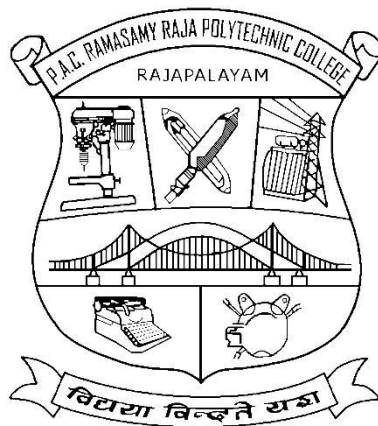


# P.A.C. RAMASAMY RAJA POLYTECHNIC COLLEGE

(AUTONOMOUS)

RAJAPALAYAM – 626 108



## N2 - SCHEME

Revised Syllabus : 2021 - 2022

# DEPARTMENT OF TEXTILE TECHNOLOGY

## INDEX

No	Code	CONTENT	PAGE
1		N2 Scheme - Regulations	
2		Curriculum Outline	
<b>III SEMESTER</b>			
3	46031	Fibre Science and Technology	
4	46032	Yarn Manufacture – I	
5	46033	Fabric Manufacture – I	
6	46034	Fibre Identification - Practical	
7	46035	Yarn Manufacture - I Practical	
8	46036	Fabric Manufacture - I Practical	
9	46037	Quality Analysis in spinning and weaving preparatory – Practical	
<b>IV SEMESTER</b>			
10	46041	Basic Engineering	
11	46042	Yarn Manufacture – II	
12	46043	Fabric Manufacture – II	
13	46044	Textile Wet Processing	
14	46045	Yarn Manufacture – II Practical	
15	46046	Fabric Manufacture – II Practical	
16	46047	Textile Wet Processing - Practical	
<b>V SEMESTER</b>			
17	46051	Textile Testing	
18	46052	Fabric Structure	
19		ELECTIVE THEORY - I	
	46071	Advanced Textile Manufacture	
	46072	Technical Textiles	
20	46054	Textile Testing Practical	
21	46055	Fabric Structure Practical	
22	46056	Communication and Skills Practical	
23	46057	Entrepreneurship & Start ups	
<b>VI SEMESTER</b>			
24	46061	Textile Management	
25	46062	Garment Manufacture	
26		ELECTIVE THEORY- II	
	46081	Maintenance of Textile Machinery	
	46082	Process control in Spinning	
27	46064	Garment Manufacture and garment CAD practical	
30	46065	Advanced fabric design analysis practical	
31	46066	Project Work & Internship	

**P.A.C. RAMASAMY RAJA POLYTECHNIC COLLEGE, RAJAPALAYAM**  
(Government Aided Autonomous Institution)

**Diploma in Engineering and Technology**  
(Implemented for Students admitted from Academic Year 2021 – 2022 onwards)  
**N2 Scheme – Regulations**

**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 First Year is common to all Engineering Branches.
- Each semester will have 16 Weeks duration of study with 35 hours per week.
- The Curriculum for all the 6 semesters of Diploma courses (Engineering and Modern Office Practice) have been revised and revised curriculum is applicable for the candidates admitted from 2021 – 2022 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 Higher School Examination with eligibility for Higher Secondary Course in Tamil Nadu.

(OR)

The Matriculation Examination of Tamil Nadu.

(OR)

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

**Note:** In addition, at the tune 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 H. Sc. (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.

S. No.	Courses	H. Sc. Academic	H. Sc. Vocational		Industrial Training Institute Courses.
			Subject Studied		
			Related Subjects	Vocational Subjects	
1.	All the Regular 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 Modern Office Practice	English & Accountancy English & Elements of Economics English & Elements of Commerce	English & Accountancy English & Elements of Economics English & Management Principles & Techniques. English & Typewriting.	Accountancy & Auditing Banking Business Management Co-operative Management International Trade Marketing & Salesmanship Insurance & Material Management Office Secretaryship.	-----

- For the Diploma Courses related with Engineering Technology, the related equivalent subjects prescribed along with Practical may also be taken for arriving the eligibility.
- Branch will be allotted according to merit through Counselling by the respective Principal as per communal reservation.
- For admission to the Textile Technology and Modern office Practice Diploma Courses the candidates studied the related subjects will be given first preference.
- Candidate 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 award of Diploma unless he/she has undergone the prescribed course of study for a period of not less than 3 academic years, if he/she admitted in First Year and two years if admitted 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 follows:

<b>Diploma Course</b>	<b>Minimum Period</b>	<b>Maximum Period</b>
Full Time	3 Years	6 Years
Full Time (Lateral Entry)	2 Years	5 Years

7. **Subjects of Study and Curriculum outline:**

The subjects of study shall be in accordance with the syllabus prescribed both for Theory and Practical subjects from time to time. The curriculum outline is given in Annexure – I.

## 8. Examinations:

Autonomous End Examinations for all subjects in all semesters under the prescribed scheme of examinations will be conducted at the end of each semester.

The internal assessment marks for all the subjects, both Theory and Practical will be awarded on the basis of continuous internal assessment conducted during the semester concerned. For each subject, 25 marks are allotted for internal assessment and 100 marks are allotted for Autonomous End Examination and reduced to 75 marks

Total Marks for result are  $25 + 75 = 100$  Marks

**Note:** 80% of attendance is compulsory to write examination.

## 9. Evaluation Systems:

The following Evaluation System (Both Theory and Practical) will be followed for N2 – Scheme for the students admitted from the academic year 2021-2022 onwards.

### A. Theory Subjects (I, II and III Year Students):

I	Internal Assessment	25 Marks
II	External Assessment for Theory Subjects will be conducted for 100 Marks and will be reduced to 75 marks.	75 Marks
Total =		100 Marks

### I. Internal Assessment:

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

a).	Periodic Tests	10 Marks
b).	Assignment	5 Marks
c).	Online Quiz	5 Marks
d).	Seminar Presentation	5 Marks
Total =		25 Marks

**(a) Periodic Tests (10 Marks)**

Periodic Test	Unit	When to conduct	Duration	Marks
CAT - 1	Unit - 1 & 2 (or) any two units	End of 6 <sup>th</sup> week	1 ½ Hours	50 Marks
CAT - 2	Unit - 3 & 4 (or) any two units	End of 12 <sup>th</sup> week	1 ½ Hours	50 Marks
CAT - 3	Unit - 5 (or) any one unit	End of 15 <sup>th</sup> week	1 Hour	25 Marks
Model Exam	Full Portion	End of 16 <sup>th</sup> week	3 Hours	100 Marks

- The model Exam covering all the five units as per end exam pattern will be conducted prior to practical end examination.
- Any student who scores poor marks in Periodic tests (CAT-1,2,3), he/she has to undergo repeat tests to improve his/her performance.
- The total marks (225 Marks) of all the tests will be converted for **10 marks** and awarded to the students.

**CAT - Question Pattern:**

Type	Number of Question	Marks
Part - A	10 questions out of 15 (10 x 2) Marks	20
Part - B	2 questions x 15 Marks (or) each 8 and 7	30
Total =		50

**b) Assignment: (5 Marks)**

Three assignments are to be submitted by the students for a total of 50 marks and the break up details are given below:

Assignment 1 (Unit 1 & 2 (or) any two units)	20 Marks
Assignment 2 (Unit 3 & 4 (or) any two units)	20 Marks
Assignment 3 (Unit (or) any one unit)	10 Marks
Total	50 Marks

- Five Question from one unit
- The marks scored in assignment will be converted to **5 marks**.

**c) Online Quiz : (05 Marks)**

Test	Unit	When to Conduct	Questions	Time	Marks
Online Quiz - 1	Unit - 1 & 2(or) any two units	End of 6 <sup>th</sup> week	30	40 min.	30
Online Quiz - 2	Unit - 3 & 4(or) any two units	End of 12 <sup>th</sup> week	30	40 min.	30
Online Quiz - 3	Unit - 5 (or) any one unit	End of 15 <sup>th</sup> week	15	20 min	15

- Equal Weightage will be given for all Units.
- The average of all the tests will be converted to **05 marks**.

**d) Seminar Presentation: (5 marks)**

1. The Students have to select the topics from their subjects which will help to improve their grasping capacity as well as their capacity to express the subject in hand.
2. The students will be allowed to prepare the material for the given topic using the Library or Internet and they will be permitted to present seminar.
3. 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 presentation.
4. For Third year, the student should present the seminar individually.
5. For each theory subject minimum of one seminar presentation is mandatory and carries 5 marks.
6. The respective subject faculty may suggest topics to the students and will evaluate the submitted material and the seminar presentation  
(2 ½ marks for the material submitted in writing and 2 ½ marks for the seminar presentation)

## First and Second Year:

Seminar	Member	Topic	Marks	
			Witten Material	Seminar
Seminar – 1	5 to 6	Subject	2.5	2.5

## Third Year:

Seminar	Member	Topic	Marks	
			Witten Material	Seminar
Seminar – 1	Individual	Subject	2.5	2.5

### Instructions:

- All the 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 Autonomous Results and produced to the flying squad and the inspection team at the time of inspection / verification.

## II. External Assessment (End Examination) :

### I Year Students : (Question pattern)

S.#	Type	Question Number	Description	Marks Allotted	Total Marks
1	Part – A	1 to 20	15 Questions are to be answered out of 20 questions. (From each unit, a maximum of four questions must be asked)	Each Question carries 2 Mark	15 x 2 = 30 Marks
2	Part – B	21 to 25	1. <b>Descriptive type answer questions:</b> Each question in PART – B will have 3 Sub divisions. Out of these 3 Sub questions, 2 questions are to be answered for 7 marks	Each Question carries 14 Marks	05 x 14 = 70 Marks

			<p>each.</p> <p>2. Out of the 3 Sub questions in PART – B, one sub question can be on problems pertaining to the following:</p> <p>Analytical ability/ logical ability /diagnostic ability/ conceptual ability relevant to the syllabus of the subject concerned.</p> <p>(Note: If the subject doesn't have problems, no need to include questions related to problems)</p> <p>3. Equal weightage is to be given to the whole syllabus.</p>		
				Total =	100

- Clark's table will not be permitted for the Board Examinations.
- Examinations will be conducted for 100 marks and will be reduced to 75 marks.

