the parts of the garment. The garment construction includes various types of stitches, seams, collars, cuffs, plackets, pockets, neckline finishes and fullness effect. This practical subject provides hands on experience to practically cut the pattern for different types of garments. This will make the students to draft pattern for any garment style

OBJECTIVES:

Pattern Making for Children's Wear:

1. To prepare pattern for Children's Underwear.
2. To prepare pattern for Sun Suit.

Pattern Making for Men's Wear:

1. To prepare pattern for Men's Shirt Front, Back and Yoke.
2. To prepare pattern for Men's Shirt 'H' Sleeve, Cuff, Collar and Pocket.
3. To prepare pattern for Gent's 'T' Shirt.
4. To prepare pattern Gent's Trouser.

Pattern Making for Ladies Wear:

1. To prepare pattern for Ladies Night Wear.
2. To prepare pattern for Salwaar.
3. To prepare pattern for Kameez.
4. To prepare pattern for Chudidhar.

Computerized Pattern Making

1. To prepare pattern for 'A' Line Frock.

Computerized Pattern Grading

1. To prepare pattern for M & L size Gent's 'T' Shirt.

GUIDELINES:

- All the fourteen experiments given in the list of experiments should be completed and given for the end semester practical examination.
- In order to develop best skills every students should create/draft separate pattern for the given garment for exposing the skills in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations.

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QUESTION PAPER PATTERN AND ALLOCATION OF MARKS IN BOARD EXAMINATION

Single experiment is to be given per student

Experiment	50 marks
Write up	20 marks
Viva	05 marks
Total	75 Marks

GARMENT MANUFACTURING TECHNOLOGY – PRACTICAL
36256

LIST OF EXPERIMENTS:

1. Preparing required pattern for Children's Underwear using the given measurement.
2. Preparing required pattern for Sun Suit using the given measurement.
3. Preparing required pattern for Men's Shirt Front, Back and Yoke using the given measurement.
4. Preparing required pattern for Men's Shirt 'H' Sleeve, Cuff, Collar and Pocket using the given measurement.
5. Preparing required pattern for Gent's 'T' Shirt using the given measurement.
6. Preparing required pattern for Gent's Trouser using the given measurement.
7. Preparing required pattern for Ladies Night Wear using the given measurement.
8. Preparing required pattern for Salwaar using the given measurement.
9. Preparing required pattern for Kameez using the given measurement.
10. Preparing required pattern for Chudidhar using the given measurement.
11. Preparing compurized pattern for 'A' Line Frock using the given measurement.
12. Preparing graded pattern for M & L size Gent's 'T' Shirt using the given measurement.

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LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS:

1. Measuring tools -1set per student
2. Pattern making tools-1set per student
3. Construction tools-1set per student
4. General tools-1set per student
5. Cutting table (6'x4')-4 No
6. Scissors -30
7. Scale (1m)-30
8. French curve-30
9. Tape-30
10. Pattern sheet
11. Markers
12. Computers with all accessories
13. Any commercial pattern drafting and grading software.

SAFETY PRECAUTIONS TO BE FOLLOWED:

Students must wear over coat and shoes.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

V SEMESTER

2015-2016 onwards

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LIFE AND EMPOLYABILITY SKILL - PRACTICAL

Common to all Branches

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

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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**

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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**

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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

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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
e.	Almost everyone	come	to the company	on motorbikes	

3. 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

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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

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

VI SEMESTER

2015-2016 onwards

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TEXTILE MANAGEMENT

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36061**
Semester : VI Semester
Subject Title : **TEXTILE MANAGEMENT**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ week	Hours/ semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Textile Management	5	75	25	75	100	3 Hrs

Topics and allocation

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Sl.No	Topic	Time (hrs.)
1	INTRODUCTION TO MANAGEMENT, SITE SELECTION, PLANT LAY OUTS	14
2	PRODUCTION AND FINANCIAL MANAGEMENT	14
3	HUMAN RESOURCE MANAGEMENT	14
4	SUPERVISORY AND SAFETY MANAGEMENT	13
5	EXPORT AND CONTEMPORARY MANAGEMENT	13
6	TEST & REVISION	7
	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 acc idents 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.

