DIPLOMA IN ENGINEERING AND TECHNOLOGY

1061 / 2061

DEPARTMENT OF TEXTILE PROCESSING – FULL TIME

DEPARTMENT OF TEXTILE PROCESSING – SANDWICH

SEMESTER PATTERN

N – SCHEME

IMPLEMENTED FROM 2020 - 2021

CURRICULUM DEVELOPMENT CENTRE

DIRECTORATE OF TECHNICAL EDUCATION

CHENNAI-600 025, TAMIL NADU

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU
DIPLOMA IN ENGINEERING/TECHNOLOGY SYLLABUS (II / III YEAR)
N SCHEME
(Implemented from Academic Year 2020-21 onwards)

Chairperson
TMT.G.LAXMI PRIYA I.A.S.
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DIPLOMA IN TEXTILE PROCESSING - FULL TIME - 1061
DIPLOMA IN TEXTILE PROCESSING (SANDWICH) - 2061

Convener

Dr.G.K.Balamurugan,
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Members

1. Dr.V.Ilango, Head of the Department / Textile Technology (Man Made Fibres), SSM Polytechnic College Komarapalayam - 638183	**5. Mr.A.Murugesan,** Lecturer / Textile Processing, SSM Polytechnic College Komarapalayam - 638183
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3. Mr.R.Manoharan, Lecturer (Selection Grade) / Textile Processing, SSM Polytechnic College Komarapalayam - 638183	**7. Mr.R.Jayakumar,** Chief Operational Officer, Colorsburg (Div.of Shakthi Knitting Ltd.) Perundurai, Erode District - 638052
4. Mr.K.Ramamurthi, Lecturer / Selection Grade – I Textile Processing EIT Polytechnic College, Kavindapadi, Erode - 638455	**8. Dr.M.Gopalakrishnan**, Assistant Professor Grade III & Head of Textile Technology Bannari Amman Institute of Technology Sathyamangalam – 638401

DIPLOMA COURSES IN ENGINEERING/TECHNOLOGY

(SEMESTER SYSTEM)

(Implemented from 2020 - 2021)

N – 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.*

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

During 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 Part Time 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 16 weeks duration of study with 35 hrs. / Week for Regular Diploma Courses and 18 hrs. / Week for Part-Time Diploma Courses.***

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 2020 – 2021 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, Tamil Nadu.

(Or)

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

(Or)

The Matriculation Examination of Tamil Nadu.

(Or)

Any other Examinations recognized as equivalent to the above by the Board of Secondary Education, Tamil Nadu.

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 Tamil Nadu affiliated to the Tamil Nadu Higher Secondary Board with eligibility for University Courses of study or equivalent examination & Should have studied the following subjects.

A pass in 2 Years ITI with appropriate Trade or Equivalent examination.

Sl. No	Courses	H.Sc Academic	H.Sc Vocational		Industrial Training Institutes Courses
		Subjects Studied	Subjects Studied		
			Related subjects	Vocational subjects	
1.	All the Regular and Sandwich Diploma Courses	Physics and Chemistry as compulsory along with Mathematics / Biology	Maths / Physics / Chemistry	Related Vocational Subjects Theory& Practical	2 years course to be passed with appropriate Trade

2.	Diploma Course in Commercial Practice	English & Accountancy English & Elements of Economics English & Elements of Commerce	English & Accountancy, English & Elements of Economics, English & Management Principles & Techniques, English & Typewriting	Accountancy & Auditing, Banking, Business Management, Co-operative Management, International Trade, Marketing & Salesmanship, Insurance & Material Management, Office Secretaryship.	-

- For the Diploma Courses related with Engineering/Technology, the related / equivalent subjects prescribed along with Practicals 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 Commercial 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, Tamil Nadu, when joined in First Year and two years if joined under Lateral Entry scheme in the second year and passed the prescribed examination.

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

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

This will come into effect from N Scheme onwards i.e. from the academic year 2020-2021.

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 subjects.

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. Board Examinations are conducted for 100 marks and reduced to 75.

The total marks for result are 75 + 25 = 100 Marks.

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 be as per the range given below)

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

ii) Test # **10 Marks**

2 Tests each of 2 hours duration for a total of 50 marks are to be conducted. Average of the these two test marks will be taken and the marks to be reduced to:	05 Marks
The Test – III is to be the Model Examination covering all the five units and the marks obtained will be reduced to :	05 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:** Covering all the 5 Units. (Board Examinations-question paper-pattern).	End of 16th week	100	3 Hrs

From the Academic Year 2020 – 2021 onwards.

Question Paper Pattern for the Test - I and Test – II is as follows. The tests should be conducted by proper schedule. Retest marks should not be considered for internal assessment.

Without Choice:

Part A Type questions:	6 Questions × 1 mark	06 marks
Part B Type questions:	7 Questions × 2 marks	14 marks
Part C Type questions:	2 Questions × 15 marks	30 marks
	Total	**50 marks**

iii) Assignment **5 Marks**

For each subject Three Assignments are to be given each for 20 marks and the average marks scored should be reduced for 5 marks.

iv) Seminar Presentation **5 Marks**

The students have to select the topics either from their subjects or general subjects which will help to improve their grasping capacity as well as their capacity to express the subject in hand. The students will be allowed to prepare the

material for the given topic using the library hour and they will be permitted to present seminar (For First and Second Year, the students will be permitted to present the seminar as a group not exceeding six members and each member of the group should participate in the presentation. For the Third Year, the students should present the seminar individually.) The seminar presentation is mandatory for all theory subjects and carries 5 marks for each theory subject. The respective subject faculty may suggest topics to the students and will evaluate the submitted materials and seminar presentation. (2 ½ marks for the material submitted in writing and 2 ½ marks for the seminar presentation). For each subject minimum of two seminars are to be given and the average marks scored should be reduced to 5 marks.

All Test Papers, Assignment Papers / Notebooks and the seminar presentation written material after getting the signature with date from the students must be kept in safe custody in the department for verification and audit. It should be preserved for one semester after publication of Board Exam results and produced to the flying squad and the inspection team at the time of inspection/verification.

B. <u>For Practical Subjects:</u>

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

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

b) Procedure/ observation and tabulation/
Other Practical related Work : **10 Marks**

c) Record writing : **10 Marks**

TOTAL : **25 Marks**

- *All the Experiments/Exercises indicated in the syllabus should be completed and the same to be given for final Board examinations.*
- The observation note book / manual should be maintained for 10 marks. The observation note book / manual with sketches, circuits, programme, reading and calculation written by the students manually depends upon the practical subject during practical classes should be evaluated properly during the practical class hours with date.

- The Record work for every completed exercise should be submitted in the subsequent practical classes and marks should be awarded for 10 marks 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 (including Observation and Record writing) and the marks awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks)
- Only regular students, appearing first time have to submit the duly signed bonafide record note book/file during the Practical Board Examinations.

All the marks awarded for Assignments, Tests, Seminar presentation and Attendance should be entered periodically in the Personal Theory Log Book of the staff, who is handling the theory subject.

The marks awarded for Observation, Record work and Attendance should be entered periodically in the Personal Practical Log Book of the staff, who is handling the practical subject.

10. Communication Skill Practical, Computer Application Practical and Physical Education:

The Communication Skill Practical and Computer Application Practical with more emphasis are being introduced in First Year. Much Stress is given to increase the Communication skill and ICT skill of students.

As per the recommendation of MHRD and under Fit India scheme, the Physical education is introduced to encourage students to remain healthy and fit by including physical activities and sports.

11. Project Work and Internship:

The students of all the Diploma Courses 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, Tamil Nadu. 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. The project work is approved**

during the V semester by the properly constituted committee with guidelines.

a) Internal assessment mark for Project Work & Internship:

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

Proper record should be maintained for the two Project Reviews and preserved for one semester after the publication of Board Exams results. It should be produced to the flying squad and the inspection team at the time of inspection/verification.

b) Allocation of Marks for Project Work & Internship in Board Examinations:

Demonstration/Presentation	25 marks
Report	25 marks
Viva Voce	30 marks
Internship Report	20 marks
Total	**100* marks**

*Examination will be conducted for 100 marks and will be converted to 75 marks.

c) Internship Report:

The internship training for a period of two weeks shall be undergone by every candidate at the end of IV / V semester during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year “Project Work & Internship” for 20 marks. The internship shall be undertaken in any industry / Government or Private certified agencies which are in social sector / Govt. Skill Centres / Institutions / Schemes.

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

12. Scheme of Examinations:

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

13. Criteria for Pass:

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

2. A candidate shall be declared to have passed the examination in a subject if he/she secures not less than *40% in theory subjects* and *50% in practical subjects* out of the total prescribed maximum marks including both the Internal Assessment and the Board Examinations marks put together, subject to the condition that he/she secures at least a minimum of *40 marks out of 100 marks in the Board Theory Examinations and a minimum of 50 marks out of 100 marks in the Board Practical Examinations.*

14. Classification of successful candidates:

Classification of candidates who will pass out the final examinations from April 2023 onwards (Joined first year in 2020 -2021) 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 2 / 3 / 3½ / 4 years [Full time(lateral entry)/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 marks in all the semesters put together and passes all the semesters except the I and II semester in the first appearance itself and passes all subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time(lateral entry)/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 the semesters put together and passes all the subjects within the stipulated period of study 2 / 3 / 3½ / 4 years [Full time(lateral entry)/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 classifications are also applicable for the Sandwich / Part-Time students who pass out Final Examination from October 2023 /April 2024 onwards (both joined First Year in 2020 -2021)

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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DIPLOMA IN TEXTILE PROCESSING/
DIPLOMA IN TEXTILE PROCESSING (SANDWICH)
COURSE CODE: 1061/2061

Description of the Courses:

Diploma in Textile Processing deals with Desizing, Scouring, Bleaching, Mercerizing, and Dyeing, Printing and Finishing of Natural and Manmade Textile materials.These above processes applied on fibres, yarn, fabric and Garments. After spinning, weaving and knitting, it is one of the lengthiest processes. The curriculum outline is framed by including all the necessary subjects based on the above listed processing technology.

Course objectives:

Now a days the number of processing industries are tremendously increasing to fulfill the need of population growth and export order, so the job opportunities for the Diploma in textile processing students in the processing industries are increasing day by day. After gaining experience of 3 to 5 years in processing industries, they will become a master level or up to the key post of the industry.

Salient Features of N Scheme Syllabus Compared with M Scheme Syllabus

The N-Scheme syllabus is drafted to meet the need of the modern industries. This syllabus covers Fibre Science, Yarn and Fabric Manufacture, Textile Testing, Dyeing, Printing and Finishing, Eco Friendly Processing Techniques, Computer Colour Matching for Dyeing and Printing Shades, Garment Manufacturing Textile Management, Entrepreneurship & Start-ups and Textile Effluent Treatment and Pollution Control.

The latest emerging technologies viz. Linen Processing, Low Salt Dyeing, Moisture Mangement, LOI (Limiting Oxygen Index), Fragrance Finishing,Advanced Dryer Machines, Tencel Dyeing, Thermochromic Printing, Digital Printing, Jute Printing and Natural Dyeing are incorporated in the core subjects of this N-Scehme Syllabus.

Airvortex, Friction Spinning, Injected Yarn Manufacturing, Blendomat, Bale Pluker are the topics included in the ancilliry subjects. A new parctical named Textile Manufacturing Technology is included in the new curriculum to improve the understanding of the students.

The most advanced technologies like Single stage preparatory process, Ultrasonic Waves assisted textile processing, Peracetic acid (PAA) bleaching, Biotechnological catalytic bleaching, Microwave dyeing, Electrochemical dyeing, Direct and Indirect Electrochemical dyeing, Supercritical dyeing using Carbon dioxide, Ultrasonic wave dyeing and Salt Free Dyeing of Cotton Fabric Using Reactive Dye are also incorporated. Pollution Control is a major requirement for textile processing insustries. Common Effluent Treatment Plant and Higg Index are included in to impart the knowlege on the necessity of keeping the safe enviorment.

Entrepreneurship & Start-ups subject is a common subject for all the branches and that will pave the way for the students to become a good businessman instead of employment seeker.

ANNEXURE – I

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

COURSE CODE: 1061/2061
DIPLOMA IN TEXTILE PROCESSING (FULL TIME) /
DIPLOMA IN TEXTILE PROCESSING (SANDWICH)

N-SCHEME

(Implemented from the Academic year 2020-2021 onwards)

CURRICULUM OUTLINE

FIRST SEMESTER (FULL TIME)

Col. No.	Subject Code	Subject	Hours Per Week				
			Theory	Drawing	Tutorial	Practical	Total
1	40011	Communicative English I	5				5
2	40012	Engineering Mathematics I	5				5
3	40013	Engineering Physics I	5				5
4	40014	Engineering Chemistry I	5				5
5	40015	Engineering Graphics I		6			6
6	40006	Engineering Physics Practical (semester examination in the second semester)				2	2
7	40007	Engineering Chemistry Practical (semester examination in the second semester)				2	2
8	40001* 40002^	Communication Skill Practical * Computer Application Practical ^				2	2
			20	6		6	32
Extra / Co-Curricular activities		Physical Education					2
		Library					1
Total							35

* For Circuit Branches only

^ For Non-Circuit Branches only

SECOND SEMESTER (FULL TIME)

Col. No.	Subject Code	Subject	Hours Per Week				
			Theory	Drawing	Tutorial	Practical	Total
1	40021	Communicative English II	4				4
2	40022	Engineering Mathematics II	4				4
3	40023	Engineering Physics II	4				4
4	40024	Engineering Chemistry II	4				4
5	40025	Engineering Graphics II		5			5
6	40006	Engineering Physics Practical				2	2
7	40007	Engineering Chemistry Practical				2	2
8	40028	Basics of Industries and Workshop Practical	2			3	5
9	40001* 40002^	Communication Skill Practical * Computer Application Practical ^				2	2
			18	5		9	32
Extra / Co-curricular activities		Physical Education					2
		Library					1
Total							35

* For Non-Circuit Branches only

^ For Circuit Branches only

THIRD SEMESTER (FULL TIME)

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
4060310	Fibre Science and Technology*	5	-	-	5
4061320	Pretreatment for Textile Colouration	5	-	-	5
4061330	Dyeing of Natural Fibres	5	-	-	5
4061340	Fibre and Chemical Analysis Practical	-	-	5	5
4061350	Pretreatment for Textile Colouration Practical	-	-	4	4
4061360	Dyeing of Natural Fibres Practical	-	-	4	4
4061370	Quality Assurance in Pretreatment and Dyeing Practical	-	-	4	4
Sub Total		15	-	17	32
Extra/Co curricular activities	Physical Education	-	-	-	2
	Library / Seminar	-	-	-	1
TOTAL		15	-	17	35

*Common with Diploma in Textile Technology

FOURTH SEMESTER (FULL TIME)

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
4061410	Technology of Yarn Manufacture	5	-	-	5
4061420	Technology of Fabric Manufacture	5	-	-	5
4061430	Dyeing of Manmade Fibres and Blends	5	-	-	5
4061440	Technology of Textile Finishing	5	-	-	5
4061450	Textile Manufacturing Technology Practical	-	-	4	4
4061460	Dyeing of Manmade Fibres and Blends Practical	-	-	4	4
4061470	Technology of Textile Finishing Practical	-	-	4	4
Sub Total		20		12	32
Extra/Co curricular activities	Physical Education	-	-	-	2
	Library / Seminar	-	-	-	1
	Internship – I (2 Weeks)	During Summer Vacation			
TOTAL		20	-	12	35

FIFTH SEMESTER (FULL TIME)

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
4060510	Textile Testing*	5	-	-	5
4061520	Technology of Textile Printing	5	-	-	5
Elective I					
4066531	Apparel Merchandising #	5	-	-	5
4061532	Eco Friendly Textile Processing				
4061540	Textile Testing Practical	-	-	5	5
4061550	Technology of Textile Printing Practical	-	-	4	4
4061560	Quality Assurance in Printing and Finishing Practical	-	-	4	4
4061570	Entrepreneurship and Start ups Practical	-	-	4	4
Sub Total		15	-	17	32
Extra/Co curricular activities	Physical Education	-	-	-	2
	Library / Seminar	-	-	-	1
	Internship – II (2 Weeks)	During Winter Vacation			
TOTAL		15	-	17	35

*Common with Diploma in Textile Technology

Common with Diploma in Garment Technology

SIXTH SEMESTER (FULL TIME)

Subject Code	SUBJECT	HOURS PER WEEK			
		Theory Hours	Tutorial / Drawing	Practical hours	Total Hours
4060610	Textile Management*	5	-	-	5
4060620	Garment Manufacture*	5	-	-	5
Elective II					
4061631	Textile Effluent Treatment	5	-	-	5
4061632	Advances in Textile Processing				
4061640	Garment Manufacture practical	-	-	5	5
4061650	Shade Matching in Dyeing and Printing Practical	-	-	6	6
4061660	Project Work and Internship	-	-	6	6
Sub Total		15	-	17	32
Extra/Co curricular activities	Physical Education	-	-	-	2
	Library / Seminar	-	-	-	1
TOTAL		15	-	17	35

*Common with Diploma in Textile Technology

DIPLOMA IN TEXTILE PROCESSING (SANDWICH) - 2061

SEVENTH SEMESTER

INDUSTRIAL TRAINING & VIVA VOCE

Subject Code	SUBJECT	Industrial Training	
		Days / Week	Weeks / Semester
4061712	INDUSTRIAL TRAINING & VIVA VOCE	5	16

ANNEXURE - II

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

COURSE CODE: 1061/2061

DIPLOMA IN TEXTILE PROCESSING (FULL TIME) /
DIPLOMA IN TEXTILE PROCESSING (SANDWICH)

N-SCHEME

(Implemented from the Academic year 2020-2021 onwards)

SCHEME OF THE EXAMINATION

I SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam in Hours
		Internal Assess-ment marks	Board Exam for 100 Marks (Converted to 75)	Total Marks		
40021	Communicative English II	25	100	100	40	3
40022	Engineering Mathematics II	25	100	100	40	3
40023	Engineering Physics II	25	100	100	40	3
40024	Engineering Chemistry II	25	100	100	40	3
40025	Engineering Graphics II	25	100	100	40	3
40006	Engineering Physics Practical	25	100	100	50	3
40007	Engineering Chemistry Practical	25	100	100	50	3
40028	Basics of Industries and Workshop Practical	25	100	100	50	3
40001* 40002^	Communication Skill Practical * Computer Application Practical ^	25	100	100	50	3