### **II & III Year Students: (Question pattern)**

S. No.	Type	Question Number	Description	Marks Allotted	Total Marks
1	Part – A	1 to 20	15 Questions are to be answered out of 20 questions (From each unit, a maximum of four questions must be asked)	Each Question carries 2 Mark	15 x 2 = 30 Marks

2	Part - B	21 to 25	<ol style="list-style-type: none"> <li>1. All the Five Questions should be of either or pattern. Students have to answer all these five questions. Each question carries 14 marks.</li> <li>2. Based on the discretion of the question paper setter, two seven mark questions (with sub divisions "a" &amp; "b") or one 14 marks question can be asked). One 7-mark sub question can be based on problem to test the analytical ability/ logical ability /diagnostic ability/ conceptual ability relevant to the subject.</li> <li>3. (Note: If the subject doesn't have problems, no need to include questions related to problems).</li> <li>4. Equal weightage is to be given to the whole syllabus.</li> </ol>	Each Question carries 14 Marks	05 x 14 = 70 Marks
				Total =	100

- Examinations will be conducted for 100 marks and will be reduced to 75 marks

## B. Practical Subjects: (I, II and III Year Students)

### I. Internal Assessment:

The internal Assessment marks (25 marks) for practical subjects are to be calculated as follows:

a).	Observation and Practical related works	10 Marks
b).	Worksheets	5 Marks
c).	Seminar Presentation	10 Marks
Total =		25 Marks

- The observation containing record of every completed exercise should be submitted by students before the subsequent practical class and marks will be awarded for each exercise subject to a maximum of **10 marks**.
- A Worksheet related to each exercise has to be answered and submitted by each student before the subsequent practical class and will be evaluated for **5 marks**.
- For each practical subject minimum of two seminars are to be given and the average marks scored should be reduced to **10 marks**.
- Presentation is mandatory for all and it is reviewed by the faculty concerned.

#### **First Year, Second Year & Third Year:**

Seminar	Member	Marks	
		Witten Material	Seminar
Seminar - 1	5 to 6	5	5
Seminar - 2	5 to 6	5	5

- At the end of each semester, the average marks of all the exercises for Observation, Worksheet and Seminar are to be calculated to arrive at the internal assessment mark for practical. (10 + 5 + 10 = 25 Marks)
- The students have to submit the Observation Note Book / File for End Examination.
- All the marks awarded for Observation, Worksheet and Seminar should be entered in the Personal Log Book of the staff concerned.

## **II. External Examination: (End Examination)**

The End Examination will be conducted by both Internal Examiner and External Examiner for a duration of 3 hours for 100 Marks and reduced to 75 marks

### III. Project Work:

The students of Diploma Course have to do a Project Work as part of the curriculum and in partial fulfilment for the award of Diploma. The Project work must be reviewed twice in the same semester.

#### a). Internal Assessment Mark for Project Work & Viva Voce: (25 Marks)

Project Review - I	10 Marks
Project Review - II	15 Marks
Total =	25 Marks

#### b). Allocation of Marks for Project Work & Internship in End Examinations

Viva Voce	30 Marks
Demonstration / Presentation	25 Marks
Project Report	25 Marks
Internship Report	20 Marks
Total =	100 Marks

- Examination will be conducted for 100 marks and will be reduced to 75 marks

#### c). Internship Report: (20 Marks)

- The internship training for a period minimum of two weeks shall be undergone by every candidate at the end of III / 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 / Government skill centres / Institutions / Schemes.

#### **d). Report (Project & Internship)**

A neatly prepared Project Report as per the format has to be submitted by individual student during the Project work & Internship Autonomous End Examination.

#### **10. Physical Education:**

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. Scheme of Examinations:**

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

#### **12. 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 our institution 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 Autonomous Examinations marks put together, subject to the condition that he/she secures at least a minimum of 40 marks out of 100 marks (30 marks out of 75 marks) in the Autonomous End Theory Examinations and a minimum of 50 marks out of 100 marks (38 marks out of 75 marks) in the Autonomous End Practical Examinations.

#### **13. Classification of candidates:**

##### **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 of 3 years (Full 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 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 of 3 years (Full Time) without any break in study.

**First Class:**

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

**Second Class:**

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

**14. 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). The total duration per Semester will be 16 weeks.

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**P.A.C. RAMASAMY RAJA POLYTECHNIC COLLEGE, RAJAPALAYAM**

[Government Aided Autonomous Institution]

**ANNEXURE – I**

**DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS**

**(Implemented for Students admitted from Academic Year 2021 – 2022 onwards)**

**N2 Scheme**

**CURRICULUM OUT LINE**

**THIRD SEMESTER:**

Col. No.	Subject Code	Subjects	Hours Per Week		
			Theory	Practical	Total
1	46031	Fibre Science and Technology	5		5
2	46032	Yarn Manufacture – I	5		5
3	46033	Fabric Manufacture – I	5		5
4	46034	Fibre Identification - Practical		5	5
5	46035	Yarn Manufacture - I Practical		4	4
6	46036	Fabric Manufacture - I Practical		4	4
7	46037	Quality Analysis in spinning and weaving preparatory – Practical		4	4
			<b>15</b>	<b>17</b>	<b>32</b>
Extra Co-Curricular Activities	Library / Seminar				1
	Physical Education				2
			<b>Total</b>		<b>35</b>

**FOURTH SEMESTER:**

Col. No.	Subject Code	Subjects	Hours Per Week		
			Theory	Practical	Total
1.	46041	Basic Engineering	5		5
2.	46042	Yarn Manufacture – II	5		5
3.	46043	Fabric Manufacture – II	5		5
4.	46044	Textile Wet Processing	5		5
5.	46045	Yarn Manufacture – II Practical		4	4
6.	46046	Fabric Manufacture – II Practical		4	4

7.	46047	Textile Wet Processing Practical		4	4
			<b>20</b>	<b>12</b>	<b>32</b>
Extra Co-Curricular Activities	Library / Seminar				1
	Physical Education				2
<b>Total</b>					<b>35</b>

**FIFTH SEMESTER:**

Col. No.	Subject Code	Subjects	Hours Per Week		
			Theory	Practical	Total
1.	46051	Textile Testing	5		5
2.	46052	Fabric Structure	5		5
3.	<b>Elective Theory - I</b>		5		5
	46071	Advanced Textile Manufacture			
	46072	Technical Textiles			
4.	46054	Textile Testing Practical		4	4
5.	46055	Fabric Structure Practical		4	4
6.	46056	Communication Skills Practical		4	4
7.	46057	Entrepreneurship and Startups		5	5
			<b>15</b>	<b>17</b>	<b>32</b>
Extra Co-Curricular Activities	Library / Seminar				1
	Physical Education				2
<b>Total</b>					<b>35</b>

**SIXTH SEMESTER:**

Col. No.	Subject Code	Subjects	Hours Per Week		
			Theory	Practical	Total
1.	46061	Textile Management	5		5
2.	46062	Garment Manufacture	5		5
3.	<b>Elective Theory - II</b>				
	46081	Maintenance of Textile Machinery	5		5
	46082	Process control in Spinning			
4.	46064	Garment Manufacture and garment CAD practical		6	6
5.	46065	Advanced fabric design analysis practical		6	6
6.	46066	Project Work & Internship		5	5
			<b>15</b>	<b>17</b>	<b>32</b>
Extra Co-Curricular Activities	Library / Seminar				1
	Physical Education				2
<b>Total</b>					<b>35</b>

**P.A.C. RAMASAMY RAJA POLYTECHNIC COLLEGE, RAJAPALAYAM**  
[Government Aided Autonomous Institution]

**ANNEXURE – II**

**DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS**  
**(Implemented for Students admitted from Academic Year 2021 – 2022 onwards)**

**N2 Scheme**

**SCHEME OF EXAMINATIONS**

**THIRD SEMESTER:**

Col. No.	Subject Code	Subjects	Examination Marks		Total Marks	Minimum Pass Marks	Duration of Exam (Hrs)
			Internal	External (converted to 75)			
1.	46031	Fibre Science and Technology	25	100	100	40	3
2.	46032	Yarn Manufacture – I	25	100	100	40	3
3.	46033	Fabric Manufacture – I	25	100	100	40	3
4.	46034	Fibre Identification - Practical	25	100	100	50	3
5.	46035	Yarn Manufacture - I Practical	25	100	100	50	3
6.	46036	Fabric Manufacture - I Practical	25	100	100	50	3
7.	46037	Quality Analysis in spinning and weaving preparatory – Practical	25	100	100	50	3

**FOURTH SEMESTER :**

Col. No.	Subject Code	Subjects	Examination Marks		Total Marks	Minimum Pass Marks	Duration of Exam (Hrs)
			Internal	External (converted to 75)			
1.	46041	Basic Engineering	25	100	100	40	3
2.	46042	Yarn Manufacture – II	25	100	100	40	3
3.	46043	Fabric Manufacture – II	25	100	100	40	3

4.	46044	Textile Wet Processing	25	100	100	40	3
5.	46045	Yarn Manufacture - II Practical	25	100	100	50	3
6.	46046	Fabric Manufacture - II Practical	25	100	100	50	3
7.	46047	Textile Wet Processing Practical	25	100	100	50	3

#### FIFTH SEMESTER:

Col. No.	Subject Code	Subjects	Examination Marks		Total Marks	Minimum Pass Marks	Duration of Exam (Hrs)
			Internal	External (converted to 75)			
1.	46051	Textile Testing	25	100	100	40	3
2.	46052	Fabric Structure	25	100	100	40	3
3.	<b>Elective Theory - I</b>		25	100	100	40	3
	46071	Advanced Textile Manufacture					
	46072	Technical Textiles					
4.	46054	Textile Testing Practical	25	100	100	50	3
5.	46055	Fabric Structure Practical	25	100	100	50	3
6.	46056	Communication Skills Practical	25	100	100	50	3
7.	46057	Entrepreneurship and Startups	25	100	100	50	3