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36061 TEXTILE MANAGEMENT
DETAILED SYLLABUS

Contents:Theory

Sl.No	Topic	Time (hrs.)
1	**INTRODUCTION TO MANAGEMENT, SITE SELECTION, PLANT LAY OUTS** Definition of Management. Functions of management – Organising, Staffing, Directing, and 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	12
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)	12
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.	12

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Sl.No	Topic	Time (hrs.)
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.	12
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),	12

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TEXT BOOKS:

S.NO	TITLE	AUTHOR	PUBLISHERS	YEAR
1	Principles of Management	P.C.Tripathi	Tata Mcgrow Publishing Compny Ltd, New Delhi	2001
2	Management of Textiles	Dudega.V.D	Trade Press, Textile Indistry ,Ahemadabad	1981

REFERANCE BOOKS:

S.NO	TITLE	AUTHOR	PUBLISHERS
1	Principles Of Management	P.C.Tripathi	Tata Mcgrow Publishing Compny Ltd, New Delhi
2	Management Of Textiles	Dudega.V.D	Trade Press, Textile Indistry ,Ahemadabad
3	Industrial Engineering	A P Verma	S K Kataria.
4	Personnel Management Of Humoun Resoures	Mamoria.C.B	Himalaya Pubishingh House, Mumbai
5	Orgisation 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;Etal	Khanna PublisherNew 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 Pubishingh House, Mumbai
11	Industrial Organisation and Engineering Economics	S C Sharma, T R Banga	Khanna PublisherNew Delhi

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

VI SEMESTER

www.binils.com

2015-2016 onwards

TECHNOLOGY OF FINISHING OF NATURAL & MAN MADE TEXTILES

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36262**
Semester : VI Semester
Subject Title : **TECHNOLOGY OF FINISHING OF NATURAL & MAN MADE TEXTILES**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
			Assessment Marks			Duration
	Hours/ Week	Hours/ Semester	Internal	Board Exam	Total	
Technology of Finishing of Natural and Man Made Textiles	5	75	25	75	100	3 Hrs

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Topics and hours allocation

UNIT	TOPIC	TIME(Hrs)
I	Textile Finishing and Finishing agents	14
II	Synthetic Resin Finishing	14
III	Functional and Garment finishing	14
IV	Finishing of Protein, Synthetic Fibres and Blends	13
V	Mechanical Finishing Machines and Quality Control	13
VI	Test & Revision	7
	Total	**75**

RATIONALE:

Finishing is the important process to provide value addition and functional value to the textile fabric which are made from natural, regenerated and synthetic fibres and their blends. So studying the different types of finishing techniques and various types of machines used to carry out that processes, are very much important for the textile technicians to increase the sale value of the garments.

OBJECTIVES:

Unit 1 : Textile Finishing and Finishing Agents

- In this unit the object and classification of textile finish are being discussed.
- Different types of softeners are also studied in detail.

Unit 2 : Synthetic Resin Finishing

- All types of synthetic resin finishing are being studied for natural as well as synthetic fibres to impart the essential knowledge of the maintenance of the dimensional stability.
- The impact of resin finishing in the fabric is incorporated to have control over them while doing finishing.

Unit 3 : Functional and Garment finishing

- Special finishes like flame retardant, water proof and repellent and garment finishing is being given in this unit to know how to increase the feel and the sale value of the fabric according to its end uses.
- Latest finishing technology is also included to impart functional finishes.

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Unit 4 : Finishing of Protein, Synthetic Fibres and Blends

- All the important finishes given to the Wool, Silk and Polyester blends are being discussed in detail to get the desired effect.
- Heat setting and its effects are studied.

Unit 5 : Mechanical Finishing Machines and Quality Control

- Basic finishing machines and the way to calculate the efficiency of the finishing process is studied to have proper control over the finishing process.
- International limitations of finishing chemicals and ETP are added to impart the knowledge about international standard.