* For Circuit Branches only

^ For Non-Circuit Branches only

II SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam in Hours
		Internal Assess-ment marks	Board Exam for 100 Marks (Converted to 75)	Total Marks		
40021	Communicative English II	25	100	100	40	3
40022	Engineering Mathematics II	25	100	100	40	3
40023	Engineering Physics II	25	100	100	40	3
40024	Engineering Chemistry II	25	100	100	40	3
40025	Engineering Graphics II	25	100	100	40	3
40006	Engineering Physics Practical	25	100	100	50	3
40007	Engineering Chemistry Practical	25	100	100	50	3
40028	Basics of Industries and Workshop Practical	25	100	100	50	3
40001* 40002^	Communication Skill Practical * Computer Application Practical ^	25	100	100	50	3

* For Non-Circuit Branches only

^ For Circuit Branches only

THIRD SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam in Hours
		Internal Assess -ment marks	Board Exam Marks for 100 (Converted to 75)	Total Marks		
4060310	Fibre Science and Technology*	25	100	100	40	3
4061320	Pretreatment for Textile Colouration	25	100	100	40	3
4061330	Dyeing of Natural Fibres	25	100	100	40	3
4061340	Fibre and Chemical Analysis Practical	25	100	100	50	3
4061350	Pretreatment for Textile Colouration Practical	25	100	100	50	3
4061360	Dyeing of Natural Fibres Practical	25	100	100	50	3
4061370	Quality Assurance in Pretreatment and Dyeing Practical	25	100	100	50	3
	TOTAL			700		

*Common with Diploma in Textile Technology

FOURTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam in Hours
		Internal Assess -ment marks	Board Exam Marks for 100 (Converted to 75)	Total Marks		
4061410	Technology of Yarn Manufacture	25	100	100	40	3
4061420	Technology of Fabric Manufacture	25	100	100	40	3
4061430	Dyeing of Manmade Fibres and Blends	25	100	100	40	3
4061440	Technology of Textile Finishing	25	100	100	40	3
4061450	Textile Manufacturing Technology Practical	25	100	100	50	3
4061460	Dyeing of Manmade Fibres and Blends Practical	25	100	100	50	3
4061470	Technology of Textile Finishing Practical	25	100	100	50	3
	TOTAL			700		

FIFTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam in Hours
		Internal Assess -ment marks	Board Exam Marks for 100 (Converted to 75)	Total Marks		
4060510	Textile Testing*	25	100	100	40	3
4061520	Technology of Textile Printing	25	100	100	40	3
Elective I						
4066531	Apparel Merchandising #	25	100	100	40	3
4061532	Eco Friendly Textile Processing					
4061540	Textile Testing Practical	25	100	100	50	3
4061550	Technology of Textile Printing Practical	25	100	100	50	3
4061560	Quality Assurance in Printing and Finishing Practical	25	100	100	50	3
4061570	Entrepreneurship and Start ups Practical	25	100	100	50	3
	TOTAL			700		

*Common with Diploma in Textile Technology

Common with Diploma in Garment Technology

SIXTH SEMESTER

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam in Hours
		Internal Assess -ment marks	Board Exam Marks for 100 (Converted to 75)	Total Marks		
4060610	Textile Management*	25	100	100	40	3
4060620	Garment Manufacture*	25	100	100	40	3
Elective II						
4061631	Textile Effluent Treatment	25	100	100	40	3
4061632	Advances in Textile Processing					
4061640	Garment Manufacture practical	25	100	100	50	3
4061650	Shade Matching in Dyeing and Printing Practical	25	100	100	50	3
4061660	Project Work and Internship	25	100	100	50	3
	TOTAL			600		

*Common with Diploma in Textile Technology

DIPLOMA IN TEXTILE PROCESSING (SANDWICH)

SEVENTH SEMESTER

INDUSTRIAL TRAINING & VIVA VOCE

Subject Code	SUBJECT	Examination Marks			Minimum for pass	Duration of Exam Hours
		Internal Assess-ment marks	Board Exam Marks (Converted to 75)	Total Marks		
4061712	INDUSTRIAL TRAINING & VIVA VOCE	25	100	100	50	3

LIST OF EQUIVALENT SUBJECTS FOR M - SCHEME TO N – SCHEME

DIPLOMA IN TEXTILE PROCESSING (FULL TIME) /

DIPLOMA IN TEXTLE PROCESSING (SANDWICH)

Course code: 1061/2061

EQUIVALENT SUBJECTS FOR III AND IV SEMESTER SUBJECTS			
SUBJECTS IN M – SCHEME		EQUIVALENT SUBJECTS IN THE N– SCHEME	
	III SEMESTER – WITH EFFECT FROM OCTOBER 2021		
36031	Fibre Science and Technology*	4060310	Fibre Science and Technology*
36132	Preparation for Textile Processing	4061320	Pretreatment for Textile Colouration
36133	Dyeing of Natural Fibres	4061330	Dyeing of Natural Fibres
36134	Fibre and chemical Analysis Practical	4061340	Fibre and Chemical Analysis Practical
36135	Preparation for Textile Processing practical	4061350	Pretreatment for Textile Colouration Practical
36136	Dyeing of Natural Fibres practical	4061360	Dyeing of Natural Fibres Practical
30001	Computer Application Practical**	40002	Computer Application Practical**
IV SEMESTER – WITH EFFECT FROM APRIL 2022			
36141	Technology of Yarn Manufacture	4061410	Technology of Yarn Manufacture
36142	Technology of Fabric Manufacture	4061420	Technology of Fabric Manufacture
36143	Dyeing of Manmade Fibres and Blends	4061430	Dyeing of Manmade Fibres and Blends
36144	Technology of Textile Finishing	4061440	Technology of Textile Finishing
36145	Dyeing of Man Made Fibres and Blends Practical	4061460	Dyeing of Manmade Fibres and Blends Practical
36146	Technology of Textile Finishing - Practical	4061470	Technology of Textile Finishing Practical
36147	Engineering Utilities - Practical	No Equivalent	

EQUIVALENT SUBJECTS FOR V and VI SEMESTER SUBJECTS			
SUBJECTS IN M – SCHEME		**EQUIVALENT SUBJECTS IN THE N – SCHEME**	
V SEMESTER – WITH EFFECT FROM OCTOBER 2022			
36051	Textile Testing*	4060510	Textile Testing*
36152	Technology of Textile Printing	4061520	Technology of Textile Printing
36153	Quality assurance in Textile Processing	No Equivalent	
36671	**Elective – I** Apparel Merchandising #	4066531	Apparel Merchandising #
36172	Eco Friendly in Textile Processing	4061532	Eco Friendly Textile Processing
36155	Technology of Textile Printing Practical	4061550	Technology of Textile Printing Practical
36156	Quality Assurance in Textile Processing Practical	No Equivalent	
30002	Life and Employability Skills Practical**	40001	Communication Skill Practical * *
VI SEMESTER – WITH EFFECT FROM APRIL 2023			
36061	Textile Management*	4060610	Textile Management*
36062	Garment Manufacture*	4060620	Garment Manufacture*
36181	**Elective – II** Water, Effluent Treatment and Pollution Control	4061631	Textile Effluent Treatment
36182	Advances in Textile Processing	4061632	Advances in Textile Processing
36064	Garment Manufacture Practical*	4061640	Garment Manufacture practical
36165	Shade Matching in Dyeing and Printing Practical	4061650	Shade Matching in Dyeing and Printing Practical
36166	Textile Testing Practical	4061540	Textile Testing Practical
36167	Project work	No Equivalent	

Important Note:

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

 # Common with Diploma in Garment Technology

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

III SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

III SEMESTER

2020 - 2021onwards

FIBRE SCIENCE AND TECHNOLOGY

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N-SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061 : DIPLOMA IN TEXTILE PROCESSING

Subject Code : 4060310

Semester : III Semester

Subject Title : FIBRE SCIENCE AND TECHNOLOGY

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
FIBRE SCIENCE AND TECNOLOGY	5 Hrs	80 Hrs	25	100*	100	3 Hrs

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

TOPICS AND ALLOCATION OF HOURS

Sl. No	Topic	Time (hrs.)
1	INTRODUCTION	15
2	VEGETABLE FIBRES	15
3	ANIMAL FIBRES	15
4	REGENERATED FIBRES	14
5	SYNTHETIC FIBRES	14
TEST & REVISION		07
Total		80

RATIONALE:

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

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

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

OBJECTIVES

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

4060310- FIBRE SCIENCE AND TECNOLOGY

DETAILED SYLLABUS

CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**INTRODUCTION:** Definition of Textile Fibre. Classification of Textile Fibres based on origin and chemical nature - Properties required for an ideal textile fibre - Identification of Textile Fibres(cotton, silk, wool, Viscose, nylon, polyester acrylic) - Microscopic test, burning test, Solubility test - Types of polymerization - Addition and condensation polymerization. Definition of monomer, polymer, repeat unit, polymerization, Degree of polymerization, Staple fibre, filament yarn, mono filament, multifilament, spun yarn & ply yarn. spinning methods of man madefibres – melt, dry and wet spinning techniques. Essential and desirable properties of textile fibre	15
II	**VEGETABLE FIBRES** **Cotton:** Cotton producing countries and states in India - Classification of commercial cottons, Indian hybrid cottons with their characteristic - Chemical structure of cellulose, degree of polymerization of cotton cellulose, stages in the growth and development of the cotton fibre and its physical structure - Physical and chemical structures of cotton fibre - Physical and chemical properties of cotton - Uses. Brief study of organic fibres **Linen:** Linen producing countries - Physical and chemical properties -Uses. **Jute:** Jute producing countries and states in India –Fibre extraction process - Retting process -Physical and chemical properties – Uses. End uses of Bamboo, soya, sisal, Banana and Pineapple fibres.	15

III	**ANIMAL FIBRES** **Wool:** Wool producing countries - Classification of wool with respect to fleece and breeds - Production of Clean wool from Raw wool - Physical and chemical structure - Physical and chemical properties - Comparison of woollen and worsted yarns - Uses. Felting of wool **Silk:** Silk producing countries - Types of silk (Mulbery, Eri, Muga) - Sericulture-life cycle of silk warm - Reeling, throwing and doubling - Degumming of silk -Weighting of silk - Physical and chemical properties – Uses.	15
IV	**REGENERATED FIBRES** : Drawing and its importance. **Viscose Rayon:** Viscose Rayon manufacturers in India - Raw material – manufacturing Process with flow chart - Properties - uses. **Polynosic Rayon:** Comparison of chief characteristics of viscose with polynosic rayons. Process sequence in the manufacture of Polynosic rayons **Properties and Uses -** High Wet Modulus rayon, HT Rayon, Tencel Rayon, Lyocell, Modal, polynosic	14
V	**SYNTHETIC FIBRES:** Nylon and Polyester manufacturers in India. **Nylon 6,6:**Raw material – manufacturing Process with flow chart - properties -uses. **Nylon – 6:**Raw material – manufacturing Process with flow chart - properties - uses **Polyester:** Raw material – manufacturing Process using PTA route with flow chart - properties - uses. **Acrylic Fibre:** Raw material - manufacturing Process with flow chart - properties -uses. Applications of the following fibres: Glass, Asbestos, Casein, Carbon, Nomex, Kevlar & Polyurethane. Fully-drawn yarn (FDY) and Partially Oriented Yarn (POY)	14

TEXT BOOKS

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

REFERENCE BOOKS

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

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weight age.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

- Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER
4060310- FIBRE SCIENCE AND TECHNOLOGY

Time: 3 Hrs **Marks: 100**

PART – A (5 x 1= 5 marks)

Note: Answer all the questions

1. Define textile fibre.
2. Name any two cotton producing states in India.
3. What are the uses of wool fibre?
4. Name any two properties ofpolynosic fibre.
5. Name any two manufacturers of nylon in India.

PART – B (10 x 2= 20 marks)

Note: Answer any TEN questions

6. Define degree of polymerization.
7. What do you mean by ply yarns?
8. Define Staple fibre.
9. What are the uses of Linen?
10. What are the end uses of bamboo and sisal fibres?
11. Name any three hybrid cotton grown in our country.
12. Explain the major wool producing countries in the world.
13. Write short note on physical and chemical properties of silk.
14. What is Spun silk?
15. What are the properties and uses of HT rayon ?
16. Mention any two differences between viscose and polynosic yarns?
17. Give the repeat unit of viscose rayon?
18. State the raw materials required for Polyester fibres.
19. What are the properties of nylon 6 fibre?
20. Explain about FDY.

PART – C

Answer all the questions choosing either sub-division (A) or sub-division (B) of each question. **(5 x 15 = 75)**

21.	(A)	I.	How will you identify the following textile fibre? (i) Cotton (ii) Wool	**(7)**
		II.	How will you identify the following textile fibre? (i) Silk (ii) Viscose (iii) Acrylic	**(8)**
			(OR)	
	(B)	I.	Explain addition polymerisation in detail.	**(7)**
		II.	Explain condensation polymerisation in detail.	**(8)**
22.	(A)	I.	Explain the physical structure of cotton fibres.	**(7)**
		II.	Explain the chemical structure of cotton fibres	**(8)**
			(OR)	
	(B)	I.	Describe the physical properties of jute fibre.	**(7)**
		II.	Describe the chemical properties of jute fibre.	**(8)**
23.	(A)	I.	Explain the physical structure of wool fibre	**(7)**
		II.	Explain the chemical structure of wool fibre.	**(8)**
			(OR)	
	(B)	I.	Explain the reeling and throwing of silk.	**(7)**
		II.	Explain doubling of silk.	**(8)**
24.	(A)	I.	Explain the manufacturing process of viscose yarn	**(7)**
		II.	Draw the flow chart for manufacturing process of viscose rayon	**(8)**
			(OR)	
	(B)	I.	Describe the physical properties of viscose fibre.	**(7)**
		II.	Describe the chemical properties of viscose fibre	**(8)**
25.	(A)	I.	Explain the manufacturing process of Nylon 6,6	**(7)**

II. Draw the flow chart for manufacturing Nylon 6,6 **(8)**

(OR)

(B) I. Explain the manufacturing process of acrylic fibre **(7)**

II. Draw the flow chart for manufacturing of acrylic fibre **(8)**

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

III SEMESTER

2020 - 2021onwards

PRETREATMENT FOR TEXTILE COLOURATION

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N-SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061 : DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** **4061320**

Semester : III Semester

Subject Title **:** **PRETREATMENT FOR TEXTILE COLOURATION**

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
Pretreatment for Textile Colouration	5	80	25	100*	100	3 Hrs

***Examination will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

Sl. No.	Topic	Time (Hrs)
1	BASIC TEXTILE CHEMISTRY	14
2	SINGEING & DESIZING	15
3	MERCERIZATION & SCOURING	15
4	BLEACHING	15
5	QUALITY TEST IN PREPARATION	14
TEST & REVISION		07
TOTAL		80

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, preparatory process for non – cellulosic fibres and quality test. Hence, it fulfills the above need.

The various sequences of processes like singeing, desizing, scouring, mercerizing, bleaching have to be included and knowledge on quality assurance and 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 understand the principles of quality test used in preparation.

DETAILED SYLLABUS

CONTENTS

4061320- PRETREATMENT FOR TEXTILE COLOURATION

Unit	Name of the Topics	Hours
I	**Basic Textile Chemistry** Definition - Inorganic chemicals, Organic chemicals, Acids, Alkali, Salts, Uses of Oxidizing Agents, Reducing Agents, Sequestering Agents in textile processing with examples - pH and its importance in textile processing – 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 – Brief study on properties and types of enzymes used for desizing – Continuous Enzymatic desizing processes – Advantages – Study on washing machines rope washing and continuous washing machine. Drying machine for Woven and Knitted – Hydro Extractor and Balloon Padder. .	**15**
III	**Mercerisation & Scouring** Objects of macerisation – conditions recommended (recipe) for mercerizing - changes taking place in mercerized cotton – Working of chain mercerizing machine and chainless mercerizing machine for woven fabrics – Working of any one knit fabric mercerizing machine – Objects of scouring –	**15**

	Impurities in cotton, Wool and Silk – Mechanism of scouring by which impurities are removed – scouring of cotton fabric with suitable recipe using machines jigger. Brief study on Kier. Scouring of Wool, Linen and Degumming of Silk. Bio Scouring.	
IV	**Bleaching** Objects of bleaching – Oxidizing bleaching agents – properties and limitation of hypochlorite – Properties of hydrogen peroxide – advantages of H_2O_2 bleaching – Stabilizers for hydrogen peroxide – Process of bleaching with H_2O_2 with recipes using Jigger and continuous Scouring 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 – OBA. Bleaching of Wool, Silk and Linen.	**15**
V	**QUALITY TESTS IN PREPARATION** Need for quality control in textile wet processing . Flow charts indicating process control and quality control tests to be carried out in desizing, scouring, mercerizing, bleaching, souring, dyeing, printing and finishing. Identification and estimation of residual starch. Determination of weight loss during desizing and scouring. Estimation of residual wax content and total wax content by soxhlet extract method. Determination of barium activity number. Absorbency tests by Drop test method and Wicking height method. Determination of whiteness and whiteness retention.	**14**

TEXT BOOKS

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

REFERENCE BOOKS

Author	Title	Publisher	Year of Publication
Chakravarthi.R.R & Trivedi	Technology of Bleaching and Dyeing Vol. I Part I	Mahajan Book Depot, Ahemedabad-9	
Trotman. E.R	Textiles Scouring & Bleaching	Charless Griffins, Com. Ltd. London	Reprinted on 2014
Marsh.J.T	Mercerising	BI Publications, Janapath Delhi-1	
Ghokale.S.V. & Dingra.A.K	Maintenance in Chemical Processing	AITRA Ahemedabad-15	1984
Dr.J.V.Rao	Auxiliaries	NITRA Publications, Ghaziabad.	
	ISI Handbook of Textile Testing	Indian Standard Institution (Delhi)	Indian Standard Institution, New Delhi

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

- Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4061320 - PRETREATMENT FOR TEXTILE COLOURATION

Time: 3 Hrs **Max.Marks: 100**

Part - A **(5 X 1 = 5)**

Note: Answer ALL questions. All questions carry equal marks.

1. What are organic chemicals?
2. What is singeing?
3. What is scouring?
4. What is OBA?
5. What is whiteness index?

Part - B **(10 X 2 = 20)**

Note: Answer any TEN questions. All questions carry equal marks.

6. What is surfactant?
7. What are the uses sequestering agent?
8. Distinguish soap and surfactant.
9. Write the principle of desizing.
10. Name any two dryers.
11. Name the enzymes used for desizing.
12. What are the impurities present in raw cotton and wool?
13. What is degumming of silk?
14. Write the recipe used for mercerization.
15. What are the limitations of hypochlorite bleaching?
16. What are the advantages of hydrogen peroxide bleaching?
17. How will you remove the iron impurities?
18. What is the need of quality control in textile wet processing?
19. How will you check the efficiency of scouring?
20. Write the concept of estimation of residual wax content.