## SIXTH SEMESTER

Col. No.	Subject Code	Subjects	Examination Marks		Total Marks	Minimum Pass Marks	Duration of Exam (Hrs)
			Internal	External (converted to 75)			
1.	46061	Textile Management	25	100	100	40	3
2.	46062	Garment Manufacture	25	100	100	40	3
3.	<b>Elective Theory - II</b>		25	100	100	40	3
	46081	Maintenance of Textile Machinery					
	46082	Process control in Spinning					
4.	46064	Garment Manufacture and garment CAD practical	25	100	100	50	3
5.	46065	Advanced fabric design analysis practical	25	100	100	50	3
6.	46066	Project Work & Internship	25	100	100	50	3

# P.A.C. RAMASAMY RAJA POLYTECHNIC COLLEGE, RAJAPALAYAM

[Government Aided Autonomous Institution]

## DIPLOMA IN **TEXTILE TECHNOLOGY** SYLLABUS

(Implemented for Students admitted from Academic Year 2021 – 2022 onwards)

### List of Equivalent Subjects for N1-Scheme in N2-Scheme

#### THIRD SEMESTER:

N 1 – Scheme		N2 – Scheme	
Subject	Subject	Subject Code	Subject
36031	Fibre Science and Technology	46031	Fibre Science and Technology
36032	Yarn Manufacture - I	46032	Yarn Manufacture - I
36033	Fabric Manufacture - I	46033	Fabric Manufacture - I
36034	Fibre Identification - Practical	46034	Fibre Identification - Practical
36035	Yarn Manufacture - I Practical	46035	Yarn Manufacture - I Practical
36036	Fabric Manufacture - I Practical	46036	Fabric Manufacture - I Practical
36037	Fibre Testing and Basic Cloth Analysis practical	46037	Quality Analysis in spinning and weaving preparatory – Practical

#### FOURTH SEMESTER:

N 1 – Scheme		N2 – Scheme	
Subject	Subject	Subject	Subject
36041	Basic Engineering	46041	Basic Engineering
36042	Yarn Manufacture – II	46042	Yarn Manufacture – II
36043	Fabric Manufacture – II	46043	Fabric Manufacture – II
36044	Textile Wet Processing	46044	Textile Wet Processing
36045	Yarn Manufacture – II Practical	46045	Yarn Manufacture – II Practical
36046	Fabric Manufacture – II Practical	46046	Fabric Manufacture – II Practical
36047	Textile Wet Processing Practical	46047	Textile Wet Processing Practical

**FIFTH SEMESTER:**

N 1 – Scheme		N2 – Scheme	
Subject	Subject	Subject	Subject
36051	Textile Testing	46051	Textile Testing
36052	Yarn Manufacture III	-----	
36053	Textile Design	46052	Fabric Structure
Elective Theory - I		Elective Theory - I	
36071	Advanced Textile Manufacture	46071	Advanced Textile Manufacture
36072	Technical Textiles	46072	Technical Textiles
36055	Yarn Manufacture III Practical	-----	
36056	Textile Testing Practical	46054	Textile Testing Practical
36057	Communication and Life skill practical	46057	Communication skills practical

**SIXTH SEMESTER:**

N 1 – Scheme		N2 – Scheme	
Subject Code	Subject	Subject Code	Subject
36061	Textile Management	46061	Textile Management
36062	Garment Manufacture	46062	Garment Manufacture
Elective Theory - II		Elective Theory - II	
36081	Maintenance of Textile Machinery	46081	Maintenance of Textile Machinery
36082	Process control in Spinning and Weaving	46082	Process control in Spinning
36064	Garment Manufacture and CAD practical	46064	Garment Manufacture and Garment CAD practical
36065	Textile CAD practical	-----	
36066	Textile Design practical	46065	Advanced fabric design analysis practical
36067	Project Work	46066	Project Work

# **III SEMESTER**

**DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS**  
**N2 -SCHEME**  
 (Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 46031

Semester : III

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 Examinations	Total	
FIBRE SCIENCE AND TECHNOLOGY	5 Hrs	80 Hrs	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**

UNIT	Topic	Hrs.
I	INTRODUCTION	15
II	VEGETABLE FIBRES	15
III	ANIMAL FIBRES	15
IV	REGENERATED FIBRES	14
V	SYNTHETIC FIBRES	14
Test & Model Exam		7
<b>Total</b>		<b>80</b>

**Course Objectives:**

1. To teach about the various classifications of fibres based on origin and chemical nature.
2. To teach about various identification methods of Textile fibres.
3. To describe the extraction of natural fibres and production of synthetic fibres, its properties and end uses.
4. To teach about different methods of spinning manmade fibres.

**Course Outcome:**

By the end of this course, students will be able to

1. Describe the tests to identify the different textile fibres.
2. Describe the physical, chemical characteristics and application of vegetable fibres.
3. Describe the physical, chemical characteristics and uses of animal and mineral fibres.
4. Explain the process flow chart for producing regenerated fibres, properties and their end uses.
5. Explain the process flow chart for producing synthetic fibres, properties and end uses.

**FIBRE SCIENCE AND TECHNOLOGY**

**DETAILED SYLLABUS**

<b>Unit</b>	<b>Name of the Topics</b>	<b>Hours</b>
I	<b>INTRODUCTION</b> 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-made fibres – melt, dry and wet spinning techniques. Essential and desirable properties of textile fibre	15

II	<p><b>VEGETABLE FIBRES</b></p> <p>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</p> <p>Linen: Linen producing countries - Physical and chemical properties - Uses.</p> <p>Jute: Jute producing countries and states in India – Fibre extraction process - Retting process - Physical and chemical properties – Uses.</p> <p>End uses of Bamboo, soya, sisal, Banana and Pineapple fibres.</p>	15
III	<p><b>ANIMAL FIBRES</b></p> <p>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</p> <p>Silk: Silk producing countries - Types of silk (Mulberry, Eri, Muga) Sericulture-life cycle of silk worm - Reeling, throwing and doubling - Degumming of silk</p> <p>- Weighting of silk - Physical and chemical properties – Uses.</p>	15

IV	<p><b>REGENERATED FIBRES</b></p> <p>Drawing and its importance.Viscose Rayon:</p> <p>Viscose Rayon manufacturers in India - Raw material – manufacturingProcess with flow chart - Properties - uses.</p> <p>Polynosic Rayon:</p> <p>Comparison of chief characteristics of viscose with polynosic rayons.Process sequence in the manufacture of Polynosic rayons</p> <p>Properties and Uses - High Wet Modulus rayon, HT Rayon, Tencel Rayon,</p> <p>Lyocell, Modal, polynosic</p>	14
V	<p><b>SYNTHETIC FIBRES</b></p> <p>Nylon and Polyester manufacturers in India.</p> <p>Nylon – 6,6: Raw material – manufacturing Process with flow chart -properties - uses.</p> <p>Nylon – 6: Raw material – manufacturing Process with flow chart - properties - uses</p> <p>Polyester: Raw material – manufacturing Process using PTA route withflow chart - properties - uses.</p> <p>Acrylic Fibre: Raw material - manufacturing Process with flow chart -properties - uses.</p> <p>Applications of the following fibres: Glass, Asbestos, Casein, Carbon,Nomex, Kevlar &amp; Polyurethane.</p> <p>Fully-drawn yarn (FDY) and Partially Oriented Yarn (POY)</p>	14

**TEXT BOOKS :**

<b>S.No</b>	<b>TITLE</b>	<b>AUTHOR</b>	<b>PUBLISHERS</b>
1	Textile fibres	V.A. Shenai	Technology of Textile Processing. Sevak publications, Bombay
2	Textile fibres Vol I, Vol II	J. Gordon cook	Wood head Publishing Ltd. Cambridge England
3	Manmade fibres	P.W. Moncrieff	Newness - Butterworts,London

**REFERENCE BOOKS :**

<b>S.No</b>	<b>TITLE</b>	<b>AUTHOR</b>	<b>PUBLISHERS</b>
1	Textile Science	E.P.C. Gohle and L.D. Vilensty	CBS Publishersand Distributors Delhi, India
2	Fibre Science and Technology	S.P. Mishra	New age International (p) Ltd Daryaganj, New Delhi- 110002
3	Dyeing and chemical Technology of TextileFibres	ER. Trotman	British high commissionMadras - 2

**Subject Code : 46031**

**Semester : III**

**Subject Title : FIBRE SCIENCE AND TECHNOLOGY**

Time: 3 Hrs

**MODEL QUESTION PAPER**

Max Marks:100

**PART - A:** Answer 15 Questions. All Questions carry equal marks. ( 15 x 2 = 30)

1. Define Fibre.

Define Monomer.