36262 - TECHNOLOGY OF FINISHING OF NATURAL AND MAN MADE TEXTILES

DETAILED SYLLABUS - Contents: Theory

UNIT	TOPIC	TIME(Hrs)
I	**TEXTILE FINISHING AND FINISHING AGENTS:** Objectives of Finishing – Advantages - Classification of Finishing (Chemical/Mechanical).Types of Finishing (Temporary/Permanent/Semi Permanent) – Brief study about Durable, Semi-Durable, Non-Durable finishes – Function of Softeners - Types of Softeners (Anionic, Cationic, Non-ionic and Reactive softeners) – Properties, Merits and Demerits of softeners – Stiff finishes using Starches and PVA - Back filling finish.	14
II	**SYNTHETIC RESIN FINISHING:** Resin finishing and Anti-crease properties- Depositing type and cross linking type of resins - Different N-methylol resins used in finishing and their structures (DMU, DMEU, DMDHEU, DMPU) - Steps involved in resin finishing (padding, drying, curing, washing and softening) – Resin Finishing recipes for 100% cotton, P/V, P/C,P/W. Effect of resin on physical properties and its remedies-Durable press finish- Use of polycarboxylic acid and glyoxal for crease recovery finish and importance of dimensional stability.	14
III	**FUNCTIONAL AND GARMENT FINISHING:** Brief study about silicone emulsion – acrylic emulsion – wax emulsion – water proofing and water repellent finishes – define soiling – mechanism involved in soil release finish – soil release finish with recipes and process sequence – Stain guard finish - Flame retardant finish – definition of LOI (limiting oxygen index) - Biopolishing of garments with enzymes. Advantages of Anti-microbial finish, UV protection finish. Definition of low-add-on, Foam finishing, micro encapsulation, plasma and nano technology.	14
IV	**FINISHING OF PROTEIN, SYNTHETIC FIBRES AND BLENDS:** Milling – Crabbing – Anti-felting – Advantages of plasma modified wool. Weighting of Silk - Scroopy finish - Carbonizing process of P/C blend - Weight reduction of Polyester - Delustering of rayon (double bath method). Definition of Pilling – Disadvantages of Pilling - Anti Pilling finish – Need of Antistatic finish. Concept - Condition and Mechanism of Heat-Setting-Effect of Heat setting on Fibre properties.	13

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UNIT	TOPIC	TIME(Hrs)
V	**MECHANICAL FINISHING MACHINES AND QUALITY CONTROL:** Mechanism of pre-shrinkage on zero-zero (Sanforising) pre shrinking range machine - Shrinkage control of knitted fabrics- Compacting - Importance of damping prior to calendaring- Purpose of calendaring – Seven bowl calendaring Machine – Advantages of Peach finish. Hot air stenters (Pin and Clip type) - Hot flue (with padding mangle). Estimation of formaldehyde content. Possible sources of contamination of red listed chemicals. Brief study of importance of pollution control (ETP and Reverse Osmosis).	13

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Author	Title	Publisher	Year
Text books:			
Hall A.J.	Textile finishing	Iliffe Books Ltd., London	1982
Marsh J.T	Textile finishing	B.I.Publications, New Delhi	1982
References books:			
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
W. D. Schindler and P. J. Hauser	Chemical finishing of textiles	Textile Institute and Woodhead publication.	2004
R. Shishoo	Plasma technologies for textille	Textile Institute and Woodhead publication.	2007
Elbadawi, A. M. andPearson, J. S.	'Foam technology in textile finishing'	Textile Progress, 33: 4, 1 — 31	2003
Shenai V.A	Technology of Textile Processing Vol.10 Technology of finishing	Sevak Publications, Bombay	1987
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	Ahmedabad Textile Industry Research Association, Ahmedabad	1984

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

VI SEMESTER

2015-2016 onwards

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ELECTIVE - II

1. **GARMENT MANUFACTURING TECHNOLOGY – II**
2. **ADVANCES IN SYNTHETIC FIBRE MANUFACTURE**

CURRICULUM DEVELOPMENT CENTRE

6.3 ELECTIVE - II

6.3.1 GARMENT MANUFACTURING TECHNOLOGY - II

6.3.2 ADVANCES IN SYNTHETIC FIBRE MANUFACTURE

ELECTIVE – II
STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36281**
Semester : VI Semester
Subject Title : **GARMENT MANUFACTURING TECHNOLOGY - II**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Garment Manufacturing Technology-II	5	75	25	75	100	3 Hrs

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Topics and hours allocation

UNIT	TOPIC	TIME(Hrs)
I	Construction and Finishing	14
II	Apparel Quality Control	14
III	Sampling and Costing	14
IV	Elements of Design, Color Aspects and Design Development	13
V	Pattern in Fabrics and Fashion Industry	13
VI	Test & Revision	7
	Total	**75**

RATIONALE:

Garment manufacturing technology is very much important for textile technicians in order to manufacture the internationally acceptable quality garments for various styles and sizes. Sample creation, costing, packing, finishing, elements of design, quality controlling tools and fashion designing concepts are included in this subject to have over all control over the garment quality as well as in marketing.

OBJECTIVES:

Unit-1- Construction and Finishing

To study about the different types of Pressing and Packing.
To study about the assembling of a Garments. .

Unit-2- Apparel Quality Control

To study about the different types of inspection process.
To know about the quality improvement tools.