Part - C **(5 X 15 = 75)**

Note: Answer ALL questions by choosing either A (OR) B

21. A. i) Explain the sequence of processes involved in textile wet processing. (7)

ii) Explain the quality parameters requirement of water for preparatory processes (8)

OR

B. i) Explain the uses of oxidizing agent and reducing agent in textile processing. (7)

ii) Explain the importance of pH. (8)

22. A. i) Explain the Gas singeing machine for woven fabric. (7)

ii) What are the precautions need to be taken in singeing. (8)

OR

B. i) Explain the continuous enzymatic desizing processing. (7)

ii) Explain the working of ballon padder. (8)

23. A. i) Explain the working of chainless mercerizing machine. (7)

ii) How will you do scouring of wool. (8)

OR

B. i) Explain the scouring of cotton fabric using jigger. (7)

ii) Explain Bio Scouring. (8)

24. A. i) Explain the bleaching process using continuous bleaching range. (7)

ii) Write notes on stabilizers used in bleaching. (8)

OR

B. i) Explain the combined scouring and bleaching using softflow machine. (7)

ii) Write notes on Linen bleaching. (8)

25. A. i) Explain the principles of drop test and wicking test. (7)

ii) How will you determine residual starch? (8)

OR

B. i) Describe the procedure for determining Barium Activity Number. (7)

ii) How do you determine whiteness and whiteness retention. (8)

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

III SEMESTER

2020 - 2021onwards

DYEING OF NATURAL FIBRES

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course Name : 1061 : DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061330

Semester : III Semester

Subject Title : DYEING OF NATURAL FIBRES

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours/ week	Hours/ semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Dyeing of Natural Fibres	5	80	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and it will be reduced to 75 marks.**

Topics and Allocation of Hours

Sl.No.	Topic	Time(Hrs)
1	Theory of Colouration	14
2	Direct Dyes and Reactive Dyes	15
3	Vat, Solublized Vat and Sulphur Dyes	15
4	Acid and Basic Dyes	14
5	Quality Tests in Colouration	15
Test & Model exam		07
Total		80

RATIONALE:

Dyeing is an important process in the textile processing sequence which imparts uniform color in the textile material. Dyeing depends on the affinity of dyes for the fibres, conditions of dyeing and auxiliaries used for dyeing of natural fibres. Direct dyes, Reactive dyes, Vat, Solubilised Vat dyes & Sulphur dyes are used for cotton and Acid, Basic dyes for silk, wool material using various techniques and machines.

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

OBJECTIVES:

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

DETAILED SYLLABUS

CONTENTS

4061330- DYEING OF NATURAL FIBRES

UNIT	NAME OF TOPICS	Hours
I	**THEORY OF COLOURATION** Introduction about Colour Theory. Definitions-Dyes, Pigments, Hue, Chroma, Value, Chromophore, Auxochrome. Primary and Secondary colours-Common terms in dyeing-Affinity, Substantivity, Exhaustion, Expression, Percentage of shade - Theory of dyeing – Adsorption, Diffusion, Fixation - Classification of dyes – Essential properties of a dye – Effect of M : L ratio, salt, temperature and time of dyeing – Dyeing auxiliaries - Wetting agents, Sequestering agents, Exhausting agents, Leveling agents, Retarding agents, Dispersing agents, Dye fixing agents and Stripping agents.	**14**
II	**DIRECT DYES AND REACTIVE DYES** **Direct Dyes** – Classification – Properties – Application of direct dyes on cotton – after treatments – Advantages and disadvantages of direct dyes – Stripping of direct dyed material. **Reactive dyes** – Classification – Properties – Mechanism of dyeing Application methods – Exhaust dyeing (cold brand, HE & ME dyes) by using Jigger, Semi continuous (vinyl sulphone dyes) by using Soft Flow dyeing machine and Continuous method (e-control process) - Advantages and Disadvantages of reactive dyes - Stripping of reactive dyed material.	**15**
III	**VAT SOLUBLISED VAT AND SULPHUR DYES** **Vat dyes** – Classification – Properties –Steps involved in vat dyeing – Application methods like Leuco vat, Pigment padding and continuous method, Advantages and Disadvantages of vat dyes - Stripping of vat dyed material. **Solublised Vat dye** – Properties – Exhaust method of application of solublised vat dyes on cotton - Advantages and Disadvantages of solublised vat dyes - Stripping of solublised vat dyed material. **Sulphur dye** – Properties - Exhaust method of application of	**15**

	sulphur dyes on cotton- Advantages and Disadvantages of sulphur dyes - Problems involved in sulphur dyeing like Bronziness and acid tendering and remedies - Stripping of sulphur dyed material	
IV	**ACID AND BASIC DYES** **Acid dyes** – Classification – Properties – Mechanism of dyeing – Dyeing of silk with acid - Dyeing of wool with acid dyes - Advantages and Disadvantages of acid dyes. **Basic dyes** – Properties – Dyeing of silk with basic dyes - Dyeing of wool with basic dyes - Advantages and Disadvantages of basic dyes	**14**
V	**QUALITY TESTS IN COLOURATION** Grey scale and its use in assessing fastness. Determination of fastness to washing. Determination of fastness to dry & wet rubbing. Determination of light fastness to artificial light. Determination of fastness to acid and alkaline perspiration. Determination of fastness to hot pressing. Determination of fastness to dry cleaning and sublimation. Determination of fastness to Saliva.	**15**

TEXT BOOK:

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

REFERENCE BOOKS

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

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

- Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4061330- DYEING OF NATURAL FIBRES

Time: 3 Hrs. Max.Marks:100

Part – A **05 x 01 = 05**

Answer all the questions.

1. Define Affinity.
2. Write the names of the classification of direct dyes.
3. Write the names of the classification of vat dyes
4. Write the names of the classification of acid dyes
5. What do you mean by grey scale?

Part – B **10 x 02 = 20**

Answer any 10 questions.

6. Define: Chroma.
7. What are chromophores?
8. Define: Percentage of shade
9. State any two properties of direct dyes.
10. State any two properties of reactive dyes
11. What do you mean by stripping?
12. State any two properties of vat dyes.
13. State any two disadvantages of solublised vat dyes.
14. State any two properties of sulphur dyes.
15. State any two advantages of acid dyes
16. How will you strip acid dyed material?
17. State any two properties of basic dyes
18. Give the fastness rating for light fastness?
19. What do you mean by acid perspiration?
20. What do you mean by saliva fastness?

Part - C **(5 X 15 = 75)**

Note: Answer ALL questions by choosing either A (OR) B

21	A	i)Explain the basic theory of colour and components of dye.	7
		ii) Write short note about i) Affinity, ii) Substantivity iii) Exhaustion	8
		(OR)	
	B	i) Define the Following i) Chromophore ii) Auxochrome	7
		ii)Explain the various functions of dyeing assistants.	8
22	A	i)Explain how direct dyes are applied on cotton material.	7
		ii)Brief note on various after treatments for direst dyed material	8
		(OR)	
	B	i) Explain the application of vinyl sulphone reactive dyes on cotton material by exhaust method.	7
		ii) Explain the application of Bi-functional reactive dyes on cotton material by exhaust method.	8
23	A	i)Explain application of vat dyes on cotton material by leuco method.	7
		ii) What are the steps involved in vat dyeing application process.	8
		(OR)	
	B	i) Explain the application procedure of sulphur dyes on cotton material	7
		ii) Explain the various problems involved in sulphur dyeing process.	8
24	A	i) Explain the fixation mechanism of acid dyes on wool fibre	7
		ii) How will you dye the wool martial by using acid dyes?	8
		(OR)	
	B	i) Explain application of basic dyes on silk material?	7
		ii) How do you dye the wool with basic dyes using exhaust method?	8
25	A	i) How will determine the fastness to dry & wet rubbing?	7
		ii) How do you determine the colourfastness to washing?	8
		(OR)	
	B	i) Explain the determination of fastness to alkaline and acid perspiration.	7
		ii) Define a) AATCC b) ASTMD c) SDC d) BSENISO e) ISO	8

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

III SEMESTER

2020 - 2021onwards

FIBRE AND CHEMICAL ANALYSIS - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course Name : 1061 : DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061340

Semester : III Semester

Subject Title : FIBRE AND CHEMICAL ANALYSIS PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
FIBRE AND CHEMICAL ANALYSIS - PRACTICAL	5 Hrs	80 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

RATIONALE:

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

GUIDELINES

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

ALLOCATION OF MARKS

Write up / Recipe	: 20 marks
Experiment/Calculation/Result	: 70 marks
Viva voce	: 10 marks
Total	: 100 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. IDENTIFICATION OF FIBRES

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

2. ANALYSIS OF FIBRES IN BLENDS

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

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

3. ESTIMATION OF HARDNESS, pH AND EFFICIENCY

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

4. ESTIMATION OF PURITY

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

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

5. VOLUMETRIC ANALYSIS

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

It gives the knowledge of analyzing the strength of H_2O_2.

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Identify the fibres by burning test.
2. Identify the fibres by solvent test.
3. Analyse the individual composition of fibres in blends – Polyester / Cotton fabric.
4. Analyse the individual composition of fibres in blends – Polyester / Wool fabric
5. Analyse the individual composition of fibres in blends – Acrylic / Wool fabric
6. Estimate the total hardness and pH of given water.
7. Estimate the purity of sulphuric acid
8. Estimate the purity of hydrochloric acid
9. Estimate the purity of sodium carbonate
10. Estimate the purity of sodium hydroxide
11. Estimate the purity of sodium hydro sulphite
12. Estimate the strength of given hydrogen peroxide

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

Materials required (for a batch of 30 students):

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

Equipments: (for a batch of 30 students):

1. Burettes (50 ml) - 30 Nos
2. Pipettes (10 ml) - 30 Nos
3. Conical Flasks (250 ml & 500 ml) - 30 Nos & 05 Nos
4. Burette Stands - 30 Nos
5. Digital pH Meter - 2 Nos
6. Glass beakers (1lit) - 02 Nos
7. Measuring Jars (100 ml) - 10 Nos
8. Glass funnels - 30 Nos
9. Hydro meters-full range - 5 Nos

SAFETY PRECATIONS TO BE FOLLOWED

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

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

III SEMESTER

2020 – 2021 onwards

PRETREATMENT FOR TEXTILE COLOURATION - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061350

Semester : III Semester

Subject Title **:** PRETREATMENT FOR TEXTILE COLOURATION PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
			Marks			Duration
	Hours /Week	Hours /Semester	Internal Assessment	Board Examination	Total	
PRETREATMENT FOR TEXTILE COLOURATION - PRACTICAL	**4 Hrs**	**64 Hrs**	**25**	**100***	**100**	**3 Hrs**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

RATIONALE:

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

GUIDELINES

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

ALLOCATION OF MARKS

Write up / Recipe	: 20 marks
Experiment/Calculation/Result	: 70 marks
Viva voce	: 10 marks
Total	: 100 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. DESIZING

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

2. SCOURING

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

3. MERCERIZATION

Mercerization is done to improve the dye uptake and dimensional stability in cotton. Sodium Hydroxide is used.

4. BLEACHING

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

5. DEGUMMING

Degumming of given raw silk by using hot soaping treatment.

To remove the sericin gum from the silk material.

6. COMBINED SCOURING AND BLEACHING

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

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

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Desizie the given cotton fabric using Enzyme Desizing method and determine the starch content.
2. Do the scouring of given cotton fabric using Desized cotton fabric and determine the scouring loss.
3. Mercerize the given cotton hank.
4. Bleach the given scoured cotton fabric with Sodium hypochlorite.
5. Bleach the given scoured cotton fabric with Hydrogen Peroxide.
6. Do the Degumming of given raw silk yarn hank using Soda Ash and Soap.
7. Bleach the given silk yarn hank using hydrogen peroxide.
8. Do the Scouring of given wool yarn hank using soap and soda ash.
9. Bleach the given wool yarn hank using hydrogen peroxide.
10. Do the Scouring of given polyester /cotton blended fabric.
11. Bleach the given polyester /cotton blended fabric
12. Carry out the combined scouring & bleaching of given cotton material using hydrogen peroxide

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

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

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

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

Dye bath with 6 pots – 5 Nos

SAFETY PRECATIONS TO BE FOLLOWED

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

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

III SEMESTER

2020 – 2021 onwards

DYEING OF NATURAL FIBRES - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code : 4061360

Semester : III Semester

Subject Title : DYEING OF NATURAL FIBRES – PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
			Marks			Duration
	Hours / Week	Hours / Semester	Internal Assessment	Board Examination	Total	
DYEING OF NATURAL FIBRES - PRACTICAL	**4 Hrs**	**64 Hrs**	**25**	**100***	**100**	**3 Hrs**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

RATIONALE:

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

GUIDELINES:

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

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

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

ALLOCATION OF MARKS

Write up / Recipe	: 20 marks
Experiment/Calculation/Result	: 70 marks
Viva voce	: 10 marks
Total	: 100 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. **DYEING OF COTTON WITH VARIOUS DYESTUFFS**

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

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

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

2. **DYEING OF SILK & WOOL WITH VARIOUS DYESTUFFS**

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

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

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Dye the cotton with direct dyes.
2. Dye the Cotton with Cold brand reactive dyes.
3. Dye the Cotton with Hot brand reactive dyes.
4. Dye the Cotton with Vinyl Sulphone reactive dyes.
5. Dye the Linen with Bi functional (ME) reactive dyes.
6. Dye the cotton using Low salt dyeing method
7. Dye the Cotton with Vat dyes.
8. Dye the Cotton with Sulphur colours
9. Dye the Silk with Reactive dyes.
10. Dye the Silk with Acid dyes.
11. Dye the Wool with Acid dyes.
12. Dye the Silk with Basic dyes

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

List of Equipments:

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

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

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

SAFETY PRECATIONS TO BE FOLLOWED

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

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

III SEMESTER

2020 – 2021 onwards

QUALITY ASSURANCE IN PRETREATMENT AND DYEING - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061370

Semester : III Semester

Subject Title : QUALITY ASSURANCE IN PRETREATMENT AND DYEING – PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
QUALITY ASSURANCE IN PRE-TREATMENT AND DYEING - PRACTICAL	**4 Hrs**	**64 Hrs**	**25**	**100***	**100**	**3 Hrs**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

RATIONALE:

Testing the various quality and efficiency of pretreated and dyed goods which are prepared by desizing, scouring, mercerizing, bleaching and dyeing. In quality assurance in pretreatment and dyeing practical, the students will be given practice to handle the instruments and testing procedure to improve their skill in quality assurance with respect to pretreatment and dyeing.

GUIDELINES:

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

ALLOCATION OF MARKS

Write up / Recipe	: 20 marks
Experiment/Calculation/Result	: 70 marks
Viva voce	: 10 marks
Total	: 100 Marks

LIST OF EXPERIMENTS AND SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Estimate the efficiency of detergents by sinking time method.
2. Estimate the absorbency of desized fabric using wicking height method.
3. Estimate the absorbency of scoured fabric using Drop test.
4. Carry out the scouring of given cotton fabric using Enzyme & Alkali and comparing the efficiency with alkali scouring in terms of Drop test.
5. Carry out the Bleaching of given cotton with H_2O_2 using Na_2SiO_3 Stabilizer, Phosphate & Organic Stabilizer and identify the best stabilizer.
6. Estimate the barium activity number of mercerized cotton.
7. Evaluate the purity of reactive dyes using visual method by dyeing trials.
8. Estimate the dry rubbing fastness of dyed material.
9. Estimate the wet rubbing fastness of dyed material.
10. Estimation of wash fastness (any one test from ISO 1 to 5)
11. Estimation of perspiration fastness of dyed material.
12. Estimation of dry cleaning fastness of dyed material.

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

Material required:

1. Desized fabric - 2 meter.
2. Scoured fabric – 2 meter
3. Bleached fabric - 2 meter.
4. Any one colour from all major dyes - 100 gm each.
5. Dyed fabric - 4 meters dyed from one colour of all major dyes.

Equipments Required:

1. Necessary chemicals.

2. Laundro meter – 1 No
3. Crock meter – 2 Nos
4. Perspiro meter – 2 Nos
5. Soxhlet extractor – 2 Nos

SAFETY PRECATIONS TO BE FOLLOWED

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

IV SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N– SCHEME

IV SEMESTER

2020 - 2021onwards

TECHNOLOGY OF YARN MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N-SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061410

Semester : IV Semester

Subject Title **:** TECHNOLOGY OF YARN MANUFACTURE

TEACHING AND SCHEME OF EXAMINATION:

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours / Semester	Marks			Duration
TECHNOLOGY OF YARN MANUFACTURE	**5 Hrs**	**80 Hrs**	**Internal Assessment**	**Board Examination**	**Total**	**3 Hrs**
			25	**100***	**100**	

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

TOPICS AND ALLOCATION OF HOURS

Unit	Topic	Time(Hrs)
1	GINNING, MIXING, BLOW ROOM AND CARDING	14
2	DRAWING AND COMBING	15
3	ROVING AND SPINNING	15
4	DOUBLING, REELING, BUNDLING AND BALING	14
5	REGULAR AND SPECIALTY YARNS	15
TEST & REVISION		07
Total		80

RATIONALE:

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

OBJECTIVES:

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

DETAILED SYLLABUS
4061410 - Technology of Yarn Manufacture

CONTENTS: Theory

UNIT	NAME OF TOPICS	Hours
I	**GINNING, MIXING, BLOW ROOM AND CARDING** **Ginning** : Objects, types of gins. **Mixing and Blending :** Objects – difference between mixing & blending. **Blowroom:** Objects - sequence of blow room machines for carded yarn and combed yarn manufacture – sequence of blow room machines for processing 100% synthetic fibres and their blends, Brief Idea about Blendomat / Bale Plucker – chute feed system - its advantages and disadvantages **Carding:** Objects – principles of carding and stripping actions – passage of material through modern HP card – salient features of modern HP card.	**14**
II	**DRAWING & COMBING** **Drawing:** Objects drawing – principles of roller drafting – passage of material through modern high speed draw Frame – salient features of modern draw frame - principles and types of auto levelers - open loop and closed loop auto levelers **Combing:** Objects of preparatory machines to combing - objects of combing - sequence of combing action - passage of material through the modern high speed comber – salient features - comparison between carded and combed yarns - definition of semi combed yarn and combing efficiency	**15**
III	**ROVING AND SPINNING** Roving: Objects of speed frame – passage of material through modern Speed frame – functions of flyer, spindle, false twister & aprons. Definition of flyer lead & bobbin lead winding - salient features of modern speed frame. Ring Spinning: Objects – passage of material through modern ring	**15**

	frame - functions of rings & travelers, S & Z Twist - salient features of modern high speed ring frame. Rotor (OE) Spinning: Objects - passage of material through rotor spinning – advantages & limitations - comparison between ring and OE yarns. Other Spinning Systems: Friction spinning - DREF 3, Air jet, Air Vortex and Compact spinning systems - only salient features..	
IV	**DOUBLING, REELING, BUNDLING AND BALING** **Doubling:** Objects – principles of doubling - passage of material through dry and wet doubling machines – end uses of doubled yarn. **Two For One twisting:** Objects - passage of material through TFO – advantages & disadvantages. **Reeling:** Objects – reeling types – passage of material through 7 lea reeling machine **Bundling and Baling:** Only objects.	**14**
V	**REGULAR AND SPECIALTY YARNS** Definition and end uses of Spun yarn - Cable yarns – Slub yarns – neppy yarns – Loop or Curl yarn– Spiral or Cork screw yarns – Chenille yarn – Core yarn – injected yarn – Mélange yarns - Elastomeric yarns – Metallic yarns– (No Method of production Details). Yarn Numbering Systems – Direct and Indirect. **Sewing threads** – Properties required for sewing threads – Process flow chart for cotton and spun polyester sewing thread manufacture.	**15**

TEXT BOOKS:

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

REFERENCE BOOKS:

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

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

- Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

Subject: 4061420 - Technology of Yarn Manufacture

Time: 3 Hrs. **Max. Marks: 100**

PART A

Answer all the Questions **(5 x 1 = 5)**

1. Define the term ginning.
2. What is combing efficiency?
3. What is ‘s’ twist?
4. What is object of reeling?
5. Define: Spun yarn

PART B

Answer any 10 Questions **(10x 2 = 20)**

6. What are the objects of Blow room?
7. What do you understand about Blendomat?
8. What are the objects of carding?
9. What do you understand about semi-combed yarn?
10. Write the principals of roller drafting.
11. What are the objects of combing?
12. Write any four salient features of Air vortex spinning system.
13. Write the functions of ring in ring frame.
14. Write the difference between Ring and OE yarns.
15. What are the objects of bundling and bailing?
16. Write any four advantages of TFO machine.
17. Write the end uses of doubled yarn.
18. Give any four end uses of Melangeyarn.
19. Write any four end uses of Spun yarn.
20. Write short notes on Elastomeric yarns.