3. What is Polymerization?

4. What is Spun yarn?

5. Mention two Indian hybrid cottons.

6. Mention two Countries Producing Linen.

7. Mention two states producing cotton in India.

8. Write two uses of Bamboo fibre.

9. What is Clean Wool?

10. What is Degummed Silk?

11. Write two uses of Wool fibre.

12. What is Sericulture?

13. What is Drawing?

14. What is Viscose Rayon?

15. What is HT Rayon?

16. Write two uses of Modal fibre.

17. Mention raw materials required for manufacturing Nylon 66.

18. What is Fully drawn yarn?

19. Write two uses of Glass fibre.

20. Write two uses of Kevlar fibre.

<b>PART - B: Answer ALL Questions by choosing either A ( or) B ( 5 X 14 = 70 )</b>			
<b>21.A</b>	(i)	Classify Textile fibres based on chemical nature.	(7)
	ii)	State Essential properties required for an ideal textile fibre	(7)
		(OR)	
<b>B</b>	(i)	State Solubility Characteristics of Textile fibres.	(7)
	ii)	Define and Explain Melt Spinning method.	(7)
<b>22.A</b>	(i)	Explain Physical structure of Cotton fibre.	(7)
	ii)	Explain Chemical structure of Cotton fibre.	(7)
		(OR)	
<b>B</b>	(i)	Write down any 7 Physical & Chemical properties of Flax fibre.	(7)
	ii)	Write down any 7 Physical & Chemical properties of Jute fibre	(7)
<b>23.A</b>	(i)	Explain Production of Clean wool in sequence.	(7)
	ii)	Classify Wool based on Fleece.	(7)
		(OR)	
<b>B.</b>	(i)	Explain Life cycle of Silk Worm.	(7)
	ii)	Write down any 7 Physical & Chemical properties of Silk fibre.	(7)
<b>24.A</b>	(i)	Present Flow chart and Sequence of diagrams involved in the Manufacture of Viscose Rayon fibre.	(7)
	ii)	State each Process involved in the Manufacture of Viscose.	(7)
		(OR)	
<b>B</b>	(i)	Write down any 7 Physical & Chemical properties of HWM Rayon.	(7)
	ii)	Write down any 7 Physical & Chemical properties of HT Rayon.	(7)
<b>25.A</b>	(i)	Explain the Manufacture of Nylon 6.	(7)
	ii)	Write down any 7 Physical & Chemical properties of Nylon 6.	(7)
		(OR)	
	(i)	Write down any 7 Physical & Chemical properties of Polyester.	(7)
	ii)	Explain the Manufacture of Acrylic fibre	(7)

**DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS**  
**N2 – SCHEME**  
**[ Implemented from the Academic year 2021 – 22 onwards ]**

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 46032

Semester : III

Subject Title : YARN MANUFACTURE - I

**TEACHING AND SCHEME OF EXAMINATION**

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
			Internal Assessment	Board Examinations	Total	
YARN MANUFACTURE – I	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**

UNIT	Topic	Hrs.
I	GINNING AND BLOWROOM	15
II	MODERN DEVELOPMENTS IN BLOW ROOM	13
III	CARDING	15
IV	MODERN DEVELOPMENTS IN CARDING	15
V	DRAW FRAME	15
Test & Model Exam		7
<b>Total =</b>		<b>80</b>

**OBJECTIVES:**

1. To discuss the principles of operation, working of various machine parts, defects and causes in blow room, carding and draw frame machines.

**COURSE OUTCOME:**

By the end of this course the student will be able to:

1. Explain the principles of operation, working of various machine parts in ginning and blow room machines.
2. Explain the principles of operation, working of various machine parts and perform the production calculation in blow room and scutcher.
3. Explain the principles of operation, working of various machine parts and perform the production calculation in carding machines.
4. Explain the principles of operation, working of auxiliary machines in carding machines.
5. Explain the principles of operation, working of various machine parts and perform the production and draft calculation in draw frame.

## DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topics	Hours
I	<p style="text-align: center;"><b>UNIT – I GINNING AND BLOWROOM</b></p> <p><b>Ginning:</b> Objectives - types of gins and their suitability. Definition of lint, linters, ginning %. Blending - Objectives and their effects on yarn quality - Fibre properties to be considered for blending - Homogeneous Mixing – Definition and importance - Typical mixing for coarse, medium and fine counts - Comparison between mixing and blending - Mixing and blending equipment - Working of multi mixer, unimix , uniblend and Automatic bale plucker.</p> <p>Blow room: Objectives of blow room process - Principles of opening and cleaning - Description and working of Mixing bale opener (MBO), Varioclean/Uniclean, Mono cylinder, step cleaner, Flexi cleaner, Cleanomat - Study of scutcher - Krischner beater - Piano feed regulating motion, Automatic Lap forming and doffing device.</p>	15
II	<p style="text-align: center;"><b>UNIT II MODERN DEVELOPMENTS IN BLOW ROOM</b></p> <p>Salient features of modern blow room - Study of material transportation fan, condensers, distributors, filter room, Automatic Waste Evacuation Systems (AWES) and Automatic waste baling system, metal detectors, Fire detectors and diverters – Study of Contamination and machine used for contamination clearers</p> <p>- Blow room sequences employed using latest openers and beaters suitable for fine, medium and coarse cotton (flow chart only) - Defects in blow room laps, causes and remedial measures - Popular manufacturers of modern Blow room machines - Calculation pertaining to machine efficiency, production of scutcher, cleaning efficiency of individual machines and overall blow room and ginning percentage.</p>	13

III	<p style="text-align: center;"><b>UNIT III CARDING</b></p> <p>Objectives and principles of carding - carding and stripping actions - passage of material through HP card. Study of different parts of a carding machine and their functions. Heel and toe arrangement in flats. Card Settings recommended for cotton and manmade fibers. Study of SFL, SFD. Study and working procedure - grinding of card cylinder and doffer. Defects in card sliver, their causes and remedies. Hook formation in card sliver. Calculation pertaining to waste %, actual Draft, mechanical draft, production and cleaning efficiency.</p>	15
IV	<p style="text-align: center;"><b>UNIT – IV - MODERN DEVELOPMENTS IN CARDING</b></p> <p>Salient features of modern carding machine. Modern development in different regions – licker-in, flats, cylinder. Study of chute feed system, advantages and disadvantages. Brief study of metallic wire specifications for Cotton process in Licker-in, Cylinder and Doffer (PPSI, Angel of wire point, Height and width). Wire mounting procedures. Study of Web doffing device – India roll. Brief study of auto leveller - Open and closed loop systems - Dust extraction system in card - Automatic Waste Evacuation System (AWES). Types of can changers. Popular manufacturers of modern Carding machines, its speeds and production particulars</p>	15
V	<p style="text-align: center;"><b>UNIT – V DRAW FRAME</b></p> <p>Objectives of drawing - principles of doubling and drafting at draw frame - Study of fibre arrangements in the carded and draw frame slivers – study of Breaker and Finisher Drawing - Functions of different parts of draw frame - Passage of material through modern draw frame - Draft and its distribution - Roller weighting systems - spring and pneumatic weighting systems. Roller settings and its importance – Working of 3 over 3, 3 over 5 and 4 over 3 drafting systems with pressure bar- Salient features of modern drawframes - Study of principle of auto levellers in modern draw frames – Brief</p>	15

	study of sliver quality monitoring device, stop motions & can changing systems - Sliver defects in draw frame their causes and remedies - Popular manufacturers of modern Draw Frames. Calculation pertaining to Draft and production.	
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***TEXT BOOK:***

S.No.	Title of the book	Author	Publisher
1	Opening and cleaning	W.A.Hunter	The Textile Institute Manchester, U.K.

**REFERENCE BOOKS:**

S.No.	Title of the book	Author	Publisher
1	Cotton spinning	W.S.Taggart	Universal Book Corporation 546, JER MohalDhobi Talav, Bombay-400072
2	Short Staple Spinning Series Volume I, II & III	W.Klein	The Textile Institute Manchester, U.K.
3	Rieter Manual of spinning Volume 1, 2, 3	W. Klein	Rieter Machineworks Ltd, Wintherthur

**46032 - YARN MANUFACTURE – I**  
**Model question paper**  
**N2 – Scheme**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Part – A**

**Answer Fifteen questions. All questions carry equal marks. (15 × 2 = 30)**

1.	What are the objects of Ginning?
2.	State the typical mixing for medium count?
3.	What are the object of blow room?
4.	What are the function of piano feed regulating motions?
5.	What is the function of fan in material transportation?
6.	What are the function of Condenser?
7.	Write the purpose of fire detector and diverters?
8.	Write the formula for cleaning efficiency of beater?
9.	State the principles of carding
10.	What is the function of licker in ?
11.	What is heel and toe arrangement?
12.	State the different types of hooks formed in carding?
13.	What are the advantage of chute feed system?
14.	Write the metallic wire specification for cotton process in cylinder?
15.	Mention few modern developments in doffing device?
16.	What are the principle of - auto leveller?
17.	What are the objects of draw frame?
18.	Explain draft and its distribution?
19.	What is the necessity of roller weighting in draw frame?
20.	What are the advantage of stop motion in draw frame?

**Part – C**

**Answer ALL questions by choosing either A (or) B (5 × 14 = 70)**

21.A).	i).	Draw the construction of Unimix	(7)
	ii).	Explain the working of Unimix.	(7)
		<b>[OR]</b>	
B).	i).	Draw the material passage through scutcher.	(7)
	ii).	Explain the working of scutcher ?	(7)
22.A).	i).	Draw the construction of contamination cleaner in blow room.	(7)
	ii).	Explain the principle and working of contamination cleaners in blow room.	(7)

		<b>[OR]</b>	
B).	i).	State any 3 blow room lap defects and give their causes and remedies	(7)
	ii).	List out any eight salient features of modern blow room	(7)
23.A).	i).	Draw the passage of material through HP carding?	(7)
	ii).	explain the passage of material through HP carding?	(7)
		<b>[OR]</b>	
B).	i).	Calculate the production in kgs of 8 hours of a card room with the given details Hank of lap = 0.00138 Ne                      M.D = 90 Doffer speed = 16 rpm                          Doffer = 27" Total waste extracted = 4 %                      No. of cards = 10 Efficiency = 86 %                                  Tension Draft = 1.1	(14)
24.A).	i).	With an aid of sketch explain the modern development in cylinder region	(7)
	ii).	Write the metallic wire specifications for the cotton process in licker in and cylinder.	(7)
		<b>[OR]</b>	
B).	i).	Write short note on open and closed loop system of auto leveller in card	(7)
	ii).	Write short note on dust extraction system in card	(7)
25.A).	i).	Draw the passage of material through draw frame.	(7)
	ii).	Explain the passage of material through draw frame with figure.	(7)
		<b>[OR]</b>	
B).	i).	Explain about top roller weighting system in draw frame with neat sketch.	(7)
	ii).	Explain 3/3 drafting system with neat sketch and give their advantages	(7)
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# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2 -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46033  
Semester : III Semester  
Subject Title : FABRIC MANUFACTURE – I

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours /Week	Hours / Semester	Marks			
			Internal Assessment	Board Examinations	Total	
Fabric Manufacture – I	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

UNIT	TOPIC	HOURS
I	Warp and weft winding	15
II	Warping and sizing	15
III	Drawing-in, denting and calculations	15
IV	Loom – primary motions	14
V	Loom - secondary and auxiliary motions	14
Test & Model Exam		7
Total		80

### **Course Objectives:**

1. To teach about various process sequence of weaving preparatory, working of warp winding weft winding machine and its parts and functions
2. To teach about warping and sizing machine and its parts and functions. To understand about Sizing ingredients, their functions
3. To teach about drawing-in, denting process and count and production calculations
4. To teach about plain power loom – primary mechanisms – timings, settings, speed and production calculations
5. To know about plain power loom – secondary and auxiliary mechanisms – timings, settings and balancing of machines.