Unit-3- Sampling and Costing

To know about the costing of the garments
To study about the sample preparation and order from the buyers.

Unit-4- Elements of Design, Color Aspects and Design Development

To study about the principle and elements of the design.
To study about colour theory.
To study about the natural source available for design development.

Unit-5- Pattern in Fabrics and Fashion Industry

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To know about the application of designs in fabric.
To study about the designing of pattern in fabrics.
To study about the different types of structural and decorative designs.
To study about the fashion industry.

ELECTIVE – II
36281 - GARMENT MANUFACTURING TECHNOLOGY - II
DETAILED SYLLABUS - Contents: Theory

UNIT	TOPIC	TIME (Hrs)
I	**PACKING AND FINISHING** Pressing: Objectives of pressing – Types of pressing. Packing: Objectives – Types of individual piece packing such as Stand-up, Flat, Dead man and Hanger pack – Mass packing system such as Ratio, Size wise, Colour wise, Assorted pack and Un-assorted pack. Finishing: Types and objectives (Functional and Novelty) Garment defects: Major, Minor and Critical defects – Sewing and Finishing defects. Packing material: Packing material used in garment packing like PVC patty, Outer patty, Butterfly, Back board, Tissue paper, Clips, Tags and Carton.	**14**
II	**APPAREL QUALITY CONTROL** Terminologies in Quality – Importance of Quality – Importance of Raw material inspections – 4 point and 10 point fabric inspection systems – Importance of In-process inspection – Final inspection and its types – Study of Quality control tools (7 tools - Cause and effect, Check sheet, Control chart, Flow chart, Histogram, Pareto chart and Sorting). AQL Inspection – Sampling procedure, AQL Standards. WRAP certification steps and procedures – GOTS certification procedure.	**14**
III	**SAMPLING AND COSTING** Sampling objectives – Types of samples & Approval (Development sample, Photo shoot sample, SMS sample, Size set sample, Pilot run sample, Shipment sample) – Sample confirmation – Order from Buyer – Style number and its importance – Importance of specification sheet – Spec sheet analysis – Purpose of Trim sheet - Brief study of costing – Cost estimation for Men's T shirt and Ladies' skirt (using Fabric rate, CMT, Accessories rate, Packing rate and Mark up%) – Role of merchandiser in Garment industry - Role of Industrial Engineer in Garment Industry.	**14**
IV	**PRINCIPLES OF DESIGN AND COLOUR ASPECTS** Elements of Design – Line, Shape, Colour, Texture and Value - Illusion created by line. Introduction to principles of Design – Unity, Proportion, Balance, Emphasis and Rhythm – Pigment colour theory – Primary colour – Secondary colours – Tertiary colours – 12 Colour wheel – Colour dimensions (Hue, Intensity, Value, Tint, Shade and Tone) – Warm and cool colours - Psychology of colour - Application of colour on dress for different season.	**13**

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UNIT	TOPIC	TIME (Hrs)
V	**DESIGN DEVELOPMENT** Design – Conventional design – Geometric design – Floral design – Animated design – Spot design – Half drop design – Reverse drop design – Ogee base design – Motifs – Types of motifs – Motifs on fabric – Sources of Inspirations - Steps in garment design development - Types of Structural and Decorative designs – Role of Fashion designer and Fashion director – Fashion capital – Brief study of Fashion show.	**13**

Author	Title	Publisher	year
Text books:			
Pradip V Mehta	An Introduction to Quality control for The Apparel Industry	ASQC Quality press New York.	2007
	ISO 9000 Series Manual	New Delhi.	
Pradip V Mehta	Managing Quality in Apparel Industry	New Age International Publishers	1998
Reference books:			
K.R.Zarapkar	Zarapkar System of Cutting	Navneet Publications (I) Pvt Ltd, Dantali, Gujarat.	2005
Winfred Aldrich	Metric Pattern Cutting for Children's Wear	Blackwell Science Publishing	2004
Reader's Digest Sewing Guide	Complete guide to sewing	Reader's Digest Association, Inc, Newyork.	1976
Sumathi.G.J	Elements of Design & Apparel Design	New Age International, Delhi	2002

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Elective – II

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)

M-SCHEME

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

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36282**
Semester : VI Semester
Subject Title : **ADVANCES IN SYNTHETIC FIBRE MANUFACTURE**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Advances in Synthetic Fibre Manufacture	5	75	25	75	100	3 Hrs

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Topics and hours allocation

UNIT	TOPIC	TIME(Hrs)
I	Polymer Modification	14
II	Developments in Nylon and Acrylic	14
III	Fundamentals of Yarn Texturising, Stretch and Modified Stretch Yarns	14
IV	Draw Texturing and Methods of Texturing for Bulk Yarns	13
V	Tow to Top conversion and Developments in Polyester	13
VI	Test & Revision	7
	Total	**75**

RATIONALE:

Technical Textiles is one of the emerging fields in textile market. So the available natural, regenerated and synthetic fibres are modified to meet the technical requirements for the different end uses. The properties of the fibres are changed according to the requirements. So studying about the modification techniques are really very much important.