PART C

Answer all the Question, Choosing either A or B from each question (5 x 15 = 75)

21	A	(i)	What is chute feed system and also give its advantages and disadvantages	8
		(ii)	Write the sequence of blow room machines for carded and combed yarn manufacture.	7
			(OR)	
	B	(i)	Write the salient features of modern HP card	8
		(ii)	Draw and explain the passage of material through modern HP card	7
22	A	(i)	Draw and explain the passage of material through modern draw frame	8
		(ii)	Write the salient features of modern combing machine	7
			(OR)	
	B	(i)	Draw and explain the passage of material through modern high speed comber	8
		(ii)	Write the salient features of modern high speed draw frame	7
23	A	(i)	Draw and explain the passage of material through rotor spinning	8
		(ii)	Write the salient features of modern speed frame	7
			(OR)	
	B	(i)	Write the salient features of modern high speed ring frame	8
		(ii)	Draw and explain the passage of material through modern speed frame	7
24	A	(i)	Draw and explain the passage of material through TFO machine	8
		(ii)	State the advantages and disadvantages of TFO machine	7
			(OR)	
	B	(i)	Draw and explain the passage of material through 7 lea reeling machine	8
		(ii)	Draw and explain the passage of material through wet doubling machine	7
25	A	(i)	Explain about the process sequence of 100% cotton sewing thread manufacturing	8
		(ii)	Write the definition and end uses for the following yarns: Injected yarn b) Metallic yarns	7
			(OR)	
	B	(i)	Explain about the process sequence of spun polyester sewing thread manufacturing	8
		(ii)	Write the definition and end uses for the following yarns: a) Cork screw yarns b) Core yarn	7

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

IV SEMESTER

2020 - 2021onwards

TECHNOLOGY OF FABRIC MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N-SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course Name	:	1061: DIPLOMA IN TEXTILE PROCESSING
Subject Code	:	4061420
Semester	:	IV Semester
Subject Title	:	TECHNOLOGY OF FABRIC MANUFACTURE

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Dura -tion
			Internal Assessment	Board Examination	Total	
Technology of Fabric Manufacture	5 Hrs	80 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours

Unit	Topic	Time(Hrs)
I	Weaving Preparatory Processes	14
II	Woven Fabric Formation	15
III	Knitted Fabric Formation	15
IV	Fabric Structures	14
V	Non Woven & Special Fabrics	15
Test & Revision		7
Total		80

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

DETAILED SYLLABUS

4061420 TECHNOLOGY OF FABRIC MANUFACTURE

CONTENTS: Theory

Unit	Name of the Topic	Hours
I	**Weaving Preparatory Process :** Sequence of processes involved in Weaving preparatory with objectives- winding, warping, sizing - Passage of material in Autoconer- Features of Autoconer- Functions of Tensioners, Slub catchers, Electronic Clearers and Splicer – Comparison between Knotting and Splicing – Advantages of splicing. Passage of material in Beam warping - Object of Sectional Warping and its salient features - Passage of material in Sizing machine.	**14**
II	**Woven Fabric Formation** Looms – Types- 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 Tappet, Dobby, Jacquard looms – Features of Automatic Shuttle Loom - Shuttleless looms Classification (Flexible Rapier, Projectile, Air jet and Water jet) and its advantages – Brief study of weft insertion techniques in shuttle less looms - Defects in Woven fabrics – Warp way defects – Weft way defects – Selvedge defects and Stains.	**15**
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 knitted fabrics. Defects in Weft knit fabrics - Vertical lines, Horizontal lines, Drop stitches, Distorted stitches and Press off - Comparison between woven and knitted fabrics.	**15**

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 Rib. Drawing of Needle (Diagrammatic) notation of Interlock and Lacoste fabrics.	**14**
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 Intelligent fabric, Smart fabric, Lace fabrics and Braided fabrics.Notes on Medical Textiles, Agricultural Textiles and Geo Textiles.	**15**

Text books:

Title	Author	Publisher	Year
Principles of weaving	R Marks ATC Robinson	The Textile Institute, Manchester, UK	1976
The Motivate Series	Andrea Wynne	MacMillan Education Ltd, London and Basingstoke.	1997
Cotton Yarn Weaving	Kanungo R.N	Textile Association India, 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

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

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

- Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

Subject: Technology of Fabric Manufacture (4061420)

Time: 3 Hrs. **Max. Marks: 100**

PART A

Answer all the Questions **(5 x 1 = 5)**

1. What is splicing?
2. Mention the weft insertion technique in Air-jet loom.
3. Define – Gauge.
4. Define – Draft.
5. What is smart textile?

PART B

Answer any 10 Questions **(10x 2 = 20)**

6. What is the object of winding?
7. What are the features of autoconer winding machine?
8. Compare knot and splice.
9. What is denting?
10. Mention the types of motions in plain loom.
11. What is feature of automatic shuttle loom?
12. Classify the knitting machine.
13. What is the purpose of sinker?
14. Mention the types of selvedge defects in woven fabric.
15. What are the end uses of satin fabric?
16. What is tuck stitch?
17. Draw the needle notion of interlock fabric.
18. What you mean by medical textile?
19. What is non-woven fabric?
20. Classify the non-woven fabric.

PART C

Answer all the Question, Choosing either A or B from each question (5 x 15 = 75)

21	A	(i)	Explain the passage of material in Autoconer winding machine.	8
		(ii)	Explain in detail about the electronic yarn clearer.	7
			(OR)	
	B	(i)	Explain the passage of material in warping machine.	8
		(ii)	Explain the sequence of process involved in weaving preparatory.	7
22	A	(i)	Explain in detail about the loom primary motion.	8
		(ii)	Explain the passage of material in plain loom.	7
			(OR)	
	B	(i)	Explain in detail about the classification of shuttle-less loom.	8
		(ii)	Explain the warp way defects in woven fabric.	7
23	A	(i)	Explain the knitting cycle of latch needle in plain knitting.	8
		(ii)	Explain the types of cams.	7
			(OR)	
	B	(i)	Explain the types of knitting needles.	8
		(ii)	Explain the defects in knitted fabric.	7
24	A	(i)	Draw the design, draft and peg plan for plain and matt weave.	8
		(ii)	Draw the Graphical and Needle notation of plain and purl fabric.	7
			(OR)	
	B	(i)	Draw the design, draft and peg plan for satin and sateen weave.	8
		(ii)	Draw the Graphical and Needle notation of rib and Lacoste fabric.	7
25	A	(i)	Explain the uses of non-woven fabrics.	8
		(ii)	Explain about the fabric formation techniques in non-woven.	7
			(OR)	
	B	(i)	Explain about the web formation techniques in non-woven.	8
		(ii)	Write notes on Geo textiles & Agricultural textile.	7

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

IV SEMESTER

2020 - 2021onwards

DYEING OF MANMADE FIBRES AND BLENDS

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name **:** 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061430

Semester : IV Semester

Subject Title : DYEING OF MANMADE FIBRES AND BLENDS

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
DYEING OF MANAMADE FIBRES AND BLENDS	**5 Hrs**	**80Hrs**	**25**	**100***	**100**	**3 Hrs**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours:

Unit	Topic	Time (hrs.)
1	PRETREATMENTS OF SYNTHETICS AND BLENDS	**15**
2	DYEING OF POLYESTER	**14**
3	DYEING OF NYLON AND ACRYLICS	**15**
4	DYEING OF BLENDS	**15**
5	DYEING MACHINES	**14**
TEST & REVISION		**07**
Total		**75**

RATIONALE:

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

OBJECTIVES:

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

DETAILED SYLLABUS

4061430- Dyeing of Man Made Fibres and Blends

UNIT	NAME OF TOPICS	Hours
1	**PRE-TREATMENTS OF SYNTHETICS AND BLENDS** Pre-treatments for 100% Polyester – scouring, heat setting, singeing, bleaching. 100% Nylon – scouring, heat setting, bleaching. 100% Acrylic – scouring, bleaching. Pre-treatments for blends - Polyester / Cotton - desizing, scouring, singeing, mercerizing, heat setting and bleaching. Pre-treatments for Polyester / Wool - removal of heavy oil stains, presetting, scouring, heat setting, brushing, cropping and singeing.	15
2	**DYEING OF POLYESTER** Disperse dyes – classification, properties, Mechanism of dyeing. Carriers - characteristics and function. Function of dispersing agents, leveling agents, antifoaming agents, redox buffer. Definition of Tg - Effect of Tg on dyeing of Polyester. Methods of Polyester dyeing - Carrier dyeing, HTHP dyeing, Thermosol dyeing. Various problems involved during dyeing and remedies.	14
3	**DYEING OF NYLON AND ACRYLICS** Dyeing of Nylon with acid dyes, Acid metal complex dyes and Disperse dyes. Acrylic dyeing - Function of retarders, Fibre saturation value, Combination value, Dye saturation factor.Effect of Tg on acrylic dyeing. Mechanism of dyeing of acrylics with cationic dyes. Dyeing of acrylic with cationic dyes and disperse dyes.	15
4	**DYEING OF BLENDS** Dyeing of Polyester / Cotton blends by single bath and two bath methods using Disperse and Reactive dyes. Dyeing of Polyester / Wool blends by two bath method with Disperse / Acid dyes. Dyeing of Nylon / Cotton blends with Acid / Vat dyes. Dyeing of Acrylic / Cotton blends with Cationic / Reactive dyes. Dyeing of Acrylic / Wool blends with Cationic / Acid dyes.	15
5	**DYEING MACHINES** Fibre dyeing machine – Rotary dyeing machine. Yarn dyeing	14

	machine - Cheese dyeing machine. Woven fabric dyeing machine - Jet, Beam dyeing machine. Knitted fabric dyeing machines - Air flow. Continuous dyeing machine - Padding mangle. Other dyeing machines – Garment dyeing machine, Button and Zip Dyeing machines.	

TEXT BOOKS:

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

REFERENCE BOOKS

S. No	Title	Author	Publisher	Year of Publishing
1	Dyeing and Chemical Technology of Textile Fibres	Trotman E.R	Charles Griffin Co Ltd, 42, Dhury Lane, London, WC	1981
2	Technology of Bleaching and Dyeing of Textile Fibres,Vol.1, Part 2	Chakravarthy RR	Mahajan Book Distributors, Ahmadabad	1982
3	Processing of Manmade Fibres	Usenko V	MIR Publishers, Moscow	1975
4	The Theory and practice of wool dyeing	Bird CL	Society of Dyers and Colourists, England	1972
5	Orientation Programme in Chemical Processing for Senior Executives	Achwal, Dixit Joshi and Teli	Textile Association (India), Bombay	1991
6	Maintenance in chemical processing	Gokhle SV and Dhingra A.K	Department of Industry ‘s Textile Mills, Ahmadabad Textile Research Association,PO Polytechnic, Ahmadabad	1984

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

- Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4061430- Dyeing of Man Made Fibres and Blends

Time: 3 Hrs. Max.Marks:100

Part – A **05 x 01 = 05**

Answer all the questions.

1. What are the pretreatments for 100% PET?
2. Define disperse dyes
3. What do you mean by cationic dyes?
4. What is the object of blend dyeing?
5. What are the problems in cheese dyeing machine?

Part – B **10 x 02 = 20**

Answer any 10 questions.

6. Define heat setting?
7. What are the pretreatments for 100% Nylon?
8. What are the pretreatments for 100% Acrylic?
9. State the properties of disperse dyes.
10. Write the classification of disperse dye?
11. State the function of dispersing agent.
12. Write the properties of cationic dyes?
13. Write the properties of acid dyes?
14. Write the effects of temperature on the dyeing of acrylic fibre?
15. Give the importance of dye selection for dyeing of blends?
16. What are the difference methods of P/C blend dyeing?
17. What are the advantages of blend dyeing?
18. What are the advantages of jet dyeing machine?
19. What are the advantages of air flow dyeing machine?
20. What are the advantages of button dyeing machine?

PART C (5 x 15 = 75)

Answer all the Question, Choosing either A or B from each question

21	A	i) Explain pretreatments for Polyester/Cotton blends.	7
		ii) Write a brief note about the 100 % polyester Pretreatment.	8
		(OR)	
	B	i) Explain pretreatments for Polyester/Wool blends.	7
		ii) Explain about the 100 % nylon Pretreatment.	8
22	A	i) Explain in detail the dyeing of PET with disperse dyes by carrier method..	7
		ii) Write the mechanism of dyeing of polyester.	8
		(OR)	
	B	i)How will you dye the PET material with disperse dyes by using HTHP Method?	7
		ii)Explain the process of dyeing of PET with disperse dyes by thermo soling with neat diagram.	8
23	A	i) Explain the process of dyeing nylon with acid dyes.	7
		ii)How do you apply the disperse dyes on nylon material by using exhaust method?	8
		(OR)	
	B	i) Explain the acrylic fibre is dyed using cationic dyes.	7
		ii)Explain the application of acid disperse dyes on acrylic fibres.	8
25	A	i) Explain in detail the dyeing of P/C blends by two bath methods using disperse and reactive dyes.	7
		ii) Explain the Dyeing procedure for Nylon / Cotton blends with Acid / Vat dyes using exhaust method.	8
		(OR)	
	B	i) Explain the process of dyeing of Acrylic /Wool blends with cationic and acid dyes.	7
		ii) Explain the application procedure for Dyeing of Acrylic / Cotton blends with Cationic / Reactive dyes.	8
26	A	i)Explain with neat sketch the working of Jet dyeing machine.	7
		ii) Explain the working of beam dyeing machine with a neat sketch.	8
		(OR)	
	B	i) Explain with neat sketch the working of Airflow dyeing machine.	7
		ii)Explain the working of garment dyeing machine with a neat sketch	8

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

IV SEMESTER

2020 - 2021onwards

TECHNOLOGY OF TEXTILE FINISHING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code : 4061440

Semester : IV Semester

Subject Title : TECHNOLOGY OF TEXTILE FINISHING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TECHNOLOGY OF TEXTILE FINISHING	5	80	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours

Sl.No.	Topic	Time(Hrs)
1	INTRODUCTION	14
2	RESIN FINISHING & ECOFRIENDLY CREASE RECOVERY FINISHES	15
3	FUNCTIONAL FINISHES	15
4	FINISHING OF PROTEIN, SYNTHETIC FIBRES AND BLENDS	15
5	MECHANICAL FINISHES	14
TEST & REVISION		07
TOTAL		80

RATIONALE:

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

OBJECTIVES:

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

DETAILED SYLLABUS
4061440- TECHNOLOGY OF TEXTILE FINISHING
CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**INTRODUCTION** Objectives of Finishing - Classification of finishing - chemical and mechanical -Types of finishes- durable, semi durable & non durable finishes - softeners-properties, merits & demerits of anionic, cationic, non - ionic & reactive softeners- - Brief study on types of starches for temporary stiff finish; permanent stiff finish – Buckram finish	14
II	**RESIN FINISHING** Objectives of resin finishing-types of resins(deposition & cross linking type) - N methyl resin structure of DMDHEU - Resin finishing process for 100% cotton ; merits and demerits of resin finishing - Eco friendly crease recovery finish with poly carboxylic acid - durable press finish recipe and process for garments.	15
III	**FUNCTIONAL FINISHES** Properties of poly ethylene emulsion and silicone emulsion in textile finishing. Difference between water proof and water repellent finish - Determination of efficiency of water proof finished fabric. Application of soil release finish, Moisture management, water repellent finish, Meaning of Limiting Oxygen Index, flame retardant finish, Determination of efficiency of flame retardant finished fabric. anti microbial finish, rot and mildew proof finish, UV protection finish and fragrance finish on cotton material – Peach finish . Biopolishing on cotton.	15
IV	**FINISHING OF PROTEIN, SYNTHETIC FIBRES AND BLENDS** Objectives of milling, crabbing and decatising – Anti felting process (chlorination) for wool - Carbonizing of wool – Moth proof finish for wool blends - weighting of silk - scroopy finish,	15

	carbonizing of P/C blend - Weight reduction of polyester - pilling and its control – antistatic finish, Delustering of rayon	
V	**PHYSICAL FINISHES** Importance of damping – principle of pre shrinking - sanforising machine for pre shrinking - Determination of efficiency of sanforized fabric. objective of Calendering – Description of 7 bowl Calendering -Brief idea on dimensional stability- stenter and compacting – Relax dryer and Continous Tumble dryer – Brief study on foam finishing, sueding and raising.	14

TEXT BOOKS:

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

REFERENCE BOOKS

Author	Title	Publisher	Year of Publication
Hall A.J.	Textile finishing	Life Books Ltd., London	1982
Harrison	Textile finishing	Textile Institute, Manchester	1978
Patel M.B.	Textile Wet Processing Machinery - Part I Bleaching, finishing and mercerizing machines	S.N.Patel, Baroda	1982

Srivatsava. SB	Recent processes of Textile Bleaching, Dyeing and finishing	SBP Board of Consultant Engineers, Delhi	1981
Datye K.V. and Vaidya A.A	Chemical Processing of synthetic fibres and blends	Wiley International Publication, New York	1982
Gokhle SV & Dhingra A.K	Maintenance and chemical processing department of Textile Mill	Ahmadabad Textile Industry Research Association, Ahmadabad	1984

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A	Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.
PART- B	Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.
PART-C	Five questions will be asked Either / Or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1= 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks *

Note: * Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4061440- TECHNOLOGY OF TEXTILE FINISHING

Time: 3 Hrs **Max.Marks: 100**

Part - A **(5 X 1 = 5)**

Note: Answer ALL questions. All questions carry equal marks.