### **Course outcomes:**

By the end of this course students will be able to

1. Explain the sequence of process of weaving preparatory study of fully automatic winding machines and the working of weft winding
2. Explain the working of warping and sizing machine, sizing ingredients and size paste preparation
3. Calculate the production and efficiency of weaving preparatory machines and looms
4. Demonstrate the working of various mechanisms of plain loom
5. Explain the working of secondary and auxiliary motions of plain loom

## 46033 - FABRIC MANUFACTURE – I

### DETAILED SYLLABUS

UNIT	NAME OF THE TOPIC	HOURS
I	<p><b>WARP AND WEFT WINDING</b></p> <p>Warp Winding: Brief study of Sequence of Processes in Weaving Preparatory – Objectives of Warp Winding– Passage of material through Fully Automatic Cone Winding Machine and its salient features</p> <p>Study of Automatic tension – Electronic yarn clearer -Splicing – Types of Splicing – Salient features of spliced yarn –Clearing Efficiency - Package Faults – Causes and Remedies.</p> <p>Weft Winding: Objectives of Weft Winding – Advantages of Rewound Weft Over Direct Weft – Passage of material through High-Speed Automatic Pirn Winder and its salient features – Bunch and its necessity.</p>	15
II	<p><b>WARPING AND SIZING</b></p> <p>Warping: Objectives - Passage of material through High-Speed Beam Warping Machine – Types of Creels – Electrical Warp Stop Motion – Salient features of Modern Warping Machines, Beam Faults – Causes and Remedies.</p> <p>Sectional Warping: Need for Sectional Warping–Passage of material through a Computerized Sectional Warping machine.</p> <p>Sizing: Objectives – Different types of Sizing ingredients and their functions – Size Pick-up – Factors affecting Size Pick-up – Study of the modern Size box with a simple sketch– Moisture Control – Stretch Control – Temperature Control – Size Level Control – Yarn Migration and its effects– Environmental and Safety Aspects in Sizing – Passageof material through Multi Cylinder Sizing Machine - Beam defects – Causes and remedies.</p>	15

III	<p><b>DRAWING-IN, DENTING AND CALCULATIONS</b></p> <p>Drawing-in and Denting: Object of Drawing-in and Denting, Object of Leasing–Methods of Leasing – Droppers – Types and their Purpose – Objectives of Warp Knotting –Manual and Mechanical Warp Knotting methods – Loom Gaiting.</p> <p>Yarn Numbering Systems : Different Yarn Numbering Systems– Direct Systems (Tex, Denier) –Indirect Systems (English Cotton, Metric Cotton and French Cotton systems) – Calculation of Length, Weight and Countof Yarns based on the above Systems– Conversion of Count from one system to another (Limited to the systems mentioned above)– Plied Yarn Count Calculations.</p> <p>Preparatory Calculations: Production Calculations of Warp Winding, Weft Winding, Warping and Sizing machines.</p>	15
IV	<p><b>LOOM – PRIMARY MOTIONS</b></p> <p>Introduction to Weaving: Passage of Material through Power loom – Definition of Right hand, Left hand looms and Shuttles.</p> <p>Shedding: Objectives of Shedding – Working of Negative tappet shedding mechanism with a simple sketch –,E-Shedding mechanism with a simple sketch.</p> <p>Picking: Objectives of Picking – Types of Picking – Working of Cone Over Picking and Side lever Under Picking Mechanisms with simple sketches– Advantages and Disadvantages of Over and Under Picking Mechanisms.</p> <p>Beat-up: Object of Beat-up – Study of the parts of the Sley-Crank Arm beat up mechanism with a simple sketch– Eccentricity of Sley's Motion– Factors affecting Eccentricity of Sley.</p> <p>Shuttle box : Purpose of shuttle box – shuttle checking devices – reed alignment with shuttle box - rebounding of shuttle causes and remedies.</p>	14

V	<p><b>LOOM - SECONDARY AND AUXILIARY MOTIONS</b></p> <p>Take up motions: Objectives - Types - Working of Seven Wheel  Take up Motion with a line sketch --Working of Positive Continuous  Take up Motion with a simple sketch- Anti-Crack Motion.</p> <p>Let-off Motion: Objectives - Types - Working of Negative let-off  Motion - Control of Warp Tension - Oscillating back rest and its  functions.</p> <p>Other Mechanisms: Functions of Weft fork Motion, Warp  Protecting  Mechanism, Brake Motion, Fly Wheel, Lease Rods, Types of Heald  wires, Reed count, and Temples - Types and their uses.</p>	14
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#### REFERENCE BOOKS:

S.No	Title	Author	Publishers
1	Hand book of weaving	Dr Sabit Adhenur	Techonomic Publishing Company – INC, Lancaster, basel , UK
2	Modern Preparation and Weaving Machinery	A.Ormerod	Butterworths , London
3	Weaving machines, mechanisms and management	Talukdar , Sriramulu, Ajgonkar	Mahajan publishers (P)ltd Mumbai
4	Weaving Calculations	R.Sengupta	D.B.Taraporevala sons& co Ltd., Mumbai
5	Textile sizing	Bhuvanesh C.Goswami & Rajesh D Anand jiwala	Marshel dekker, INC New York

**FABRIC MANUFACTURE - I**  
**Model Question Paper**  
**N2 – Scheme**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Part – A**

**Answer Fifteen questions. All questions carry equal marks.**

**(15 × 2 = 30)**

1.	Name any two yarn faults are removed in warp winding ?
2.	What are the working principles of electronic yarn clearer?
3.	What is indirect weft?
4.	What is bunch?
5.	What are the two types of warping?
6.	What is the speed of high speed warping machine and super speed warping
7.	Name some of the secondary sizing ingredients?
8.	What is an adhesive? Give examples for adhesive.
9.	Name the three systems of yarn numbering.
10.	Define direct system of yarn numbering.
11.	Give examples for indirect yarn numbering system.
12.	Define English count.
13.	Define weaving & woven fabric.
14.	Write the classifications of looms.
15.	Define shedding and picking
16.	What is meant by sley eccentricity ratio ?
17.	What are the objects of let-off mechanism in a plain loom?
18.	What are the objects of take up mechanism?
19.	What are the functions of temple?
20.	What are the functions of lease rods?

**Part – C**

Answer **ALL** questions by choosing either **A (or) B**

**(5 × 14 = 70)**

21.A).	i).	Explain the passage of material through main zones of cone winding machine.	(7)
	ii).	Sketch and label neatly the passage of material through main zones of cone winding machine.	(7)
		<b>[OR]</b>	
B).	i).	What are special features of an automatic pirn winder?	(7)
	ii).	Draw the neat sketch about the yarn passage in Schweitzer automatic pirn winder.	(7)
22.A).	i).	Write the salient features of computerized sectional warping.	(7)
	ii).	Draw the passage of material through multi cylinder sizing machine and label the parts.	(7)
		<b>[OR]</b>	
B).	i).	Draw line sketch the head stock of high speed warping machine and Label the parts.	(7)
	ii).	Name the sizing ingredients used and state the functions of each of them.	(7)
23.A).	i).	Calculate the count in Tex system if the weight of 400 meters of yarn in 6 grams.	(7)
	ii).	Calculate the production of a winding machine which is running with the following particulars. Winding speed = 1500 ypm                      Count of yarn = 20s Efficiency = 85%                                      Shift duration = 8hrs	(7)
		<b>[OR]</b>	
B).	i).	If the count of a hank of nylon yarn is found to be 133 denier ( Metric system ), What will be its count in the cotton (English system )	(7)
	ii).	Calculate the actual production per shift of 8 hours of a loom running at 200ppm with 90% efficiency. The no of picks per inch inserted on the cloth is 60.	(7)
24.A).	i).	Draw neatly the passage of warp through a plain loom and label the parts.	(7)
	ii).	Explain the working of the cone over picking mechanism in a plain loom.	(7)
		<b>[OR]</b>	
B).	i).	Explain about different types of shed formations with neat line sketches.	(7)
	ii).	Draw a neat sketch of crank arm beat up mechanism in a plain loom.	(7)
25.A).	i).	Draw a neat sketch of let-off mechanism in a plain loom	(7)
	ii).	Compare the fast-reed and loose-reed motions.	(7)
		<b>[OR]</b>	
B).	i).	Explain the working of side weft fork mechanism in a plain loom	(7)
	ii).	Draw a neat sketch of 7 wheel take-up mechanism in a plain loom	(7)
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# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46034  
Semester : III Semester  
Subject Title : FIBRE IDENTIFICATION PRACTICAL

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

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

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

### RATIONALE

To enhance the practical knowledge to identify the natural and man-made fibres by microscopical appearance, solubility and burning tests, also to acquire knowledge to identify the blend proportion in yarn and fabric.