OBJECTIVES:

Unit-1-Polymer Modification

- To study about the details of generation of synthetic fibres by doing cross section modification.
- To study about the details of generation of synthetic fibres by doing chemical modification.

Unit-2-Developments in Nylon and Acrylic

- To study about the details of nylon6, 10 and all developments in nylon.
- To study about all developments in acrylic.

Unit-3- Fundamentals of Yarn Texturising, Stretch and Modified Stretch Yarns

- To study about the principles of texturisation,
- To study about the production of Stretch and Modified Stretch Yarns.

Unit-4- Draw Texturing and Methods of Texturing for Bulk Yarns

- To study about the Sequential and Simultaneous Draw Texturing.
- To study about the Stuffer Box and Air Jet Texturing.

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Unit-5- Tow to Top conversion and Developments in Polyester

- To study about the specific convertor and stretch break convertor.
- To study about the hydrophilic and differentially dyeable Polyester.

ELECTIVE – II
36282 - ADVANCES IN SYNTHETIC FIBRE MANUFACTURE
DETAILED SYLLABUS

Contents: Theory

UNIT	TOPIC	TIME(Hrs)
I	**POLYMER MODIFICATION:** Detailed study of second, third and fourth generation of fibres - drawbacks of synthetic fibres: brief idea of various modifications of fibre forming polymers - necessity for polymer modification. Physical modification of synthetic fibres - brief idea of principles involved in physical modification in fibres : bi-component, bi-constituent and profile fibres - hollow fibres - micro fibres. Chemical modification of synthetic fibres - brief introduction of the chemical modifications of polyester, nylon and acrylic for differential dyeability, anti-pilling, anti-static, flame retardancy and hygroscopicity - solvent treatment of fibres - grafting of polymers.	14
II	**DEVELOPMENTS IN NYLON AND ACRYLIC:** Production, properties and applications of Nylon 6,10 and Nylon 11 Modified Nylons: Brief study of Hydrophilic nylon, Differentially dyeable nylon and Flame retardant nylon; Production, properties and applications of Micro Filament nylon. Production, properties and applications of bi-component acrylic and flame retardant acrylic. Brief study of hydrophilic acrylic, dope-dyed acrylic, high-bulk acrylic and, differentially shrinkable acrylic.	14
III	**FUNDAMENTALS OF YARN TEXTURISING, STRETCH AND MODIFIED STRETCH YARNS:** Definitions of texturising and textured yarn. Classification of textured yarns - Stretch, modified stretch (Set) and Bulk yarns and their characteristics. Brief study of texturising principles – Thermo -mechanical, Pneumo-mechanical and Chemo-mechanical: Stretch Yarns - Method of production of stretch yarns using the thermo mechanical principle of texturising - False Twist (FT) texturising principle - path of yarn through a continuous FT Machine for converting Fully Oriented Yarn (FOY) to stretch yarns – Brief study of stacked discs and friction twisting device - properties and uses of stretch yarns. Modified Stretch yarns - effect of post treatment of stretch yarns - path of FOY feed yarn through a FT Texturising machine designed to produce modified stretch yarn --properties and applications of modified stretch yarns.	14

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UNIT	TOPIC	TIME(Hrs)
IV	**DRAW TEXTURING AND METHODS OF TEXTURING FOR BULK YARNS:** Brief knowledge of Un Drawn Yarn (UDY), Partially Oriented Yarn (POY) and Fully Oriented Yarn (FOY) - Advantages of POY over UDY for draw texturing (DTX) . Draw texturising methods – brief study of simultaneous DTX and sequential draw texturising - characteristics of the draw textured yarns. Principle of stuffer box crimping – path of POY through a stuffer box crimping machine – characteristics and applications of stuffer box crimped yarn. Air jet texturising – principle of air jet texturising – path of yarn through an air jet texturising machine – types of air jet nozzles used – properties of air jet textured yarns – applications of air jet textured yarns. Brief study of principle of gear crimping and Knit - de – Knit Crimping.	13
V	**TOW TO TOP CONVERSION AND DEVELOPMENTS IN POLYESTER:** Tow to top conversion – basic methods - passage of material through pacific converter – stretch break converter - passage of material through Turbo stapler - advantages of Tow –to-top system. Production of LOY, MOY, POY and FOY Yarns and comparison of their properties. Advantages of High speed Spinning of Polyester. Brief study of micro polyester, cationic dyeable polyester (CD PET) and silk like polyester.	13