1. What is the role of wetting agent?
2. What is Heat setting?
3. What is UV finish
4. What is Milling?
5. What is Damping?

Part - B **(10 X 2 = 20)**

Note: Answer any TEN questions. All questions carry equal marks.

6. What are the types of finish?
7. What are the stiffeners are used?
8. Write down the properties of reactive softners.
9. What do you mean by post cure process?
10. Write structure of DMDHEU
11. Name the chemicals used for ecofriendly crease recovery finish.
12. Distinguish between Water proof and Water repellent
13. What is LOI?
14. What is Anti Microbial Finish?
15. How do you impart Weighting of silk?
16. Write a note on Anti Static finish.
17. How do you Corbonise wool?
18. What is the importance of Compacting?
19. Discuss Suede finish
20. What is Sanforising?

Part - C **(5 X 15 = 75)**

Note: Answer ALL questions by choosing either A (OR) B

16. A) I)Classify various finishes for textile goods (7)

II) Explain stiff finish on cotton material (8)

(OR)

B) I) Explain durable Buckram finish (7)

II) Explain the types of softeners (8)

17. A) I) Explain durable press finishes on cotton (7)

II) Discuss wash and wear (8)

(OR)

B) I) Explain Resin finishing (7)

II) Discuss about antishrink finish (8)

18. A) I)How water repellency finish is imparted on 100% cotton? (7)

II) Explain Bio Polishing and Peach Finish (8)

(OR)

B) I)How FR finish is imparted on 100% cotton? (7)

II) Discuss Soil release finish (8)

19. A) I) Explain crabbing (7)

II)Explain carbonising of P/C blend (8)

(OR)

B) I) How delustering of rayon is done? (7)

II) Explain weight reduction of polyester (8)

20. A) I) Discuss about stenter (7)

II) Explain Relax dryer (8)

(OR)

B) I) Explain 7 bowl calendaring (7)

II) Explain continous Tumble dryer (8)

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

IV SEMESTER

2020 – 2021 onwards

TEXTILE MANUFACTURING TECHNOLOGY PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061450

Semester : IV Semester

Subject Title **:** TEXTILE MANUFACTURING TECHNOLOGY PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours /Week	Hours /Seme -ster	Marks			Durati on
			Internal Assessment	Board Examination	Total	
TEXTILE MANUFACTURING TECHNOLOGY – PRACTICAL	**4**	**64**	**25**	**100***	**100**	**3 Hrs**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

RATIONALE:

This practical is helpful for the students to analyse the different types of fabric structures both in woven and knitted fabric. They also learn the various quality parameters of the fabric.

OBJECTIVES

To analysis Woven Fabric for the following design

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

To analysis Knitted Fabric for the following design

Single Jersey, Rib and Interlock.

ALLOCATION OF MARKS

Write up / Recipe /Design	: 20 marks
Experiment/Calculation/Result	: 70 marks
Viva voce	: 10 marks
Total	: 100 Marks

DETAILED SYLLABUS

Content : Practical

Name of the Topics:

1. Woven Cloth Ananlysis
2. Knitted Cloth Analysis

Textile Manufacturing Process Practical

List of Experiments and Specific Questions

1. Analyse the given cloth- Plain
2. Analyse the given cloth – 4/4 Mat
3. Analyse the given cloth – Twill
4. Analyse the given cloth – Pointed Twill
5. Analyse the given cloth – Satin
6. Analyse the given cloth – Sateen
7. Analyse g the given cloth – Honey Comb
8. Analyse the given cloth – Huck-a-back
9. Analyse the given cloth – Terry
10. Analyse the given cloth – Single Jersey
11. Analyse the given cloth – Rib
12. Analyse the given cloth – Interlock

LIST OF EQUIPMENTS / CONSUMABLES FOR A BATCH OF 30 STUDENTS

1. Cloth samples for basic weaving and knitting structure analysis

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

IV SEMESTER

2020 - 2021onwards

DYEING OF MANMADE FIBRES AND BLENDS - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course Name **:** 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061460

Semester : IV Semester

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

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
DYEING OF MAN MADE FIBRES & BLENDS PRACTICAL	4 Hrs	64 Hrs	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

RATIONALE:

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

GUIDELINES:

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

ALLOCATION OF MARKS

Write up / Recipe	: 20 marks
Experiment/Calculation/Result	: 70 marks
Viva voce	: 10 marks
Total	: 100 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

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

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

2. Dyeing of synthetic blends

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

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Dye the Polyester with Disperse dyes by HTHP method.
2. Dye the Nylon with Acid dyes.
3. Dye the Nylon with Disperse dyes
4. Dye the Acrylic with Cationic dyes
5. Dye the Acrylic with Disperse dyes.
6. Dye the Polyester / Cotton blends with Disperse / Reactive dyes by single bath process
7. Dye the Polyester / Cotton blends with Disperse / Reactive dyes by two bath process.
8. Dye the Polyester / Viscose blends with Disperse / Reactive dyes by single bath process.
9. Dye the Polyester / Viscose blends with Disperse / Reactive dyes by two bath process.
10. Dye the 100% Tencel Fabric using reactive dye.
11. Dye the Polyester / Wool blends with Disperse / Acid dyes.
12. Dye the Acrylic/ Wool blends with Cationic / Acid dyes.

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

List of Equipments:

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

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

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

SAFETY PRECATIONS TO BE FOLLOWED

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

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

II YEAR

N – SCHEME

IV SEMESTER

2020 – 2021 onwards

TECHNOLOGY OF TEXTILE FINISHING - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061470

Semester : IV Semester

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

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours /Week	Hours /Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TECHNOLOGY OF TEXTILE FINISHING – PRACTICAL	**4 Hrs**	**64 Hrs**	**25**	**100***	**100**	**3 Hrs**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

RATIONALE:

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

GUIDELINES

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

ALLOCATION OF MARKS

Write up / Recipe	: 20 marks
Experiment/Calculation/Result	: 70 marks
Viva voce	: 10 marks
Total	: 100 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

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

To impart stiff finish in cotton fabric using starch and PVA

To impart soft finish in cotton fabric using softener

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

2. BACK FILLING DURABLE PRESS FINISH ON THE FABRIC COTTON

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

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

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

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

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

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

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

5. IMPARTING SCROOPY FINISH AND WEIGHTING OF SILK

To impart scroopy finish in silk.

To increase the weight of the silk.

6. CARBONIZING OF P/C BLEND

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

7. BIO POLISHING

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

8. FRAGRANCE FINISH ON THE GIVEN MATERIAL

To give fragrance finish on the given material.

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Finish the given cotton fabric using 2% starch.
2. Finish the given fabric using PVA.
3. Finish the given cotton fabric using 2% softener.
4. Finish the cotton fabric using the given resin.
5. Impart Durable press finish on the cotton fabric sample using resins.
6. Apply water repellent finish to the given fabric sample.
7. Apply Flame retardant finish to the given fabric sample.
8. Impart Scroopy finish for silk.
9. Carry out the Weighting of silk.
10. Carbonize of P/C blend.
11. Bio polish the fabric using enzymes.
12. Apply Fragrance finish on the given material.

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

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

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

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

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

SAFETY PRECATIONS TO BE FOLLOWED

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

V SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

V SEMESTER

2020 - 2021onwards

TEXTILE TESTING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code : 4060510

Semester : V

Subject Title : TEXTILE TESTING

TEACHING AND SCHEME OF EXAMINATION

No. of Weeks per Semester: 16 Weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Textile Testing	**5**	**80**	**25**	**100***	**100**	**3 Hours**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hours
I	MOISTURE AND ITS RELATIONS IN TEXTILES	14
II	FIBRE TESTING	15
III	YARN TESTING	15
IV	FABRIC TESTING	14
V	STATISTICAL QUALITY CONTROL	15
TEST & MODEL EXAM		7
TOTAL		80

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.
- To study the principles and the methods of testing the fabric to determine their quality characteristics.
- To study the statistical methods involved in controlling the quality of the textile products during their manufacture
- To learn about the application of the statistical methods to suit textile processes.

DETAILED SYLLABUS

4060510- TEXTILE TESTING

Content : Theory

Unit	Name of the Topics	Hours
1	**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,polyester, Tencel, Linen and Bamboo - Effect of moisture regain on fibre properties. Factors affecting moisture regain.	**14**
2	**FIBRE TESTING** Length – Importance of fibre length - Definition of effective length and span length - Methods of measuring fibre length by 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 – Principles of measurement of Fibre properties in High volume instrument, Brief Idea about Advanced Fibre Information System (AFIS)	**15**
3	**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 by Electronic Twist Tester – 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	**15**

	irregularities – thick, thin, slub, nep - Methods of Assessing yarn evenness by yarn -appearance board and Uster Evenness Tester 4 - Brief study of Uster classimate, Yarn Hariness Index – Definition. Comparision between Online and Offline Testing of Yarn.	
4	**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, Kawabata – Objective measurement of Subjective Properties.	**14**
5	**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, Variance Length Curve and its properties. Quality Control Chart - Definition, use, Construction of control chart for Averages and Ranges, Six Sigma Concept.	**15**

REFERNCE 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
4	Principles of Textile Testing	J.E.BOOTH	Butterworth Scientific London	1996
5	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
6	Methods of Test for Textiles – B.S.Hand book No.11,	B.S.I	British Standards Institution,London, England	1963
7	Method of Test for Textiles BS Hand book NO 11,	B.S.I	British Standards Institution,London, England	1963

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks.A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4060510- TEXTILE TESTING

Time: 3 Hrs. **Max. Marks: 100**

PART A

Answer all the Questions **(5 x 1 = 5)**

1. Define: Humidity.
2. Define: Span length
3. What is RKM?
4. What is pilling?
5. Define: Mode.

PART B

Answer any 10 Questions **(10x 2 = 20)**

6. Define the term relative humidity.
7. Give the moisture regain value for cotton, silk, wool and linen.
8. State the effect of moisture regain on fiber properties.
9. What is Fiber Quality Index?
10. Write the importance of fibre fineness.
11. What is maturity co-efficient?
12. Define Yarn Hariness Index.
13. Define: English Count.
14. Write a short note on Uster Classimate.
15. Define the term Air permeability.
16. Write the importance of Crimp.
17. Define the term drape.
18. Define: Percentage Mean Deviation.
19. What is Six Sigma Concept?
20. What is tabulation of data?

PART C

Answer all the Question, Choosing either A or B from each question (5 x 15 = 75)

21	A	(i)	How do you measure the relative humidity using Wet and Dry bulb hygrometer?	8
		(ii)	Explain estimation of moisture content and regain using conditioning oven	7
			(OR)	
	B	(i)	Explain the factors affecting moisture regain	8
		(ii)	With a sketch explain the Shirley Moisture Meter	7
22	A	(i)	Explain the method of measuring fibre length using Digital Fibro Graph	8
		(ii)	Explain measurement of fibre maturity by sodium hydroxide swelling method	7
			(OR)	
	B	(i)	Explain the estimation of trash content by Shirley Trash Analyser	8
		(ii)	Explain the method of measuring fibre fineness by Sheffield micronaire instrument	7
23	A	(i)	Explain the estimation of single yarn twist by electronic twist tester	8
		(ii)	Explain the working of single yarn strength tester	7
			(OR)	
	B	(i)	Explain the method of measuring yarn evenness by Uster Evenness Tester 4	8
		(ii)	Compare between Online and Offline Testing of yarn	7
24	A	(i)	Explain the procedure for measuring fabric Crimp by using Shirley Crimp Tester	8
		(ii)	Write the importance of fabric tensile strength, tearing strength and busting strength	7
			(OR)	
	B	(i)	Explain the procedure for measuring fabric stiffness by using Shirley Stiffness Tester	8
		(ii)	Explain the procedure for objective measurement of subjective	7

properties in Kawabata

25	A	(i)	Calculate mean, median, standard deviation and co-efficient of variation percentage for the following data: 30.5, 30.4, 31.2, 30.8, 30.1, 32.8, 30.5, 31.1, 30.3, 30.4.	8
		(ii)	Write the steps for constructing the control charts for mean and range	7
			(OR)	
	B	(i)	Explain the Histogram and Frequency Polygon	8
		(ii)	Explain normal distribution curve and also give its properties	7

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

V SEMESTER

2020 - 2021onwards

TECHNOLOGY OF TEXTILE PRINTING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N – SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061520

Semester : V Semester

Subject Title : TECHNOLOGY OF TEXTILE PRINTING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TECHNOLOGY OF TEXTILE PRINTING	**5**	**80**	**25**	**100***	**100**	**3 Hrs**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours

Unit	Topic	Time (hrs.)
1	INTRODUCTION TO TEXTILE PRINTING	14
2	DIRECT STYLE OF PRINTING	14
3	DISCHARGE & RESIST STYLES OF PRINTING	15
4	ADVANCED TEXTILE PRINTING	15
5	PRINTING MACHINES AND QUALITY TEST	15
TEST & REVISION		07
TOTAL		80

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, and Digital 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.
- To acquire the knowledge on Quality Test used to assess the printed material.

DETAILED SYLLABUS

4061520- TECHNOLOGY OF TEXTILE PRINTING

CONTENTS: THEORY

UNIT	NAME OF TOPICS	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 - printing with Disperse dyes on polyester by HTHP and HT steaming methods, Direct style of printing on Nylon and Silk with Acid, Printing of acrylics with cationic dyes - Fixation machines - Working of 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 cotton. Pigment discharge print on reactive ground - White and colour discharge printing styles on Polyester with Disperse	**15**

	ground. Problems associated with Discharge style of printing. Resist printing - Definition – Colour and white resist – Types - Mechanical resisting - Batik and Tie &Dye - Chemical resist - Pigment resist on reactive ground.	
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, Plastisols Inks, Glitter Metallic prints (Gold and Silver), Flock printing by Electro Static method, High density printing, Puff and suede print, Fluorescent and Foil print, Fragrance Print, Thermochromic Print. Transfer printing – Principles of Sublimation, Advantages & Limitations. Working of Garment Printing m/c. Digital Printing Machine – Types, Working and Advantages and limitations.	**15**
V	**PRINTING MACHINES** Screen preparation for flat bed and rotary screen printing machines – working of fully automatic flat bed printing machine. Working of Rotary printing m/c. Comparison of Rotary and flat bed printing machines. Table screen printing - limitations and advantages. Brief study on special printing styles like IKAT printing, Kalamkari printing, Burnt out styles, Crimp and Crepon style. Various printing defects. Print Durability – Appearance test for printed material.	**15**

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	Textile Dyeing & Printing	M.K.Khandelwal & M.L.Chauhan	Ritu Publications, Jaipur	2005

REFERENCES:

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

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A	Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.
PART- B	Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.
PART-C	Five questions will be asked Either / Or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1= 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks *

Note: * Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4061520- TECHNOLOGY OF TEXTILE PRINTING

Time: 3 Hrs **Max.Marks: 100**

Part - A **(5 X 1 = 5)**

Note: Answer ALL questions. All questions carry equal marks.

1. Define methods of print give one example
2. State the advantages of loop ager .
3. What is Discharge style of printing?
4. What is thermochromic print?
5. Write any two printing defects.

Part - B **(10 X 2 = 20)**

Note: Answer any TEN questions. All questions carry equal marks.

6. Give the recipe for kerosene emulsion paste and mention its advantages.
7. Define mesh number and mention its importance
8. Mention the important fabric requirements for printing
9. State the advantages and disadvantages of direct style of printing
10. Briefly explain the washing and its importance
11. State the advantages and disadvantages of reactive printing by steaming method
12. Define white and colour resist printing
13. Define haloing
14. Brief the idea of mechanical resist style of printing mechanism
15. Briefly discuss on PVC plastisols printing
16. Mention any two problems is metallic print
17. State the advantages and limitations of transfer printing
18. Discuss the printing process of crimp and crepon style of printing
19. State the limitations of flat bed printing machine
20. Give the mechanism behind the screen exposing

Part - C **(5 X 15 = 75)**

Note: Answer ALL questions by choosing either A (OR) B

21 A. i) Explain the classification of thickeners (7)

ii) State the difference between the dyeing and printing (8)

OR

B. i) State the functions of printing ingredients (7)

ii) Give the requirements good printing thickeners (8)

22 A. i) Explain the direct style of printing using pigment by water base Thickener (7)

ii) Explain disperse printing on polyester by HTHP method (8)

OR

B. i) How reactive dyes are printed by silicate padding method, mention its disadvantages. (7)

ii) With a sketch, briefly explain the working of loop ager. (8)

22. A. i) Discuss the printing process of acid resist print on reactive ground (7)

ii) List the major problems involved in discharge printing (8)

OR

B. i) Explain batik printing (7)

ii) How do you carry out colour discharge printing with vat dyes on reactive ground? (8)

23. A. i) Explain flock printing by electrostatic method. (7)

ii) Explain with a sketch the working of garment printing machine (8)

OR

B. i) Explain the colour khadi printing (7)

ii) With a line diagram explain the modern inkjet printing machine (8)

24. A. i) Draw the line diagram of rotary screen printing machine (7)

ii) Explain the working principles of rotary screen printing machine (8)

OR

25. B. i) Compare rotary and flat bed printing machine . (7)

ii) Explain the screen preparation method for rotary screen. (8)

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

V SEMESTER

2020 - 2021onwards

APPAREL MERCHANDISING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

N -SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code : 4066531

Semester : V Semester

Subject Title : APPAREL MERCHANDISING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours /Week	Hours /Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
4066531 Apparel Merchandising	**5**	**80**	**25**	**100***	**100**	**3 Hrs.**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours:

S. No	Topics	Hours
I	Introduction to Merchandising	15
II	Merchandise Planning	15
III	Retail & Visual Merchandising	15
IV	Garment Costing	14
V	Marketing Techniques & sales promotion	14
Test & Revision		7
Total		80

RATIONALE:

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

OBJECTIVES:

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

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

4066531- APPAREL MERCHANDISING

DETAILED SYLLABUS

Content: Theory

Unit	Name of the Topic	Hours
I	**INTRODUCTION TO MERCHANDISING** Terminology in merchandising - Customer, Consumer, Buyer, Importer, Retailer, Exporter and Trader. Season of export – Spring, Summer, Winter & Autumn. Types of Buyer and buying offices. Merchandising – Definition – Process flow of merchandising – Role of merchandiser – Skills of Merchandiser. Sampling – Types of samples - Development sample, Salesman sample, Approval sample, Preproduction sample, Production sample, Shipment sample. Brief study of Garment export procedure - Specification file – BOM sheet – order confirmation – purchase order – PP Meeting – Compliance.	**15**
II	**MERCHANDISE PLANNING** Merchandising plan – Planning sales goals – Buying plan – Assortment Planning – Open to buy – Purpose of a six months plan, Elements of a six-month plan – Analysis of previous merchandising plan and developing a new plan - Planning components - Merchandising calendar and scheduling. Direct order - Merchant order - CMT order - Vendor and sub-contractor - Requirement of a purchase order - Buyer seller meets.	**15**
III	**RETAIL & VISUAL MERCHANDISING** Introduction to Retail Merchandising – Types of retail merchandising - Department stores – Discounters – Off-price retailers – Outlet source – Close out - Warehouse clubs – Non-store retailing – Mail order Merchants – E Tailing. Definition of Visual Merchandising – Elements of Visual Merchandising - Signage, Marquee, Entries, window display, Lighting & Awnings - Principles of Displays – Responsibility in visual merchandiser – Methods of display – Problems in display.	**15**

IV	**GARMENT COSTING** Components of costing – Prime cost – Over heads – Total cost. Garment Costing – Fabric consumption – Sewing thread consumption - CMT charges for various styles – Costing of woven garment full Sleeve shirt and Trouser– Costing of Knitted garment - T shirt, night gown. Retail pricing – Mark up – Price point – Markdown – Promotional pricing – Deceptive pricing.	**14**
V	**MARKETING TECHNIQUES & SALES PROMOTION** Marketing – Definition - Principles – Objectives – Strategies - Brief study of E-marketing. Advertisement Techniques – Broadcast Advertising – Radio advertising – Television Advertising – Magazines – Out-of-home advertising - Advertisement effectiveness. Consumer behavior in fashion - Sales promotion approaches & effectiveness - Distribution channels.	**14**

Text Book:

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

Reference:

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

Board Examination-Question Paper Pattern

Subject – Apparel Merchandising

Time: 3 Hrs. Max.Marks:100

PART – A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questionsfrom each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have Subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weight age.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks *

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

Subject: 4066531- Apparel Merchandising

Time: 3 Hrs. **Max. Marks: 100**

PART A

Answer all the Questions **(5 x 1 = 5)**

1. Who is customer?
2. What you mean by CMT?
3. What you mean by signage?
4. What is prime cost?
5. Define Marketing.

PART B

Answer any 10 Questions **(10x 2 = 20)**

6. Mention the seasons of export.
7. Define - Merchandiser.
8. What you mean by BOM?
9. What is merchant order?
10. Who is vendor?
11. What is direct order?
12. What is e-tailing?
13. What is departmental store?
14. What is the problem in display?
15. What are elements of costing?
16. What is price point?
17. What is markdown?
18. What is E-Marketing?
19. How will you improve the sales?
20. What is the objective of marketing?