### OBJECTIVES:

1. To identify the natural fibre with longitudinal views
2. To identify the Man-made fibre by examining the longitudinal views
3. To determine the mean twist of continuous multifilament yarn.
4. To identify the natural fibre using solvent.
5. To identify the man-made using solvent.
6. To identify the natural fibres by the burning tests.
7. To identify the man-made fibre by the burning tests

8. To determine the blend proportions in a spun yarn using solvents. (P/C, P/V).
9. To determine the blend proportions of the given fabric (P/C, P/V).
10. To determine the mean linear density of monofilament yarns.
11. To determine the mean linear density of multifilament yarns.
12. To determine the mean linear density of texturised yarns.

**GUIDELINES:**

1. All experiments given in the list of experiments should be completed and given for the end semester practical examination.
2. 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 equipment set up for doing experiments in the laboratory.
3. The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

**DETAILED ALLOCATION OF MARKS**

**Single Experiment is to be given per student**

<b>PARTICULARS</b>	<b>MARKS</b>
Experiment	60 marks
Write up / diagram / calculations	30 marks
Viva	10 marks
Total	100 Marks

<b>LIST OF EXPERIMENTS</b>	
1.	Examination of the longitudinal views of the given natural fibres (cotton, silk, wool and jute) by means of a microscope.
2.	Examination of the longitudinal views of the given synthetic fibres (viscose rayon, nylon, polyester and acrylic) by means of a microscope.
3.	Determination of the mean twist in the given continuous multifilament yarn and its CV %
4.	Examination of the solubility of the given natural fibres (cotton, silk, wool and jute) with suitable solvents.
5.	Examination of the solubility of the given synthetic fibres (viscose rayon, nylon, polyester and acrylic) with suitable solvents.
6.	Identification of the given natural fibres (cotton, silk, wool and jute) by burning tests.
7.	Identification of the given synthetic fibres (Viscose rayon, Polyester, Nylon and Acrylic) by burning tests.
8.	Determination of the blend proportions of the given spun yarns (P/C, P/V).
9.	Determination of the blend proportions of the given fabric (P/C, P/V).
10.	Determination of the linear density of the given monofilament synthetic yarns.
11.	Determination of the linear density of the given multifilament synthetic yarns.
12.	Determination of the linear density of the given texturised yarns.

<b>List of equipment required for a batch of 30 students.</b>	
1.	Dye bath - 2
2.	Glass plate - 4
3.	Microscope - 1
4.	Bunsen burner - 2
5.	Wrap reel - 1
6.	Single Yarn twist tester - 1
7.	Conical flask - 10
8.	Test tube - 10
9.	Different types of fibres and blended fabrics.

<b>MODEL QUESTION PAPER</b>	
1.	Examine the longitudinal views of the given natural fibres (cotton, silk, wool and jute) by means of a microscope.
2.	Examine the longitudinal views of the given synthetic fibres (viscose rayon, nylon, polyester and acrylic) by means of a microscope.
3.	Determine the mean twist in the given continuous multifilament yarn and its CV %
4.	Examine the solubility of the given natural fibres (cotton, silk, wool and jute) with suitable solvents.
5.	Examine the solubility of the given synthetic fibres (viscose rayon, nylon, polyester and acrylic) with suitable solvents.
6.	Identify the given natural fibres (cotton, silk, wool and jute) by burning tests and solubility tests.
7.	Identify the given synthetic fibres (Viscose rayon, Polyester, Nylon and Acrylic) by burning tests and solubility tests.
8.	Determine the blend proportions of the given spun yarns (P/C, P/V).
9.	Determine the blend proportions of the given fabric (P/C, P/V).
10.	Determine the linear density of the given monofilament synthetic yarns.
11.	Determine the linear density of the given multifilament synthetic yarns.
12.	Determine the linear density of the given texturised yarns.

# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2 -SCHEME

(Implemented from the Academic year 2021-2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46035  
Semester : III Semester  
Subject Title : YARN MANUFACTURE – I PRACTICAL

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
YARN MANUFACTURE – I PRACTICAL	4Hrs	64Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	100*	100	

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

#### **RATIONALE**

In Diploma level engineering education, skill development plays a vital role. The skill development can be achieved by on hand experience in various instruments, apparatus and equipment. This is accomplished by doing engineering related experiments in practical classes in various laboratories.

#### **OBJECTIVES**

#### **BLOW ROOM**

1. To practice the settings of the blow room machinery such as, Mixing bale opener, Mono cylinder, Flexi cleaner and Scutcher.
2. To draw the gearing plan and calculate the speed of various parts of the blow room machinery such as, Mixing bale opener, Mono cylinder, Flexi cleaner and Scutcher.
3. To calculate the production and efficiency of the blow room line.

## **CARDING**

4. To practice the settings of carding machine for processing long, medium and short staple cotton.
5. To draw the gearing plan and calculate the speed of various parts of the carding machine.
6. To calculate the Drafts between the various carding elements of the carding machine and to calculate the Draft constant of the machine.
7. To calculate the production and efficiency of the carding machine.

## **DRAW FRAME**

8. To practice the settings of Draw frame for processing long, medium and short staple cottons.
9. To draw the gearing plan and calculate the speed of various parts of the Draw frame.
10. To calculate the Drafts between the various drafting rollers of the Draw frame and to calculate the Draft constant of the machine.
11. To calculate the production and efficiency of the Draw frame.

## **GUIDELINES:**

1. All the experiments given in the list of experiments should be completed and given for the end semester practical examination.
2. 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 equipment set up for doing experiments in the laboratory.
3. The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

## DETAILED ALLOCATION OF MARKS

Single Experiment is to be given per student

PARTICULARS	MARKS
Experiment	50 marks
Write up / diagram / calculations	40 marks
Viva - Voce	10 marks
Total	100 Marks

### LIST OF EXPERIMENTS

1.	Calculate the speeds and surface speeds of various parts in Mixing bale opener
2.	Draw the gearing diagram and calculate the speeds and surface speeds of various parts in Hopper Feeder.
3.	Calculate the speed of beater in mono cylinder and also set the grid bar to the following settings. Write the procedure for setting the grid bars. a. Gap between grid bar : Narrow / Medium / Wide b. Angle of grid bard : _____ Deg.
4.	Calculate the speeds and surface speeds of various parts in Flexi clean opener
5.	Calculate the speeds of various parts in <b>T&amp;S Scutcher - Front Zone and Back zone</b> based on given gearing diagram
6.	Dismantle and assemble the piano feed regulating mechanism in Scutcher and write down the procedure. Also calculate the Tension draft between lap roller and bottom calendar roller in Scutcher.
7.	Calculate the following in Scutcher ➤ Beats / minute ➤ Beats / inch ➤ Beating point calculation in Blow line ( For MBO – Monocylinder –

	<p>Flexiclean Line)</p> <p>➤ Actual production in kgs/shift at ___% Efficiency , hank delivered as _____<sup>s</sup></p>
8.	Draw the gearing diagram and calculate the speeds and surface speeds of various parts in <b>MMC Card</b>
9.	Calculate the speeds, surface speeds and Draft distribution of High production card <b>LC 300A</b> based on given gearing diagram
10.	Calculate the production of card LC300A based on given gearing diagram
11.	<p>i. Draw the gearing diagram for flats speed and calculate the flats speed constant in MMC Card.</p> <p>ii. Set the various parts in the Back zone, middle zone and front zone of MMC card</p>
12.	Draw the gearing diagram and calculate the speeds and surface speeds of various parts in <b>TEXTTOOL TD 302</b> draw frame.
13.	<p>Calculate the following in <b>TEXTTOOL TD 302</b> draw frame.</p> <p>a) Draft constant      b) Total draft using Draft constant</p> <p>c) Calendar roller speed   d) Production constant</p> <p>e) Actual production using production constant</p> <p>Hank of sliver .....      Efficiency .....</p>
14.	<p>Calculate the following in <b>TEXTTOOL TD 302</b> draw frame.</p> <p>a) Draft constant      b) Total draft using Draft constant</p> <p>c) Bottom roller specifications: Dia, working width, type of flutes, no. of flutes</p> <p>d) Impression of bottom drafting rollers</p> <p>e) Top arm specifications      f) Nipping diagram of drafting rollers</p>

### **List of equipment required for a batch of 30 students**

#### **Blow room, Carding and Draw frame**

Material :- Blow room laps, cans of carding sliver

#### **Blow room line with the following equipments:**

Mixing bale opener – 1

Flexi Cleaner - 1

Mono cylinder - 1

Scutcher – 1

#### **Carding:**

Carding machine – 1

#### **Drawing:**

Draw frame machine - 1

### **SPECIFIC INSTRUCTIONS TO CARRY OUT IN THE PRACTICAL CLASS WORKAS WELL AS THE BOARD PRACTICAL EXAMINATIONS**

The students are instructed

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

### MODEL QUESTION PAPER

1.	Calculate the speeds and surface speeds of various parts in Mixing bale opener.
2.	Draw the gearing diagram and calculate the speeds and surface speeds of various parts in Hopper Feeder.
3.	<p>Calculate the speed of beater in mono cylinder and also set the grid bar to the following settings. Write the procedure for setting the grid bars.</p> <p style="margin-left: 40px;">a. Gap between grid bar : Narrow / Medium / Wide</p> <p style="margin-left: 40px;">b. Angle of grid bard : _____ Deg.</p>
4.	Calculate the speeds and surface speeds of various parts in Flexi clean opener.
5.	Calculate the speeds of various parts in <b>T&amp;S Scutcher - Front Zone and Back zone</b> based on given gearing diagram.
6.	<p>Dismantle and assemble the piano feed regulating mechanism in Scutcher and write down the procedure.</p> <p>Also calculate the Tension draft between lap roller and bottom calendar roller in Scutcher.</p>
7.	<p>Calculate the following in Scutcher</p> <ul style="list-style-type: none"> <li>➤ Beats / minute</li> <li>➤ Beats / inch</li> <li>➤ Beating point calculation in Blow line ( For MBO – Monocylinder – Flexiclean Line)</li> <li>➤ Actual production in kgs/shift at ___% Efficiency , hank delivered as _____<sup>s</sup></li> </ul>
8.	Draw the gearing diagram and calculate the speeds and surface speeds of various parts in <b>MMC Card</b> .
9.	Calculate the speeds, surface speeds and Draft distribution of High production <b>card LC 300A</b> based on given gearing diagram.