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Author	Title of the book	Publishers	Year
Text books:			
Dr.R.S.Gandhi	A guide to crimping / texturing technology	MANTRA Publications Ahmedabad.	1990
B.C.Goswami	Textile Yarns	John Wilex & sons, Newyork	1976
Bohumil Piller	Bulked Yarns	SNTC Publication, II, Albert SN, Manchester.	1973
Reference Books :			
R.W.Moncrieff	Man Made Fibres	Butter Worth and Co. Publishers Ltd 88 LingswayWC 2B6AB London.	1979
H.F.Mark, S.M. Atlas & E.Cernia	Man Made Fibres - Science and Technology	Interscience Publishers New York.	1967
A.A.Vidhya	Production of Synthetic Fibres	Prentice Hall of India Private Ltd.New Delhi.	1988
Ludwig Harman	Polyester fibres - Chemistry and Technology	Noyes Data Corporation New Jersey 07656 USA.	1972
Marshall Sitting	Polyester Fibre Manufacture	Noyes Data CorporationNew Jersey 07656 USA.	1971
Marshall Sitting	Synthetic fibres from Petroleum	Noyes Data Corporation New Jersey 07656 USA.	1967
Hearle	Acrylonitrila Polymer Manufacture	Ellis Horwood Ltd Torondo	1985
V.P.GUPTHA	Polyethline Terephthalate	Textile Institute, UK	1980
J.J.Prey	Man Made Textile Encyclopedia	Textile Book publication, London	1959
Meanachem Lewin	Handbook of Fibre Science and Technology	Meanachem Lewin	1990
M.J. Folkes	Short Fibre Reinforced Thermoplastics	M.J. Folkes	1996
Lawrence E. Nielsen	Mechanical Properties of Polymers and Composites	Lawrence E. Nielsen	1994
M.L.Gulkarni	Polyester Textiles	Textile Association India(TAI)	1980

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

VI SEMESTER

2015-2016 onwards

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TEXTILE PRINTING - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36264**
Semester : VI Semester
Subject Title : **TEXTILE PRINTING – PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Textile Printing	5	75	25	75	100	3 Hrs

RATIONALE:

Printing is the process which is mainly carried out to provide value addition and to create fancy effects to increase the aesthetic feel to the textile woven as well as knitted fabric. This practical is helpful to practically know about various printing styles and method. In this practical the students can practically understand the printing of cotton, Polyester, P/C blend and Nylon by direct, discharge and resist styles, fixation and washing aspects after printing the materials.
They can also have an idea about various printing effects like, Khadi, Plastizol, Metallic Print, Tie & Dye, Batik, Discharge, Resist, Burnt out, Crimp and Crepon Styles.

OBJECTIVES:

Direct Style of Printing on Cotton:

1. To carry out the Direct style of printing on cotton with hot brand reactive dyes by steaming method.
2. To carry out the Direct style of printing on cotton with vinyl sulphone reactive dyes and sodium silicate by cold pad batch / hot silicate method.
3. To carry out the Direct style of printing using pigments on cotton using kerosene substitute paste.

Direct Style of Printing on Polyester:

1. To carry out the Direct style of printing on polyester using disperses dyes. (Print – Dry – HTHP steaming / Thermosol method)

Fancy and Special Printing styles:

1. To carry out the Printing using plastisol inks (White or colour) (Print – Dry - fix)
2. To carry out the Printing using Silver Metallic powder pastes.
3. To carry out the Printing using Gold Metallic powder pastes.
4. To carry out the Burnt out style of printing on P/C blend (white / pastel dyed)
5. To carry out the Batik style of printing (white or color resist) using cold brand reactive dyes / Azoic dyes.

Discharge Style of Printing:

1. To carry out the White Discharge printing on reactive dyed / padded cotton fabric.

Resist Style of Printing:

1. To carry out the Tie & dye – resist style of Coloration using reactive dyes.
2. To carry out the White Resist on Ramazol ground.