PART C

Answer all the Question, Choosing either A or B from each question (5 x 15 = 75)

21	A	(i)	Explain the process flow of merchandising.	8
		(ii)	Explain about the PP meeting.	7
			(OR)	
	B	(i)	Explain the skill required for merchandiser.	8
		(ii)	Explain the types of sample.	7
22	A	(i)	Explain in detail about the six-month plan.	8
		(ii)	Explain the importance of buyer seller meet.	7
			(OR)	
	B	(i)	Explain in detail about the Merchandising calendar and scheduling	8
		(ii)	Explain the analysis of merchandising plan.	7
23	A	(i)	Calculate the garment costing of woven pleated trouser.	8
		(ii)	Explain the different types of pricing.	7
			(OR)	
	B	(i)	Calculate the garment costing of T-Shirt.	8
		(ii)	Explain the calculation of sewing thread consumption.	7
24	A	(i)	Explain the elements of visual merchandising.	8
		(ii)	Explain the responsibility of visual merchandiser.	7
			(OR)	
	B	(i)	Write notes on Warehouse club & Non-store retailing.	8
		(ii)	Write notes on Methods of display.	7
25	A	(i)	Explain the principles of marketing.	8
		(ii)	Explain the consumer behaviors in fashion.	7
			(OR)	
	B	(i)	Explain the effectiveness of Advertising.	8
		(ii)	Explain the different types of advertising.	7

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

V SEMESTER

2020 - 2021onwards

ECO FRIENDLY TEXTILE PROCESSING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the Academic Year 2020 - 2021onwards)

Course : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061532

Semester : V Semester

Subject Title **:** ECO FRIENDLY TEXTILE PROCESSING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ECO – FRIENDLY TEXTILE PROCESSING	**5**	**80**	**25**	**100***	**100**	**Hrs**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours

S.No	Topic	Time (Hrs)
1	IMPACT OF TEXTILE PROCESS CHEMICALS ON ECOLOGY	14
2	ECO STANDARDS	15
3	ECO TESTING	15
4	ECOFRIENDLY PROCESSING	15
5	CLEAN TECHNOLOGY FOR FUTURE	14
TEST & REVISION		07
TOTAL		80

RATIONALE:

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

OBJECTIVES:

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

DETAILED SYLLABUS

4061532- ECO FRIENDLY TEXTILE PROCESSING

CONTENTS: THEORY

UNIT	NAME OF TOPICS	Hours
I	**IMPACT OF TEXTILE PROCESS CHEMICALS ON ECOLOGY** Pollution - definition - Types - Impact of pollution on environment- Pollution capability of chemicals and products used in processing - pollution load at every stages of processing – Pollution associated with various colouration process - Need for eco-friendly processing- Red listed chemicals - Possible sources of contamination of various red listed chemicals- List of banned amines and chemicals.	**14**
II	**ECO STANDARDS** Need for Eco standards. European & USA Eco standards. Permissible limits (norms) of chemicals, pH, colour fastness and heavy metals by different eco-standards such as MST, OEKOTEX, CLEANFASHION, STEILMANN & - Eco-labeling and labels - Eco-auditing - Eco-management - ISO 14000 – SA 8000 - Natural Textiles – Organic Cotton – GOTS & organic exchange certification, Brief idea about Higg Index –Problems associated with APEO , NPEO & OPEO	**15**
III	**ECO TESTING** Toxic substances used in processing and safe alternatives- Principles and procedures involved in the estimation of pH, pesticides, Residual formaldehyde, carcinogenic dyes, chlorinated phenols, phthalates, organo tin compounds and heavy metals.	**15**

IV	**ECO FRIENDLY PROCESSING** Eco-friendly dyeing of sulphur dyes - Eco friendly pigment printing & discharge Printing. Organic stabilizer – Application of Diazo sensitizer in screen preparation – Application of Eco-friendly preservatives – Non PVC, Non Phthalate, Plastizol inks**,** Formaldehyde free dye fixing agents. Properties of Enzymes - Application of Enzymes in Desizing, Scouring & Peroxide killing on cotton material, stone wash effect by Bio-polishing, Enzymatic degumming of silk	**15**
V	**CLEAN TECHNOLOGY FOR FUTURE** Clean technology – Brief idea about Natural Dyeing - RF drying, Microwave assisted dyeing, Ultrasonic assisted processing, Supercritical CO_2 dyeing, importance of energy & water conservation – Energy audit - Basics & application scope of Nano technology in textiles - Occupational diseases & safety measures in Wet processing industries.	**14**

TEXT BOOKS:

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

REFERENCE BOOKS

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

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A	Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.
PART- B	Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.
PART-C	Five questions will be asked Either / Or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1= 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks *

Note: * Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4061532-ECO FRIENDLY TEXTILE PROCESSING

Time: 3 Hrs. **Max. Marks: 100**

PART A

Answer all the Questions **(5 x 1 = 5)**

1. Define Pollution
2. What is Organic cotton?
3. Name a few toxic substances used in dyeing industry
4. Write the recommended enzyme for Biopolishing
5. What is clean technology?

PART B

Answer any 10 Questions **(10x 2 = 20)**

6. What are the types of pollution?
7. Name few heavy metals.
8. What is the need for ecofriendly processing?
9. What is the need for Eco standards?
10. Explain GOTS
11. Explain Natural Textiles.
12. What are the problems associated with APEO, NPEO and OPEO ?
13. What is eco management?
14. Give the safe alternative for chlorine bleaching.
15. Explain Ecofriendly dyeing of sulphur dyes
16. Discuss about enzymatic degumming of silk?
17. Write a note on formaldehyde free dye fixing agent.
18. Write a note on RF drying
19. Name a few occupational diseases
20. Explain Microwave Assisted Dyeing.

PART C

Answer all the Question, Choosing either A or B from each question (5 x 15 = 75)

21	a	i) Explain Red Listed chemicals	7
		ii) List the banned amines	8
		(OR)	
	b	i) Explain Impact of pollution on environment	7
		ii) Explain Permissible limits of chemicals, pH, color fastness and heavy metals	8
22	a	i)Discuss ISO 14000, ii) Explain Eco auditing	7
		(OR)	
	b	ii)Explain SA 8000, ii) Discuss about Organic Exchange Certification	8
23	a	i) Name 10 toxic substances used in processing and give safe alternatives	7
		ii) How will you estimate pH on a fabric	8
		(OR)	
	b	i) How will you estimate presence of heavy metals on a fabric	7
		ii) Explain procedure to detect presence of residual formaldehyde on the fabric.	8
24	a	i) Explain toxic free pigment printing	7
		ii) Discuss about problems of preservatives	8
		(OR)	
	b	i) Explain peroxide killing using enzyme	7
		ii) Explain Bioscouring of cotton	8
25	a	i) Enumerate clean technology options	7
		ii) Explain scope of nano technology	8
		(OR)	
	b	i) Explain super critical CO_2 dyeing of polyester	7
		ii) Explain safety measures are to be adopted in wet processing industries	8

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

V SEMESTER

2020 - 2021onwards

TEXTILE TESTING PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

N-SCHEME

(Implemented from the Academic Year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code : 4061540

Semester : V

Subject Title : TEXTILE TESTING - PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No. of Weeks per Semester: 16 Weeks

Subject	Instruction		Examination			
			Marks			Duration
	Hours/ Week	Hours/ Semester	Internal Assessment	Board Examinations	Total	
Textile Testing Practical	**5**	**80**	**25**	**100***	**100**	**3 Hours**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

RATIONALE:

- 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.

DETAILED SYLLABUS

Content : Practical

NAME OF THE TOPICS

1. Fibre testing
2. Yarn Testing
3. Fabric testing

LIST OF EXPERIMENTS AND SPECIFIC QUESTIONS FOR FOR THE PRACTICAL CLASS WORK

1. Determination of fibre length using Baer Sorter.
2. Determination of fibre fineness by ATIRA Fibre Fineness Tester.
3. Determination of count of yarn by cutting and weighing method.
4. Determination of single yarn twist by Electronic Twist Tester.
5. Determinations of Double Yarn twist by Electronic Twist Tester.
6. Determination of single yarn strength.
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.

DETAILED ALLOCATION OF MARKS

Experiment	30 marks
Write Up	20 marks
Calculation	25 marks
Diagram	20 marks
Viva	05 marks
Total	100 Marks

LIST OF EQUIPMENTS FOR A BATCH OF 30 STUDENTS

1. Baer Sorter
2. Fibre fineness tester
3. Tension type Twist tester
4. Lea strength tester
5. Yarn appearance winder
6. Fabric tensile strength tester
7. Elmendorf tearing strength tester
8. Ballistic tester, Fabric thickness tester
9. Quadrant balance
10. Crease recovery tester
11. Stiffness tester
12. physical balance

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

V SEMESTER

2020 - 2021onwards

TECHNOLOGY OF TEXTILE PRINTING PRACRTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N -SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061550

Semester : V Semester

Subject Title : TECHNOLOGY OF TEXTILE PRINTING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TECHNOLOGY OF TEXTILE PRINTING PRACTICAL	4	64	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

RATIONALE:

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

GUIDELINES:

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

ALLOCATION OF MARKS

Write up / Recipe	: 20 marks
Experiment/Calculation/Result	: 70 marks
Viva voce	: 10 marks
Total	: 100 Marks

LIST OF EXPERIMENTS AND SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Carry out Block or Stencil printing on Jute Fabric
2. Carry out Direct style of printing on cotton with hot brand reactive dyes by steaming method.
3. Carry out Direct style of printing using pigments on cotton, P/C blends using water base substitute paste.
4. Carry out Direct style of printing on polyester using disperses dyes. (Print – Dry – HTHP steaming method)
5. Print the given material with white and colour khadi pastes (Print – Dry – cure)
6. Print the given material with Metallic powder pastes (Silver and gold)
7. Do the Tie & dye – resist style of Coloration using reactive dyes. (white & multi colour effect)
8. Carry out the Batik style of printing (white & colour resist) using cold brand reactive dyes / azoic dyes.
9. Carry out White and Vat colour discharge printing on reactive dyed / padded cotton fabric.
10. Carry out White and pigment discharge printing on reactive dyed / padded cotton fabric.
11. Carry out White and pigment resist printing on reactive ground.
12. Carry out Burnt out style of printing on P/V blend (white / pastel dyed)

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

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

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

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

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

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

SAFETY PRECATIONS TO BE FOLLOWED

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

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

V SEMESTER

2020 – 2021 onwards

QUALITY ASSURANCE IN PRINTING AND FINISHING - PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N -SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061560

Semester : V Semester

Subject Title : QUALITY ASSURANCE IN PRINTING AND FINISHING – PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
QUALITY ASSURANCE IN PRINTING AND FINISHING - PRACTICAL	**4 Hrs**	**64 Hrs**	**25**	**100***	**100**	**3 Hrs**

* Examinations will be conducted for 100 marks and will be reduced to 75 marks.

RATIONALE:

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

GUIDELINES:

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

ALLOCATION OF MARKS

Write up / Recipe	: 20 marks
Experiment/Calculation/Result	: 70 marks
Viva voce	: 10 marks
Total	: 100 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. QUALITY TEST FOR PRINTED SUBSTRATE

Estimating the wash, rubbing and fastness

properties of efficiency of detergents, absorbency of desized and scoured fabric, efficiency of enzymes, efficiency of stabilizers and barium activity number.

2. QUALITY TEST FOR DYED SUBSTRATE

Estimating the purity of dyes, rubbing, wash, dry cleaning and perspiration fastness for dyes fabric.

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

1. Estimate the dry rubbing fastness of printed material
2. Estimate the wet rubbing fastness of printed material
3. Estimate the wash fastness of the given printed material (any one test from ISO 1 to 5)
4. Estimate the colour fastness to perspiration of the printed material.
5. Estimate the flammability of flame retardant finished fabric.
6. Estimate warps wise / weft wise shrinkage of the given fabric.
7. Estimate nickel content in the given fabric using spot test.
8. Estimate formaldehyde content in the given fabric using spot test.
9. Estimate the print durability of given printed fabric.
10. Estimate the colour fastness to saliva for the given coloured substrate
11. Estimate the colour fastness to artificial urine for the given coloured substrate
12. Estimate colour fastness to light fastness (daylight/heat lamp) for the given coloured substrate

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

Material required: (for a batch of 30 students)

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

Equipments Required: (for a batch of 30 students)

1. Necessary chemicals.
2. Laundro meter – 1 No
3. Crock meter – 2 Nos
4. Crease recovery tester – 2 Nos
5. Perspiro meter – 2 Nos
6. Soxhlet extractor – 2 Nos
7. Heating Lamp – 1 No
8. Colour Matching cabinet – 1 No

SAFETY PRECATIONS TO BE FOLLOWED

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

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

V SEMESTER

2020 - 2021onwards

ENTREPRENEURSHIP & START UPS PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN ENGINEERING / TECHNOLOGY SYLLABUS

N-SCHEME

(Implemented from the Academic Year 2020-2021 onwards)

Course Name : 1061 : DIPLOMA IN TEXTILE PROCESSING

Subject Code : 4061570

Semester : V

Subject Title : ENTREPRENERUSHIP AND STARTSUPS PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No. of Weeks per Semester: 16 Weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Entrepreneurship and Start ups Practical	**4**	**64**	**25**	**100***	**100**	**3 Hours**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	Topic	Hours
1	Entrepreneurship – Introduction and Process	12
2	Business Idea and Banking	12
3	Start ups, E-cell and Success Stories	12
4	Entrepreneurial Traits	12
5	Business Plan Preparation	12
Revision		4
Total		64

RATIONALE:

Development of a diploma curriculum is a dynamic process responsive to the society and reflecting the needs and aspiration of its learners. Fast changing society deserves changes in educational curriculum particularly to establish relevance to emerging socio-economic environments; to ensure equity of opportunity and participation and finally promoting concern for excellence. In this context the course on entrepreneurship and start ups aims at instilling and stimulating human urge for excellence by realizing individual potential for generating and putting to use the inputs, relevant to social prosperity and thereby ensure good means of living for every individual, provides jobs and develop Indian economy.

OBJECTIVES:

At the end of the study of 5th semester the students will be able to

- To excite the students about entrepreneurship
- Acquiring Entrepreneurial spirit and resourcefulness
- Understanding the concept and process of entrepreneurship
- Acquiring entrepreneurial quality, competency and motivation
- Learning the process and skills of creation and management of entrepreneurial venture
- Familiarization with various uses of human resource for earning dignified means of living
- Know its contribution in and role in the growth and development of individual and the nation
- Understand the formation of E-cell
- Survey and analyze the market to understand customer needs
- Understand the importance of generation of ideas and product selection
- Learn the preparation of project feasibility report
- Understand the importance of sales and turnover
- Familiarization of various financial and non financial schemes
- Aware the concept of incubation and starts ups

DETAILED SYLLABUS

CONTENTS

4061570 - ENTREPRENERUSHIP AND STARTSUPS - PRACTICAL

UNIT	NAME OF TOPICS	Hours
I	**Entrepreneurship – Introduction and Process** ● Concept, Functions and Importance ● Myths about Entrepreneurship ● Pros and Cons of Entrepreneurship ● Process of Entrepreneurship ● Benefits of Entrepreneur ● Competencies and characteristics ● Ethical Entrepreneurship ● Entrepreneurial Values and Attitudes ● Motivation ● Creativity ● Innovation ● Entrepreneurs - as problem solvers ● Mindset of an employee and an ● entrepreneur ● Business Failure – causes and remedies ● Role of Networking in entrepreneurship	**12**
II	**Business Idea and Banking** ● Types of Business: Manufacturing, Trading and ● Services. ● Stakeholders: sellers, vendors and ● consumers and Competitors ● E- commerce Business Models ● Types of Resources - Human, Capital and Entrepreneurial tools and resources ● Selection and utilization of human resources ● and professionals, etc. ● Goals of Business; Goal Setting ● Patent, copyright and Intellectual property ● rights ● Negotiations - Importance and methods ● Customer Relations and Vendor Management ● Size and capital based classification of business enterprises ● Various sources of Information ● Role of financial institutions	**12**

	● Role of Government policy ● Entrepreneurial support systems ● Incentive schemes for state government ● Incentive schemes for Central governments	
3	**Start ups, E-cell and Success Stories** ● Concept of Incubation centre's ● Visit and report of DIC , financial institutions and other relevance institutions ● Success stories of Indian and global business legends ● Field Visit to MSME's ● Study visit to Incubation centers and start ups ● Learn to earn ● Startup and its stages ● Role of Technology – E-commerce and Social Media ● Role of E-Cell ● E-Cell to Entrepreneurship	**12**
4	**Entrepreneurial Traits** • Identifying and testing business opportunities in Textiles • Decomposing complex business problems in the field of textiles. • Identify your entrepreneurial traits to put up a dyeing related business • Identify the business opportunities that suits you in Printing • Use the support systems to zero down to your business idea in Ecofriendly Textile Processing	**12**
5	**Business Plan Preparation** ● Feasibility Study Report – Technical analysis, financial analysis and commercial analysis ● Business Plan Preparation ● Describe the procedure to evaluate your entrepreneurial traits as a career option for the	**12**

	high quality Denim garments to be manufactured. ● Steps in setting up of a Textile chemical business. ● Arrive at a business opportunity on the basis of given data/circumstances with justification. ● Describe the schemes offered by the government for starting continuous woven dyeing plant. ● Suggest a suitable place for setting up Medical textiles on the basis of given data/circumstances with justification. ● Suggest the steps for the selection process of an enterprise for bandage cloth with justification. ● Describe the market study procedure of the Bleached / dyed Linen fabric. ● Market study procedures: questionnaire design, sampling, market survey, data analysis ● Develop comprehensive business plans to market yarn dyed fabric ● Prepare plans to manage modern knits processing plant. ● Bring out one Business Plan as a micro-project	

Note: (i) Unit 1, 2 & 3 contents are common for all diploma programs

(ii) Unit 4 & Unit 5 contents are branch specific contents.