10.	Calculate the production of card LC300A based on given gearing diagram
11.	<p>i. Draw the gearing diagram for flats speed and calculate the flats speed constant in MMC Card.</p> <p>ii. Set the various parts in the Back zone, middle zone and front zone of MMC card</p>
12.	Draw the gearing diagram and calculate the speeds and surface speeds of various parts in TEXTTOOL TD 302 draw frame.
13.	<p>Calculate the following in TEXTTOOL TD 302 draw frame.</p> <p>a) Draft constant      b) Total draft using Draft constant</p> <p>c) Calendar roller speed   d) Production constant</p> <p>e) Actual production using production constant</p> <p>Hank of sliver .....      Efficiency .....</p>
14.	<p>Calculate the following in TEXTTOOL TD 302 draw frame.</p> <p>a) Draft constant      b) Total draft using Draft constant</p> <p>c) Bottom roller specifications: Dia, working width, type of flutes, no. of flutes</p> <p>d) Impression of bottom drafting rollers</p> <p>e) Top arm specifications      f) Nipping diagram of drafting rollers</p>

# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46036  
Semester : III Semester  
Subject Title : FABRIC MANUFACTURE - I PRACTICAL

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instruction		Examination			Duration
			Marks			
	Hours/ Week	Hours/ Semester	Internal Marks	Board Exam	Total	
Fabric Manufacture - I Practical	4	64	25	100*	100	3 Hrs

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

### RATIONALE:

To enhance the practical knowledge in plain loom construction, gearing plan and speed. To understand the various parts in plain power loom. The timing and settings also given for better understanding of each mechanism. These fundamentals help the students to understand the automatic and shuttle less weaving machine mechanisms.

## **OBJECTIVES:**

### **Shedding**

1. To study the various parts of the Tappet shedding mechanism with timing and settings.

### **Picking**

2. To study the various parts of the Cone over pick mechanism with timing and settings.
3. To study the various parts of the Under-pick mechanism with timing and settings.

### **Take-up**

4. To study the various parts of the 7 wheel take-up motion with timing and settings.

### **Let-off**

5. To study the various parts of the negative let-off mechanism with back rest settings.

### **Auxiliary Motions**

6. To study the various parts of the loose reed / fast reed mechanism with timing and settings.
7. To study the various parts of the weft fork mechanism with timing and settings.

### **Shuttle box**

8. To study the various parts of the shuttle box of an over pick loom with reed alignment for the given shuttle.

<b>LIST OF EXPERIMENTS</b>	
1.	Sketching the gearing plan of a plain power loom and calculate the speed of the loom.
2.	Sketching the construction of plain power loom and identifying the function of each mechanism.
3.	Sketching the tappet shedding mechanism and setting it for proper timing and working.
4.	Sketching the cone over pick mechanism and setting it for proper timing and working.
5.	Sketching the under pick (Lever / Cone) mechanism and setting it for proper timing and working
6.	Sketching the beat-up mechanism and set it for proper timing and working
7.	Sketching the 7-wheel take-up motion and set it for proper timing and working.
8.	Sketching the negative let-off mechanism and set it with timing and back rest settings.
9.	Sketching the Loose reed mechanism set it for proper timing and working.
10.	Sketching the Fast reed mechanism set it for proper timing and working.
11.	Sketching the shuttle box of an over pick loom and set it with reed alignment for the given shuttle.
12.	Sketching the Side weft-fork mechanism and set it for proper timing and working.
13.	Estimating balancing of machinery for 100 ordinary looms capacity

**List of equipment required for a batch of 30 students.**

1. Plain power looms – 3 Nos

**DETAILED ALLOCATION OF MARKS**

<b>PARTICULARS</b>	<b>MARKS</b>
Experiment	50 marks
Write up / diagram / calculations	40 marks
Viva - Voce	10 marks
Total	100 Marks

**GUIDELINES:**

1. All the experiments given in the list of experiments should be completed for the semester practical examination.
2. In order to develop best skills every student should be provided with a separate machine for each mechanism for better understanding in the laboratory.
3. The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations

**46036 - FABRIC MANUFACTURE - I PRACTICAL****Model Question paper**

1.	Sketch the gearing plan of a plain power loom and calculate the speed of the loom.
2.	Sketch the construction of plain power loom and identify the function of each mechanism.
3.	Sketch the tappet shedding mechanism and set it for proper timing and working.
4.	Sketch the cone over pick mechanism and set it for proper timing and working.
5.	Sketch the under pick (Lever / Cone) mechanism and set it for proper timing and working.
6.	Sketch the beat-up mechanism and set it for proper timing and working.
7.	Sketch the 7-wheel take-up motion and set it for proper timing and working.
8.	Sketch the negative let-off mechanism and set it with timing and back rest settings.
9.	Sketch the Loose reed mechanism set it for proper timing and working.
10.	Sketch the Fast reed mechanism set it for proper timing and working.
11.	Sketch the shuttle box of an over pick loom and set it with reed alignment for the given shuttle.
12.	Sketch the Side weft-fork mechanism and set it for proper timing and working.
13.	Estimating balancing of machinery for 100 ordinary looms capacity

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46037  
Semester : III Semester  
Subject Title : QUALITY ANALYSIS OF SPINNING AND WEAVING PREPARATORY - PRACTICAL

#### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
QUALITY ANALYSIS IN SPINNING AND WEAVING PREPARATORY PRACTICAL	4 Hrs	64 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	100*	100	

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

## RATIONALE

To enhance the practical knowledge to identify the natural and man-made fibres by microscopical appearance, Linear density and, also to acquire knowledge to identify the staple length in fibres

### OBJECTIVES:

1. To identify the natural fibre with staining tests.
2. To determine the staple length man-made fibre.
3. To determine the linear density in Flat yarns.
4. To determine the hank of the lap, card sliver and draw frame sliver
5. To find out the viscosity of starch paste

### GUIDELINES

1. All the experiments given in the list of experiments should be completed and given for the end semester practical examination.
2. 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 equipment set up for doing experiments in the laboratory.
3. The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

### DETAILED ALLOCATION OF MARKS

PARTICULARS	MARKS
Experiment	50
Write up / diagram / calculations	40
Viva - Voce	10
Total	100

<b>LIST OF EXPERIMENTS</b>	
1.	Determination of the fibre length using digital fibrograph.
2.	Determination of the mean cut length and crimp of the given staple fibre by oiled plate technology and calculated the CV%.
3.	Determination of the mean linear density of the flat yarns and calculate the linear density and CV%.
4.	Estimation of the mean linear density and CV% of the given staple fibre yarn sample.
5.	Identifying the given fibre by the staining tests.
6.	Determination of the hank of blow room lap by weighing method.
7.	Determination of the hank and CV% of the card sliver by weighing method.
8.	Determination of the hank and CV% of the draw frame sliver by weighing method.
9.	Determination of the hank and CV% of the simplex roving by weighing method.
10	Determination of the trash percentage in the given cotton.
11	Finding out the viscosity of starch paste.
12	Analysing the different kind of woven fabric defects (like warp streaks, weft streaks, oil stain, batch, hole, slub, improper knots)

<b>MODEL QUESTION PAPER</b>	
1.	Determination of the fibre length using digital fibrograph.
2.	Determination of the mean cut length and crimp of the given staple fibre by oiled plate technology and calculate the CV%.
3.	Determination of the mean linear density of the flat yarns and calculate the linear density and CV%.
4.	Estimation of the mean linear density and CV% of the given staple fibre yarn sample.
5.	Identify the given fibre by the staining tests.
6.	Determine the hank of blow room lap by weighing method.
7.	Determine the hank and CV% of the card sliver by weighing method.
8.	Determine the hank and CV% of the draw frame sliver by weighing method.
9.	Determine the hank and CV% of the simplex roving by weighing method.
10.	Determine the trash percentage in the given cotton.
11.	Find out the viscosity of starch paste.
12.	Analyse the different kind of oven fabric defects (like warp streaks, weft streaks, oil stain, batch, hole, slub, improper knots)

# **IV SEMESTER**

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 - SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name	:	DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	46041
Semester	:	IV Semester
Subject Title	:	BASIC ENGINEERING

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
BASIC ENGINEERING	5 Hrs	80 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	100*	100	

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

### Topics and Allocation of Hours

UNIT	TOPIC	HOURS
I	BASICS OF MECHANICAL ENGINEERING - I	15
II	BASICS OF MECHANICAL ENGINEERING - II	15
III	BASICS OF ELECTRICAL ENGINEERING	14
IV	BASICS OF ELECTRONICS ENGINEERING	14
V	MEASURING INSTRUMENTS AND SENSORS	15
Test & Model Exam		7
Total		80

**Course objectives**

1. To teach about the various terms, principle of operation about boilers, pumps, air conditioning and humidification used in textile industry
2. To teach about the various mechanical devices like lubrication methods, Bearings, Transmission of Motion and Power ,Maintenance used in textile industry
3. To teach about various terms, definition in basic electrical engineering, motors, transformers and starters used in textile industry
4. To teach about various application of electronic devices such as rectifiers, inverters, strain gauge, LVDT and PLC in Textile industry
5. To teach about principle of various measuring instruments like moving coil and iron instrument, sensors and earthing used in textile industry

**Course outcomes:**

By the end of this course, student will able to

1. Describe the types of fuels, working of boilers, pumps, air compressors, humidification, air conditioning
2. Explain the different types of bearings and lubrication, different types drives and gears, and different types of Maintenance
3. Explain the fundamentals of AC circuits, AC motors, electrical machines and calculate the electrical power and energy in a DC circuit.
4. Explain the working of different types of rectifiers, transducers, inverter, servo motor and PLC.
5. Describe the principle of working of sensors, methods of earthing, elimination of static charges.