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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 every students should be provided with a required dyes and fabric for exposing the skills in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations.

QUESTION PAPER PATTERN AND ALLOCATION OF MARKS IN BOARD EXAMINATION

Single experiment is to be given per student

Recipe	10 marks
Procedure/Process sequence	20 marks
Calculation	20 marks
Result (based on the sample produced)	20 marks
Viva	05 marks
Total	75 Marks

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36264- TEXTILE PRINTING – PRACTICAL

LIST OF EXPERIMENTS :

Direct Style of Printing on Cotton:

1. Carrying out the Direct style of printing on cotton with hot brand reactive dyes by steaming method.
2. Carrying out the Direct style of printing on cotton with vinyl sulphone reactive dyes and sodium silicate by cold pad batch / hot silicate method.
3. Carrying out the Direct style of printing using pigments on cotton using kerosene substitute paste.

Direct Style of Printing on Polyester:

4. Carrying out the Direct style of printing on polyester using disperses dyes. (Print – Dry – HTHP steaming / Thermosol method)

Fancy and Special Printing styles:

5. Carrying out the Printing using plastisol inks (White or colour) (Print – Dry - fix)
6. Carrying out the Printing using Silver Metallic powder pastes.
7. Carrying out the Printing using Gold Metallic powder pastes.
8. Carrying out the Burnt out style of printing on P/C blend (white / pastel dyed)
9. Carrying out the Batik style of printing (white or color resist) using cold brand reactive dyes / Azoic dyes.

Discharge Style of Printing:

10. Carrying out the White Discharge printing on reactive dyed / padded cotton fabric.

Resist Style of Printing:

11. Carrying out the Tie & dye – resist style of Coloration using reactive dyes.
12. Carrying out the White Resist on Ramazol ground.

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LIST OF EQUIPMENTS REQUIRED FOR A BATCH OF 30 STUDENTS:

Equipments:

1. Printing Table -1 with 5 metre length
2. Printing screens--15
3. Curing Oven-1
4. Baby Steamer-1
5. Printing Blocks-2
6. High speed stirrer -4
7. Squeegees -15

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.

SAFETY PRECAUTIONS TO BE FOLLOWED:

Students must wear over coat and shoes.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

VI SEMESTER

2015-2016 onwards

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TECHNOLOGY OF FINISHING OF NATURAL & MAN MADE TEXTILES - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36265**
Semester : VI Semester
Subject Title : **TECHNOLOGY OF FINISHING OF NATURAL& MANMADE TEXTILES – PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours / Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Technology of Finishing of Natural & Man Made Textiles-Practical	5	75	25	75	100	3 Hrs

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RATIONALE:

Finishing is an important process to provide value addition and functional value to the textile fabric which are made from natural, regenerated and synthetic fibres and their blends. So doing the different types of finishing techniques in the laboratory is very much helpful for the students to combine the finishing treatments by adopting the chemicals possessing good compatibility.

OBJECTIVES:

Stiff Finish:

1 To finish the given fabric using 2% starch.
2 To give Permanent stiff finish using Poly Vinyl Acetate.
3 To give Back filling finish for the given fabric sample using a suitable recipe.

Soft Finish:

4 To finishing the given fabric using 2% softener.

Resin Finishing:

5 To finish the sample using the given resin.

Special finish and functional finish:

6 To give Flame retardant finish to the given fabric sample.
7 To give water repellent finish to the given fabric sample.
8 To give Biopolish using enzyme.

Finishing of protein fibres, P/C blend and Viscose:

9 To give Scroopy finish for silk.
10 To Carbonise the P/C blend.
11 To reduce the weight of Polyester.

Shrinkage:

12 To find the warp wise / weft wise shrinkage of the given fabric.

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 every students should be provided with a required chemicals and fabric for exposing the skills in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations.

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QUESTION PAPER PATTERN AND ALLOCATION OF MARKS IN BOARD EXAMINATION

Single experiment is to be given per student

Recipe	10 marks
Procedure/Process sequence	20 marks
Calculation	20 marks
Result (based on the sample produced)	20 marks
Viva	05 marks
Total	75 Marks

36265 - TECHNOLOGY OF FINISHING OF NATURAL&MANMADE TEXTILES – PRACTICAL

LIST OF EXPERIMENTS WITH OBJECTIVES:

Stiff Finish:

1. Finishing the given fabric using 2% starch.
2. Imparting Permanent stiff finish using Poly Vinyl Acetate.
3. Imparting Back filling finish for the given fabric sample using a suitable recipe.