REFERNCE BOOKS:

1. Dr. G.K. Varshney, Fundamentals of Entrepreneurship, Sahitya Bhawan Publications, Agra - 282002
2. Dr. G.K. Varshney, Business Regulatory Framework , Sahitya Bhawan Publications, Agra - 282002
3. Robert D. Hisrich, Michael P. Peters, Dean A. Shepherd, Entrepreneurship , McGraw Hill (India) Private Limited, Noida - 201301
4. M.Scarborough, R.Cornwell, Essentials of Entrepreneurship and small business management, Pearson Education India, Noida - 201301
5. Charantimath Poornima M. Entrepreneurship Development and Small Business Enterprises, Pearson Education, Noida - 201301
6. Trott, Innovation Management and New Product Development, Pearson Education, Noida - 201301
7. M N Arora, A Textbook of Cost and Management Accounting, Vikas Publishing House Pvt. Ltd., New Delhi-110044
8. Prasanna Chandra, Financial Management, Tata McGraw Hill education private limited, New Delhi
9. I. V. Trivedi, Renu Jatana, Indian Banking System, RBSA Publishers, Rajasthan
10. Simon Daniel, HOW TO START A BUSINESS IN INDIA, BUUKS, Chennai - 600018
11. Ramani Sarada, The Business Plan Write-Up Simplified - A practitioners guide to writing the Business Plan, Notion Press Media Pvt. Ltd., Chennai 600095.

Board Examination – Evaluation Pattern

Internal Mark Allocation

Assignment (Theory portion)*	-	10
Seminar Presentation	-	10
Attendance	-	5
Total	**-**	**25**

Note: * Two assignments should be submitted. The same must be evaluated and converted to 10 marks.

Guidelines for assignment:

First assignment – Unit I

Second assignment – Unit II

Guidelines for Seminar Presentation- Unit III

Each assignment should have five three marks questions and two five marks questions.

BOARD EXAMINATION

Note

1. The students should be taught all units and proper exposure and field visit also arranged. All the portions should be completed before examinations.
2. The students should maintain theory assignment and seminar presentation. The assignment and seminar presentation should be submitted during the Board Practical Examinations.
3. The question paper consists of theory and practical portions. All students should write the answers for theory questions (40 Marks) and practical portions (60 Marks) should be completed for board examinations.
4. All exercises should be given in the question paper and students are allowed to select by lot. If required the dimensions of the exercises may be varied for every batch. No fixed time allotted for each portion and students have liberty to do the examination for 3Hrs.

5. For Written Examination: Theory question and answer: 45 Marks

   Ten questions will be asked for 3 marks each. Five questions from each unit 1 & 2. (10 X 3 = 30).

   Three questions will be asked for 5 marks each. One question from each unit 1, 2 & 3. (3 X 5 = 15)

6. For Practical Examination: The business plan/Feasibility report or Report on Unit 4 & 5 should be submitted during the board practical examinations. The same have to be evaluated for the report submission (40 marks).

DETAILED ALLOCATION OF MARKS

Sl. No	Description	Marks
Part A	Written Examination - Theory Question and answer (10 questions x 3 marks:30 marks) & (3 questions x 5 marks: 15 marks)	45
Part B	Practical Examination – Submission on Business Plan/Feasibility Report or Report on Unit 4 & 5	40
Part C	Viva Voce	15
	Total	100

MODEL QUESTION PAPER

4061570 - ENTREPRENEURSHIP AND START UPS PRACTICAL

Time: 1 hour **Max. Marks: 45**

Part A

I. Answer ten questions in brief **(10x3=30)**

1. Define entrepreneurship.
2. State the process of entrepreneurship
3. What are the benefits of being an entrepreneur?
4. How do entrepreneurs act as problem solvers?
5. Outline the role of networking in entrepreneurship.
6. List the various types of business
7. Outline the business model.
8. Suggest the various goals of business.
9. How selection of human resources is carried out?
10. Specify the role of government policy on entrepreneurship.

II. Answer three questions in details

(3x5=15)

11. Describe the importance of innovation on entrepreneurship.
12. Enumerate the various incentive schemes for the central government.
13. How technology will play a major role in E- commerce?

Part B

Max Marks : 40

Practical Examination – Submission on Business Plan / Feasibility Report or Report on Unit 4 & 5 (40)

PART C

Max Marks : 15

Viva Voce (15)

VI SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

VI SEMESTER

2020 - 2021onwards

TEXTILE MANAGEMENT

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N -SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code : 4060610

Semester : VI

Subject Title : TEXTILE MANAGEMENT

TEACHING AND SCHEME OF EXAMINATION

No. of Weeks per Semester: 16 Weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Textile Management	**5**	**80**	**25**	**75**	**100**	**3 Hours**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours

Unit	Topic	Hours
I	INTRODUCTION TO MANAGEMENT, SITE SELECTION, PLANT LAY OUTS	14
II	PRODUCTION AND FINANCIAL MANAGEMENT	15
III	HUMAN RESOURCE MANAGEMENT	15
IV	SUPERVISORY AND SAFETY MANAGEMENT	14
V	EXPORT MANAGEMENT	15
TEST & MODEL EXAM		7
TOTAL		80

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.

DETAILED SYLLABUS

4060610- TEXTILE MANAGEMENT

CONTENT : THEORY

Unit	Name of the Topics	Hours
1	**INTRODUCTION TO MANAGEMENT, SITE SELECTION, PLANT LAY OUTS** Management – Definition, Functions and Principles. Organization structure of any Textile Unit. Selection of site - Various factors of site selection for various textile industries. Industrial Buildings – Types. Importance of Lighting, Ventilation and Humidification. Plant layout - Process, Product, Combination - their merits and demerits. Suitable Layout for Spinning, Weaving, Processing and Garment industries. Eco Management.	14
2	**PRODUCTION AND FINANCIAL MANAGEMENT** Production, Productivity, Labour Productivity Index (LPI) and Machine Productivity Index (MPI). Production Information System, Application of Work Study, Method Study, Time Study and Work Measurement in a Textile Mill. Material Handling – Importance, Various Equipments used for Material Handling in a Textile Industry. Production Planning and Control (PPC) – Functions, Enterprise Resource Planning (ERP). Inventory control - Economic Order Quantity (EOQ), ABC and VED Analysis. Financial Management – Sources of Finance. Cost – Elements, Techniques of Costing, System of Costing - Method of Calculating Ex Mill Price. Break Even Analysis. Depreciation.	15
3	**HUMAN RESOURCE MANAGEMENT** HRM – Importance. Man Power Planning, Job Analysis and Job Evaluation. Recruitment – Sources, Selection Process in Recruitment. Training – Importance and types of Training Process. Wages – Its Components. Method of Wage Payment. Incentives – Types, Merits and Demerits. Labour Welfare Activities – Role of Labour Welfare Officer. Labour grievances - Causes Grievance Redressal procedures.	15

4	**SUPERVISORY AND SAFETY MANAGEMENT** Supervisor – Role, Leadership – Role, Difference Between Leader and Manager. Transformational Leadership. 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 of 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.	**14**
5	**EXPORT 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 and Textile committee. Export procedure - Export incentives. Importance of Shipping bill and bill of lading. Export finance – pre shipment finance and post shipment finance. Letter of Credit, Forwarders cargo receipt and Payment via SWIFT. Export pricing-Ex factory, Free On Truck (FOT), Free On Board (FOB), Cost & Freight(C&F), Cost Insurance Freight (CIF) and Franco pricing. Brief Idea about Management Information System (MIS), Just In Time (JIT) and Total Quality Management (TQM).	**15**

REFERNCE BOOKS:

S.NO	TITLE	AUTHOR	PUBLISHERS
Text Books:			
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	Principles Of Management	P.C.Tripathi	Tata Mcgrow Publishing Compny Ltd, New Delhi
4	Management Of Textiles	Dudega.V.D	Trade Press, Textile Indistry ,Ahemadabad
5	Personnel Management Of Humoun Resoures	Mamoria.C.B	Himalaya Pubishingh House, Mumbai
Reference Books:			
1	Costing In Textile Mills	SITRA	SITRA, Coimbatore
2	Export Management	T A S Balagopal	Himalaya Pubishingh House, Mumbai
3	Industrial Organisation and Engineering Economics	S C Sharma, T R Banga	Khanna PublisherNew Delhi

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART - A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks.A and B have subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weightage.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4060610- TEXTILE MANAGEMENT

Time: 3 Hrs. **Max. Marks: 100**

PART A

Answer all the Questions **(5 x 1 = 5)**

1. Define Management
2. Define Labour Productive Index.
3. What is Job Analysis?
4. Define Motivation.
5. Expand WTO.

PART B

Answer any 10 Questions **(10x 2 = 20)**

6. What are the functions of management?
7. Give the importance of Lighting in a textile industry.
8. Write a note on control of air pollution in a textile industry.
9. Give the objectives of Method Study.
10. Give the functions of PPC.
11. Give the elements of cost.
12. Define Recruitment.
13. Give the components of wages.
14. What do you mean by grievances?
15. List the importance of Motivation.
16. List the types of communication.
17. What are safety guards?
18. Write a note on export promotion councils.
19. What do you mean by Globalization?
20. Write a note on TQM.

PART C

Answer all the Question, Choosing either A or B from each question (5 x 15 = 75)

21	A	(i)	Write in detail about the types of organization structures	8
		(ii)	How will you select site for textile industry? Justify your selection	7
			(OR)	
	B	(i)	Write in detail with sketch, the various types of buildings used in textile industry and its importance	8
		(ii)	Give an account of different types of plant layouts and their merits and demerits	7
22	A	(i)	Discuss the importance of material handling in textile industry	8
		(ii)	Write in detail about Elements of cost and explain how the Ex-mill price of cloth is calculated.	7
			(OR)	
	B	(i)	Explain in detail about Break Even Analysis with the chart.	8
		(ii)	Write in detail about Production Planning and Control	7
23	A	(i)	Write in detail about employee selection procedure for an industry	8
		(ii)	Give an account of Training Procedures	7
			(OR)	
	B	(i)	Write about wages and its components, systems of wage payments	8
		(ii)	Explain in detail causes of Grievances and Grievance Redressal procedure	7
24	A	(i)	Explain in detail the Motivation and various theories of Communication	8
		(ii)	Give the various safety guards and devices used in textile industry	7
			(OR)	
	B	(i)	Write in detail about industrial accidents, its causes and prevention steps adopted in industry	8
		(ii)	Write a note on 5s and Kaizen principle with advantages	7
25	A	(i)	Discuss the functions of various export promotion council's	8
		(ii)	Give the various export procedures to be followed and Export Documents	7
			(OR)	
	B	(i)	Write in detail about Export Price Composition	8
		(ii)	Write in detail about (i) TQM (ii) MIS	7

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

VI SEMESTER

2020 - 2021onwards

GRAMENT MANUFACTURE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

N -SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code : 4060620

Semester : V Semester

Subject Title : GARMENT MANUFACTURE

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours /Week	Hours /Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
GARMENT MANUFACTURE	**5**	**80**	**25**	**100***	**100**	**3 Hrs.**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours:

S. No	Topics	Hours
I	MEASUREMENTS, PATTERNS AND TOOLS FOR GARMENT CONSTRUCTION	15
II	DRAFTING AND PATTERN LAYOUT	15
III	CUTTING AND GARMENT CONSTRUCTION	15
IV	PACKING AND QUALITY REQUIREMENTS	14
V	FASHION DESIGNING	14
TEST & REVISION		7
TOTAL		80

RATIONALE:

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

OBJECTIVES:

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

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

DETAILED SYLLABUS

4060620- GARMENT MANUFACTURE

Contents: Theory

Unit	Name of the Topic	Hours
I	**MEASUREMENTS, PATTERNS AND TOOLS FOR GARMENT CONSTRUCTION** Flow chart for garment manufacturing process in garment industry. Eight head theory of human anatomy and its uses. Measurements – importance, Measurements to be taken for children's, Ladies, and Gent's. Paper patterns - importance – Types - Commercial patterns and personal patterns - Principles of pattern drafting –Purpose of Pattern grading. Tools required for garment making – Measuring tools, Cutting tools - Pattern making tools - Pressing tools.	15
II	**DRAFTING AND PATTERN LAYOUT** Pattern making of 'A' line frock - Ladies skirt - Gent's half sleeve shirt - Ladies nightwear. Fabrics used in garment manufacture – Plain, Striped, Plaid, Printed and one way. Rules for pattern layout – types of Layout (length wise Cross wise, partial length wise, partial cross wise, combined fold and open layout). Special layouts for asymmetrical, striped, checked and one-way designs – Types of Lay. Lay length and Marker planning.	15
III	**CUTTING AND GARMENT CONSTRUCTION** Objects of spreading & cutting - Importance of cutting - Brief study on types of cutting machines – Straight knife - Band knife - Round knife -LASER cutting. Sewing Machine Parts and its function. Stitches – Properties and Application of Lock stitch, Chain stitch, 3 thread over lock, 5 thread flat lock. Brief study of different types of Seams – Plain, bound flat & Slot seam. Construction of 'A' line frock, Ladies skirt, Gent's half sleeve shirt and Ladies nightwear.	15
IV	**PACKING AND QUALITY REQUIREMENTS** Types of pressing and its objects. Packing materials, Different methods of Packing – Ratio pack, Assortment pack, Colour wise pack, Size wise pack. Methods of fabric inspection - Study of 4 point and 10-point system. Types of Inspection – Raw Material Inspection — Brief study of in-process inspection and Final inspection. Brief study of Garment defects. Accepted Quality Level (AQL). ISO certification for the Garment Industry. Objects of Organic cotton certification and GOTS, WRAP,SA8000	14

V	**FASHION DESIGNING** Elements of Design – Line, Shape, Texture, colour and value. Principles of design – Balance, Proportion, Emphasis, Rhythms and Harmony. Pigment theory of colours – Primary, Secondary and Tertiary colours. Color dimension (Hue, Intensity, value, tint, shade and tone) - Warm and Cool Colors. Design – Different types of structural designs and decorative designs on dress. Basic concepts of Fashion show – Fashion Forecasting. Buying office and its importance.	14

TEXT BOOKS

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

REFERENCE BOOKS

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

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART – A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questionsfrom each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have Subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weight age.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks *

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4060620 – GARMENT MANUFACTURE

Time: 3 Hrs. Max.Marks:100

PART – A

Answer all the questions **(5 x 1 = 5)**

1. Define pattern.
2. Define one way design fabrics.
3. State the use of band knife cutting machine.
4. State the objects of packing?
5. Define Design?

PART – B

Answer all the questions **(10 x 2 = 20)**

6. Write the steps in garment manufacturing process.
7. State the importance of Measurement
8. What do you mean by Personal pattern?
9. List the basic measurement needed to develop the gent's shirting?
10. What do you mean by asymmetrical design
11. What do you mean by marker planning?
12. Write the importance of cutting?
13. What are the properties of 3 threads over lock stitch?
14. What do you mean by slot seams?
15. What do you mean by Ratio pack and assorted packs?
16. What do you mean by AQL?
17. What are the objects of Organic cotton?
18. What do you mean by color dimension?
19. What do you mean by fashion forecasting?
20. What is the role of buying office in garment industry?