Soft Finish:

4. Finishing the given fabric using 2% softener.

Resin Finishing:

5. Finishing the sample using the given resin.

Special finish and functional finish:

6. Imparting Flame retardant finish to the given fabric sample.
7. Imparting water repellent finish to the given fabric sample.
8. Imparting Biopolish using enzyme.

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Finishing of protein fibres, P/C blend and Viscose:

9. Imparting Scroopy finish for silk.
10. Carbonising the P/C blend.
11. Reducing the weight of Polyester.

Shrinkage:

12. To find the warp wise / weft wise shrinkage of the given fabric.

LIST OF EQUIPMENTS REQUIRED FOR A BATCH OF 30 STUDENTS:

1. Felt Calendar Machine - 1
2. Padding Mangle - 1
3. Drying Oven with Temperature Control – 1
4. Heater-1
5. Fabric samples of cotton, silk, and polyester (as per the requirement)

SAFETY PRECAUTIONS TO BE FOLLOWED:

Students must wear over coat and shoes.

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

VI SEMESTER

www.bhils.com

2015-2016 onwards

ADVANCED GARMENT MANUFACTURING - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
M-SCHEME
(to be implemented for the student admitted from the year 2015-2016 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY (MMF)
Subject Code : **36266**
Semester : VI Semester
Subject Title : **ADVANCED GARMENT MANUFACTURING - PRACTICAL**

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 15 weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Assessment Marks			Duration
			Internal	Board Exam	Total	
Advanced Garment Manufacturing-Practical	5	75	25	75	100	3 Hrs

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RATIONALE:

By practically doing the different types of stitches, the students can be able to make garments with different style by employing the suitable stitch type in various parts of the garments. The students are also trained to make variety of garments by using the given pattern with out any fault.

OBJECTIVES :

Constructing Children's Wear:

1. To construct and finish the Children's Wear.
2. To construct and finish the Children's Underwear.
3. To construct and finish the Sun Suit.
4. To construct and finish the Straight Skirt.

Constructing Men's Wear:

1. To construct and finish the Men's Shirt Front, Back, Yoke and Sleeve.
2. To assemble the constructed parts and finish the Men's Shirt.

3. To construct and finish the Men's 'T' Shirt.
4. To construct and finish the Gent's Trouser.

Constructing Ladies Wear:

1. To construct and finish the Ladies Night Wear.
2. To construct and finish the Salwaar.
3. To construct and finish the Kameez.
4. To construct and finish the Chudidhar.

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 every students should be provided with a separate sewing machines and required attachments for exposing the skills in the laboratory.
- The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations.

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QUESTION PAPER PATTERN AND ALLOCATION OF MARKS IN BOARD EXAMINATION

Single experiment is to be given per student

Experiment	50 marks
Write up	20 marks
Viva	05 marks
Total	75 Marks

36266 - ADVANCED GARMENT MANUFACTURING - PRACTICAL

LIST OF EXPERIMENTS :

Constructing Children's Wear:

1. Constructing and finish the Children's Wear.
2. Constructing and finish the Children's Underwear.
3. Constructing and finish the Sun Suit.
4. Constructing and finish the Straight Skirt.

Constructing Men's Wear:

5. Constructing and finish the Men's Shirt Front, Back, Yoke and Sleeve.
6. Assembling the constructed parts and finish the Men's Shirt.
7. Constructing and finish the Men's 'T' Shirt.
8. Constructing and finish the Gent's Trouser.

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Constructing Ladies Wear:

9. Constructing and finish the Ladies Night Wear.
10. Constructing and finish the Salwaar.
11. Constructing and finish the Kameez.
12. Constructing and finish the Chudidhar.

LIST OF EQUIPMENTS REQUIRED FOR A BATCH OF 30 STUDENTS:

1. Twin needle lock stitch-1
2. 5-thread overlock-1
3. 5-thread flat lock -1
4. Lock stitch pedal sewing -15
5. 3-thread overlock-1
6. Cutting machine- 1
7. Multi thread embroidery -1
8. Industrial steam ironing press -1
9. Steam iron box-1
10. Pattern drafting & grading software

SAFETY PRECAUTIONS TO BE FOLLOWED:

Students must wear over coat and shoes.

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DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE TECHNOLOGY

(MAN MADE FIBRE)

III YEAR

M – SCHEME

VI SEMESTER

2015-2016 onwards

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PROJECT WORK

CURRICULUM DEVELOPMENT CENTRE

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.

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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)

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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?

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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.

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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.

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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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