PART – C

Answer all the questions choosing either sub-division (A) or sub-division (A) of each question. (5 x 15 = 75)

21. (A) I. Write the importance of Eight head theory with a neat sketch. (7)

II. Explain the methods of taking body measurements for ladies garments. (8)

(OR)

(B) I. Write the Principles of Pattern Drafting with a neat sketch. (7)

II. Explain the different types of tools required for garment making. (8)

22. (A) I. Explain the different types of fabric used in garment industry? (7)

II. Explain the pattern drafting procedure for ladies night wear with a neat sketch of 1/4 scale. (8)

(OR)

(B) I. Explain the Rules for pattern layout with a neat sketch. (7)

II. Explain the different types of layout in garment industry. (8)

23. (A) I. Explain the Laser cutting machine with a neat sketch. (7)

II. Explain the function of sewing machine with a neat sketch. (8)

(OR)

(B) I. Explain the different types of seams. (7)

II. Explain the construction procedure for gent's half sleeve shirt. (8)

24. (A) I. Explain the different method of packing in garment industry. (7)

II. Explain the Various inspection methods used in garment industry. (8)

(OR)

(B) I. Explain the methods of Acquiring ISO Certificate in garments industry. (7)

II. Explain about GOTS, WRAP and SA8000. (8)

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

VI SEMESTER

2020 - 2021onwards

TEXTILE EFFLUENT TREATMENT

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N -SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061631

Semester **:** VI Semester

Subject Title **:** **TEXTILE EFFLUENT TREATMENT**

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours/ week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
TEXTILE EFFLUENT TREATMENT	5	80	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours:

SL.NO	TOPIC	TIME (HRS)
1	INTRODUCTION TO ENVIRONMENT & POLLUTION IMPACT	15
2	WATER TREATMENT- I	15
3	WATER TREATMENT - II	14
4	EFFLUENT TREATMENT	15
5	POLLUTION CONTROL	14
TEST & REVISION		07
TOTAL		75

RATIONALE:

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

OBJECTIVES:

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

DETAILED SYLLABUS
4061631- TEXTILE EFFLUENT TREATMENT
CONTENTS

UNIT	NAME OF TOPICS	Hours
I	**INTRODUCTION TO ENVIRONMENT AND POLLUTION IMPACT:** Environment - Definition, Impact of man on environment, effects of urbanization - Environmental pollution - definition - classification of pollution- brief definitions on Air, Water, Land, Noise, Nuclear pollution - Sources & harmful effects of water pollution - A detailed study of effluents discharged by fibre manufacturing industries, Textile processing industries, - Origin, characteristics and various mode of treatments	**15 Hrs**
II	**WATER TREATMENT – I** Constituents of water and their effects in textile processing - Boiler feed water problems, causes, effects and remedies- Boiler feed water parameters – water softening – need, detailed study of various softening methods – Cat ion exchange softening, softening by sequestering agents and Demineralization with schematic diagram for removal of carbon di oxide and silica.	**15 Hrs**
III	**WATER TREATMENT – II** Uses of water, sources of water, treatment process for industrial and drinking water with line diagrams – Removal of colour and turbidity (coagulation, flocculation, settling and filtration methods) sterilization, Determination of dissolved oxygen by iodimetry, Determination of BOD, COD, TDS	**14 Hrs**

IV	**EFFLUENT TREATMENT** Various stages of Effluent Treatment – objectives and definition. Detailed study on Primary Treatment – Screening, equalization, neutralization, coagulation and flocculation, settling by clarification, sludge handling (solar beds, filter press). Secondary treatments – Activated sludge process, Anaerobic digestion, and Activated carbon filter -Tertiary Treatment - Micro filtration, Ultra filtration, Nano filtration, Reverse osmosis, Combined Anaerobic, Aerobic Biological Treatment – concept of Zero Liquid Discharge .A detailed study about common effluent treatment plant.	**15 Hrs**
V	**POLLUTION CONTROL** Role of Central Pollution Control Board - Air pollution – sources and effects of air pollutants on human health, A study on Global warming, , Ozone layer depletion, - means for combating air pollution effects, Air pollution control methods, names only- ambient air quality standards. Noise pollution – sources, ill effects- Auditory and Non auditory, Noise pollution control measures and standard noise levels in decibels.	**14 Hrs**

TEXT BOOKS

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

REFERENCE BOOKS

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

Board Examination-Question Paper Pattern

Subjects – Apparel Merchandising

Note: Clarkes Table and Programmable Calculators are not permitted.

Relevant data should be provided in the question paper for solving the problems if anyrequired.

Time: 3 Hrs. Max.Marks:100

PART – A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questionsfrom each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have Subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weight age.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks *

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4061631- TEXTILE EFFLUENT TREATMENT

Time: 3 Hrs. **Max. Marks: 100**

PART A

Answer all the Questions **(5 x 1 = 5)**

1. Define environment.
2. State the use of water.
3. Abbreviate-BOD
4. What are the objectives of secondary treatment?
5. Mention the sources of air pollution.

PART B

Answer any 10 Questions **(10x 2 = 20)**

6. State the harmful effects of inorganic pollution
7. Write the classification of pollution.
8. What is nuclear pollution
9. What are the constitute of water
10. State the remedies of boiler feed water
11. What is the need for water softening?
12. What do you mean by filtration?
13. What do you mean by COD?
14. What is turbidity?
15. What is screening?
16. write the various steps involved in Secondary treatment
17. State the concept of ZLD
18. What is anaerobic & Aerobic?
19. State the Role of CPCB
20. Mention the effects of noise pollution.

PART C

Answer all the Question, Choosing either A or B from each question

(5 x 15 = 75)

21	A	(i)	Classify Pollution	8
		(ii)	Write the various mode of effluent treatment	7
			(OR)	
	B	(i)	Explain the sources of water and the harmful effects of water pollution	8
		(ii)	Give a detailed note on the characteristics of Textile Effluent	7
22	A	(i)	Explain about the constituents of water	8
		(ii)	Explain the problem associated with boiler feed water	7
			(OR)	
	B	(i)	Explain the demineralization process	8
		(ii)	Explain any one water softening method	7
23	A	(i)	Write the sources of water	8
		(ii)	Explain the treatment process of industrial water	7
			(OR)	
	B	(i)	Write notes on filtration process	8
		(ii)	How do you determine the dissolved oxygen content by iodimetry method	7
24	A	(i)	Explain the primary treatment process of textile effluent	8
		(ii)	Explain the secondary treatment process of textile effluent	7
			(OR)	
	B	(i)	Explain the concept of tertiary treatment process of textile effluent	8
		(ii)	Explain the concept of common effluent treatment plant	7
25	A	(i)	Write the ambient air quality standards	8
		(ii)	Write the ill effects of noise pollution	7
			(OR)	
	B	(i)	Explain the role of CPCB	8
		(ii)	What are the effects of Air Pollution on human health	7

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

VI SEMESTER

2020 - 2021onwards

ADVANCES IN TEXTILE PROCESSING

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(Implemented from the student admitted from the year 2020 - 2021onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061632

Semester : VI Semester

Subject Title : ADVANCES IN TEXTILE PROCESSING

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
ADVANCES IN TEXTILE PROCESSING	**5**	**80**	**25**	**100**	**100**	**3 Hrs**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Topics and Allocation of Hours

UNIT	TOPIC	TIME (HRS.)
1	ADVANCES IN PREPARATORY PROCESS	13
2	ADVANCES IN DYEING AND PRINTIING	13
3	ADVANCES IN FINISHING	14
4	APPLICATION OF NANO TECHNOLOGY IN FINISHING	14
5	APPLICATION OF PLASMA TECHNOLOGY IN TEXTILES	14
TEST & REVISION		07
TOTAL		80

RATIONALE:

Advances in textile processing covers advances in preparatory process, advances in dyeing and printing, advances in finishing, application of nano technology in finishing and application of plasma technology in textiles will give the knowledge in latest machines and the process of the textile processing industries. This will give enough knowledge for the students to work in the industries.

OBJECTIVES:

- To acquire knowledge in knit processing sequence
- To acquire knowledge in advances in preparatory processing
- To impart knowledge in advances in dyeing and printing
- To know about various special effects produced on garments by advances in finishing
- To educate in the field of continuous processing
- To have an idea about various continuous processes being practiced
- To impart knowledge about the new technology i.e. Nanotechnology
- To know about the application of nanotechnology in textile finishing
- To have knowledge about types of plasma and their characteristics
- To study about the application of plasma in textiles.

DETAILED SYLLABUS

4061632-ADVANCES IN TEXTILE PROCESSING

CONTENTS

UNIT	NAME OF TOPICS	Hours
1	**ADVANCES IN PREPARATORY PROCESS** Sequence of knit processing operations - Stitching, reversing, singeing, scouring, mercerizing, bleaching, dyeing and finishing - knit tube reversing machine - Slit opening machine - Single stage preparatory process - Ultrasonic waves assisted textile processing – Desizing, Scouring, Bleaching and Mercerising. Peracetic acid (PAA) bleaching - Biotechnological catalytic bleaching - Continuous combined scouring and bleaching.	**13**
2	**ADVANCES IN DYEING AND PRINTIING** Continuous dyeing of cotton with Vat dyes - Continuous dyeing of warp yarn using indigo dyes and Sulphur black. Microwave dyeing, Electrochemical dyeing – Direct and Indirect Electrochemical dyeing. Supercritical dyeing using Carbon dioxide - Ultrasonic wave dyeing - Salt Free Dyeing of Cotton Fabric Using Reactive Dye – Digital printing	**13**
3	**ADVANCES IN FINISHING** Processing of lycra blends - Stone washing, sandblasting, acid wash, embossing and dry finishing. Continuous preparation for P/C blends. Continuous dyeing for P/C blends using disperse and reactive dyes. Continuous weight reduction of PET. E control processes.	**14**
4	**APPLICATION OF NANO TECHNOLOGY IN FINISHING** Nano - Definition - Comparison between nano tech finishing with conventional finishing. Functional finishes - UV protection, flame retardency, antibacterial, antistatic, water, oil and stain repellency, soil resistance, wrinkle resistance. Commercially successful finishes.	**14**

5	**APPLICATION OF PLASMA TECHNOLOGY IN TEXTILES** Plasma – Definition. Surface modification of fibres - cotton, wool and polyester. Plasma polymerization on textile substrates. Application of plasma in textiles - Fabric preparation and finishing. Effects of plasma on textile substrates - surface energy, wetting and wicking properties. Limitations of plasma treatments.	**14**

TEXT BOOKS:

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

REFERENCE:

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

Board Examination-Question Paper Pattern

Time: 3 Hrs. Max.Marks:100

PART – A Five questions will be asked covering all units. All questions are to be answered. Each question carries 1 mark.

PART- B Fifteen questions will be asked covering all the units. Three questions from each unit. Answer any ten questions. Each question carries 2 marks.

PART-C Five questions will be asked Either or type. One question from every unit. Answer either A or B. Each question carries 15 marks. A and B have Subdivisions. (7 + 8)

The questions are to be numbered from 1 to 25. All the units are to be covered with equal weight age.

PART A Definitions and Statements. Question Number 1 to 5	5 X 1 = 5 Marks
PART B Short answer type questions Question Number 6 to 20	10 X 2 = 20 Marks
PART C Descriptive answer type questions (Either A or B) Question number 21 to 25	5 X15 = 75 Marks
TOTAL	100 Marks *

Note: Board Examinations will be conducted for 100 Marks and converted to 75 Marks.

MODEL QUESTION PAPER

4061632-ADVANCES IN TEXTILE PROCESSING

Time: 3 Hrs. Max.Marks:100

Part – A (05 x 01 = 05)

Answer all the questions.

1. What is meant by fabric reversing?
2. What do you mean by Microwave dyeing
3. What do you mean by sand blasting
4. Define: Nano technology
5. Define: Plasma technology

Part – B (10 x 02 = 20)

Answer any 10 questions.

6. What do you mean by Single stage preparatory process
7. What do you mean by Ultrasonic waves assisted textile processing
8. What do you mean by Peracetic acid (PAA) bleaching
9. What do you mean by Microwave dyeing
10. Define: Ultrasonic wave dyeing
11. Define: Digital printing
12. Briefly explain Processing of lycra blends
13. Define: dry finishing
14. Define: E control process.
15. What do you mean by UV protection finish
16. What do you mean by antistatic finish
17. What do you mean by soil resistance finish
18. Mention the level of plasma treatment
19. What is plasma polymeriztion?
20. Write the limitations of plasma treatment.

Part – C

Answer either A or B. **(05 x 15 = 75)**

21. A. i. Explain with a neat sketch the working of Slit opening machine. 8

ii. Explain continuous combined bleaching 7

(or)

B. i. Explain in detail the Ultrasonic waves assisted textile processing? 8

ii. Explain biotechnological catalytic bleaching 7

22. A. i. Explain the process of continuous dyeing of warp yarn using indigo dyes 8

ii. Explain electrochemical dyeing 7

(or)

A. i. Explain the process of Salt Free Dyeing of Cotton Fabric Using Reactive Dyes? 8

ii. Explain super critical co_2 dyeing 7

23. A. i. Explain the process of Continuous preparation for P/C blends? 8

ii. Explain E-control Processes 7

(or)

B. i. Explain the process of Continuous weight reduction of PET? 8

ii. Explain processing of lycra blend 7

24. A. i. Explain in detail between nano tech finishing with conventional finishing? 8

ii. Explain UV protection finishes 7

(or)

B. i. Explain the commercially successful finishes? 8

ii. Explain stain repellency finish 7

25. A. i. Explain in details the surface modification of fibres for cotton and Polyester. 8

ii. Explain the limitations of plasma treatment 7

(or)

B. i. Explain the application of plasma technology in finishing of textiles? 8

ii. what are the effects of plasma on textile substrate 7

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

VI SEMESTER

2020 - 2021onwards

GARMENT MANUFACTURE PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N -SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name **:** 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4060640

Semester : VI Semester

Subject Title **:** GARMENT MANUFACTURE PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours /Week	Hours /Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
GARMENT MANUFACTURE PRACTICAL	5	80	25	100*	100	3 Hrs

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

Rationale:

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

GUIDELINES:

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

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

OBJECTIVES:

1. To learn 8 head theory of human anatomy
2. To learn the fundamentals of pattern drafting.
3. To understand the concepts of garment making.

List of Experiment and Specific Questions for Practical Class Work

Drawing

1. Draw male & female anatomy based on 8 head theory.

Preparing samples

2. Prepare hand embroidery samples with running and double running
3. Prepare hand embroidery samples with, back & steam stitches.
4. Prepare stem and satin stitches.

Pattern Drafting

5. Prepare paper pattern for style - 'A' line frock.
6. Prepare paper pattern for style – Plain skirt for Girls
7. Prepare paper pattern for Ladies nightwear.
8. Prepare paper pattern for Men's slack shirt with full sleeve.

Construction

9. Using the given paper pattern, cut stitch and finish a style - A line frock.
10. Using the given paper pattern, cut stitch and finish a style- Plain skirt for Girls
11. Using the given paper pattern, cut stitch and finish a style- Ladies nightwear.
12. Using the given paper pattern, cut stitch and finish a style- Men's slack shirt with full sleeve.

QUESTION PAPER PATTERN & ALLOCATION OF MARKS

Single experiment is to be given per student

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

EQUIPMENT LIST FOR A BATCH OF 30 STUDENTS

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

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N – SCHEME

VI SEMESTER

2020 - 2021onwards

SHADE MATCHING IN DYEING AND PRINTING PRACTICAL

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N - SCHEME

(To be implemented from the student admitted from the year 2020-2021 onwards)

Course Name : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code : 4061650

Semester : VI Semester

Subject Title : SHADE MATCHING IN DYEING AND PRINTING PRACTICAL

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours /Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
SHADE MATCHING IN DYEING AND PRINTING - PRACTICAL	6	96	25	100*	100	3 Hrs

* Examinations will be conducted for 100 marks and will be reduced to 75 marks.

RATIONALE:

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

GUIDELINES

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

ALLOCATION OF MARKS

Write up / Recipe	: 20 marks
Experiment/Calculation/Result	: 70 marks
Viva voce	: 10 marks
Total	: 100 Marks

COMPLETE LIST OF EXPERIMENTS IN DETAILS

1. PREPARATION OF SELF SHADES

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

2. PREPARATION OF COMPOUND SHADES USING TWO DIFFERENT COLOURS

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

3. PREPARATION OF COMPOUND SHADES USING THREE DIFFERENT COLOURS

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

4. MATCHING OF COMPOUND SHADES

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

5. PREPARATION OF PRINTING SHADE CARDS

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

6. PRINTED SHADE MATCHING

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

SPECIFIC QUESTIONS FOR THE PRACTICAL CLASS WORK

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

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

List of Equipments:

1. Dye baths with 6 pots – 15 Nos.
2. Hot plate – 2 Nos.
3. Printing Table -1 with 5 meter length
4. Printing screens--10
5. Curing Oven-1
6. Baby Steamer-1

7. Printing Blocks-2
8. High speed stirrer -4
9. Squeegees -10

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

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

SAFETY PRECATIONS TO BE FOLLOWED

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

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING

DIPLOMA IN TEXTILE PROCESSING SANDWICH

III YEAR

N– SCHEME

VI SEMESTER

2020 - 2021onwards

PROJECT WORK & INTERNSHIP

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N -SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name	:	DIPLOMA IN TEXTILE PROCESSING
Course Code	:	1061
Subject Code	:	4061660
Semester	:	VI Semester
Subject Title	:	PROJECT WORK & INTERNSHIP

TEACHING AND SCHEME OF EXAMINATION

No. of Weeks per Semester: 16 Weeks

Subject	Instruction		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
			Internal Assessment	Board Examinations	Total	
Project Work & Internship	**6**	**96**	**25**	**100***	**100**	**3 Hours**

***Examination will be conducted for 100 marks and will be converted to 75 marks. Minimum Marks for Pass is 50 out of which minimum 50 marks should be obtained out of 100 marks in the Board Examination alone.**

OBJECTIVES:

1. Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment
2. Get exposure on industrial environment and its work ethics through internship
3. Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
4. Carry out cooperative learning through synchronous guided discussions within the class in key dates, asynchronous document sharing and discussions, as well as to prepare collaborative edition of the final project report.

PROJECT WORK:

Students have to select any one topic of their own interest under the guidance of the department faculty in their area of specialization, emphasizing the principles studied in the theory and practical subjects. The selected topics must be related to any streams of Textile manufacturing process like Spinning/Weaving/Textile wet processing/Knitting/Garment making/ Problems related to quality control waste control, process control, productivity control, machinery maintenance and sustainable development in Textile Industries. After completing the work, they have to submit their findings in the form of a report through the guide and Head of the Department. A viva-voce is conducted on the report submitted by the student. The number of students in a batch for a project work shall not exceed six.

INTERNSHIP:

The internship training for a period of two weeks shall be undergone by every candidate at the end of IV / V semester during vacation. The certificate shall be produced along with the internship report for evaluation. The evaluation of internship training shall be done along with final year “Project Work & Internship” for 20 marks. The internship shall be undertaken in any industry / Government or Private certified agencies which are in social sector / Govt. Skill Centres / Institutions / Schemes.

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

INTERNAL ASSESSMENT:

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

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

EVALUATION FOR BOARD EXAMINATION:

Details of Mark allocation	Max Marks
Demonstration/Presentation	**25**
Report	**25**
Viva Voce	**30**
Internship report	**20**
Total	**100**

VII SEMESTER

DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN TEXTILE PROCESSING SANDWICH

N – SCHEME

VII SEMESTER

2020 - 2021onwards

INDUSTRIAL TRAINING & VIVA VOCE

CURRICULUM DEVELOPMENT CENTRE

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TAMILNADU

DIPLOMA IN TEXTILE PROCESSING

N -SCHEME

(Implement from the Academic Year 2020-2021 onwards)

Course Name (SANDWICH) : 1061: DIPLOMA IN TEXTILE PROCESSING

Subject Code **:** 4061712

Semester : VII Semester

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

TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Industrial Training		Examination			
	Days / Week	Weeks / Semester	Marks			Duration
			Internal Assessment	Board Examination	Total	
INDUSTRIAL TRAINING & VIVA VOCE	**5**	**16**	**25**	**100***	**100**	**3 Hrs**

*** Examinations will be conducted for 100 marks and will be reduced to 75 marks.**

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

ALLOCATION OF MARKS:

TIME: 3 HRS.	MAX.MARKS: 100
Industrial Review I (6th week)	10
Industrial Review II (12th week)	10
Attendance	05
Total	25
Board Examination	
Report preparation	60
Viva Voce	40
Total	100