Unit	Name of the Topic	Hours
I	<p><b>Basics of Mechanical Engineering - I</b></p> <p><b>Fuels:</b>  Definition—Examples of different types of fuels— Definition of Calorific Value of Fuel.</p> <p><b>Boilers:</b>  Function—Types of Boilers—Study of the working of a Lamount boiler- Advantages and Disadvantages of Fire tube and Water tube Boilers—Uses of Steam for Textile Applications.<b>Suction:</b>  Definition- Various Applications of Suction in Textile Machines.</p> <p><b>Pumps:</b>  Functions—Types of Pumps—Study of the working of a Centrifugal Pump, Reciprocating pump.</p> <p><b>Air Compressors:</b>  Functions—Types of Air Compressors—Study of the working of a Single Acting Single Stage Reciprocating Air Compressor with a simple sketch — Uses of Compressed Air in Textile Applications.</p> <p><b>Humidification:</b>  Definition— Principles of Humidification— Definition of Absolute and Relative Humidity— Importance of Humidification in Textile Industry.</p> <p><b>Air Conditioning:</b>  Definition — Principles of Air Conditioning— Study of the working of a Window type and Central Air Conditioner with a simple sketch.</p>	15
II	<p><b>Basics of Mechanical Engineering -II</b></p> <p><b>Bearings:</b>  Functions— Need and Importance of Bearings—Types of Bearings— Factors for Selection of Bearings — Brief study of the Construction of Ball, Roller and Needle Bearings with simple sketches.</p> <p><b>Lubrication:</b></p>	15

	<p>Definition—Purpose of Lubrication—types of lubricants — Desirable qualities of a good lubricant ,Study of lubrication methods and applications of lubricants.</p> <p>Transmission of Motion and Power:</p> <p style="padding-left: 40px;">Different types of Belt drives—Brief study of Flat belt, V belt and Gear belt drives — Merits and Demerits of the different belt drives— Application of the Belt drives in Textile Machines—Brief study of Spur, Helical, Bevel, Worm and Worm gear drives, Pawl and Ratchet drives and their Advantages and Disadvantages— Brief study of Cams and followers—different types of Cams and Followers - Applications of the above drives in Textile Machines</p> <p>-Variable Speed drives—Need for Variable Speed drives in Textile machines</p> <p>— Study of the working of Stepless Cone Pulleys and PIV drives for changing speed.</p> <p>Clutches and Brakes</p> <p>Application of brakes in Textile Machines - Difference between a clutch and a brake ,Construction and working of Hydraulic brake,f Pneumatic brake</p> <p>Study of types of welding,Oxy-acetylene gas welding</p> <p>Study of Brazing process</p> <p>Maintenance:</p> <p>Definition — importance of maintenance textile industry — types of maintenance — benefits of preventive maintenance — importance of repair and maintenance — maintenance audit - Maintenance standard — Advantages.</p>	
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<p><b>III</b></p>	<p><b>Basics of Electrical Engineering</b></p> <p>Basic Ideas - Creation of magnetic field – Right Hand Thumb rule electromagnetic Induction – Faraday’s laws of Electromagnetic induction- Fleming’s Right-Hand rule – Fleming Left Hand rule – Ohm’s law. (Statement only, No derivations or calculations of all above topics). Definitions of Electrical quantities: Voltage, current, resistance, power and energy – units of these quantities. Fundamentals of Alternating Current (AC): Definition of AC terms- wave form – Instantaneous value, Maximum value, Root Mean Square (RMS) value – Cycle, frequency, power and power factor- Disadvantages of low power factor, Methods to improve power factor – Three phase connections -Advantages – Star and Delta connection – properties of Star and delta connections. Fundamentals of Electrical Machines: Brief concepts of Electrical motors and Generators. Induction Motors- Principle of working of Three phase induction motors – types of induction motors - Necessity of starter-Study of three point starter - Working of Variable Frequency Drives (VFD) -Servo motor – definition – uses. Transformers-types of transformers Principle and working of single- phase transformer (Basic idea only, No calculations)</p>	<p>14</p>
<p><b>IV</b></p>	<p><b>Basics of Electronics Engineering</b></p> <p>(Brief study only – No derivations or Calculations involved)</p> <p>Basic Concepts: Definition of conductors, Insulators and semiconductors. Semiconductor Devices: Brief study – Doping of semiconductors – types of semiconductors –PN Junction Diode working – Transistors working. Rectifiers – Types –</p>	<p>15</p>

v	<p>Working of Half wave, Full wave and Bridge Rectifiers.</p> <p>Transducers:</p> <p>Function of Transducers – Types – Advantages of Transducers– Piezo electric effect - Working principle of strain gauge – Working principle of Photocell – Applications of strain gauge and photocell in Textile Industries</p> <p>Linear variable differential transducer (LVDT) – Principle and working – Application in textiles</p> <p>Programmable Logic Controllers (PLC): definition of PLC, Advantages of PLC over wired control, Basic elements of PLC, PLC Scan, application of PLC in textiles</p> <p><b>Measuring Instruments and Sensors</b></p> <p>(Brief study only – No derivations or Calculations involved)Sensors:</p> <p>Introduction – functions of Sensors – Types of sensors – Applications of sensors – Definition of Temperature, Pressure, Level, Force, Humidity, Infrared sensor and Proximity sensors – working of Proximity sensor – Limitswitch.</p> <p>Earthing:</p> <p>Importance of Earthing – Methods of earthing – Explanation of Pipeearthing, static charges – Definition - methods and equipments used to eliminate / reduce the static charges</p> <p>Measuring Instruments:</p> <p>Instruments used to measure Voltage, Current, Power and Energy –</p> <p>Voltmeter, Ammeter (moving coil and moving iron), Watt meter (dynamo meter type), Energy meter (Induction type).</p>	15
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**TEXT BOOKS**

S.No	Title	Authors	Publisher
1	Thermal Engineering	R.Rudramoorthy	Tata Mcgraw Hills Educational pvt Ltd.New delhi
2	A Text Book on Hydraulics, Fluid Mechanics and Hydraulic machines	R.S.Khurmi	S.Chand& Co, Ram nager New Delhi-110055

**REFERENCE BOOKS**

S.No	Title	Authors	Publisher
1	Thermal Engineering	R.Rudramoort hy	Tata Megraw Hills Educational pvt Ltd. New delhi
2	A Text Book on Hydraulics,Fluid Mechanics and Hydraulic machines	R.S.Khurmi	S.Chand& Co,Ram nager New Delhi-110055
3	Mechanical Technology	V.Sivarajan	V.K.Publishers
4	Welding and Welding Technology	Richard. L. Little	Tata Megraw Hills Pub.co.Ltd.,
5	A Text Book of Electrical Technology	B.L.Theraja	Publication Division,Niraja, New Delhi
6	Electronic Principles	Malvino	Tata McGraw Hill Publication
7	Electrical Machines	Smarajit Ghosh	Person Education (Singapore) P.Ltd., IndianBranch Patparaganj .Delhi-110 092

**46041 - BASIC ENGINEERING  
MODEL QUESTION PAPER  
N2 – Scheme**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Part – A**

**Answer Fifteen questions. All questions carry equal marks. (15 × 2 = 30)**

1.	Define the term Calorific value of fuel and give its unit
2.	Compare fire tube with water tube boiler
3.	Write the various applications of compressed air in textile industry
4.	What is air conditioning? and Give the range of temperature in window type AC
5.	What are the different types of Bearings ?
6.	Mention any three purpose of lubrication
7.	Write the application of belt drives used in textile machines
8.	Write any three advantages of Maintenance
9.	State the Faraday's laws of electromagnetic induction
10.	Define the term current and give its unit
11.	Differentiate Motor and generator
12.	What is the necessity of starters for induction motors?
13.	What are the different types of Semiconductors ?
14.	Mention any three advantages of Transducers
15.	What is Piezo electric effect ?
16.	What are the uses of Photocell in Textile industries ?
17.	State any three functions of sensors
18.	State any three importance of earthing
19.	What instruments are used to measure Current and Energy ?
20.	What do you mean by Induction type Energy meter ?

**Part – B**

Answer **ALL** questions by choosing either **A (or) B**

(5 × 14 = 70)

21.A).	i).	Explain the different types of fuel and give examples for each type	(7)
	ii).	State the importance of Humidification in textile industry	(7)
		<b>[OR]</b>	
B).	i).	Draw a neat sketch the single acting reciprocating pump	(7)
	ii).	Explain the working of single acting reciprocating pump.	(7)
22.A).	i).	List out types of Bearings	(7)
	ii).	Describe the constructional details of ball and needle bearings	(7)
		<b>[OR]</b>	
B).	i).	Write a short note on following Belt drives with neat sketches ( a ) Flat belt      ( b ) V belt	(7)
	ii).	Explain in detail about any three types of maintenance	(7)
23.A).	i).	Definitions of following electrical quantities and give its units ( a ) Voltage and Current ( b ) Resistance and Power	(7)
	ii).	Define the following fundamentals of AC terms: ( a ) AC - Wave form and Instantaneous value ( b ) Maximum value and Root mean square ( RMS ) value	(7)
		<b>[OR]</b>	
B).	i).	List out types of transformers with simple sketches	(7)
	ii).	Draw a neat sketch the three phase induction motor	(7)
24.A).	i).	Explain with neat sketch about the working of PN junction diode	(7)
	ii).	Describe in detail about the working of Transistors	(7)
		<b>[OR]</b>	
B).	i).	What is a rectifier ? Explain the working of a half wave rectifier	(7)
	ii).	Draw a neat sketch the half wave rectifier	(7)
25.A).	i).	Explain the different types of sensors	(7)
	ii).	Write the different applications of sensors	(7)
		<b>[OR]</b>	
B).	i).	Describe in detail about the principle of working of magnet moving coil type of instrument	(7)
	ii).	Draw a neat sketch the Induction type energy meter	(7)
		* * * * *	

**DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS**  
**N2 – SCHEME**  
**[ Implemented from the Academic year 2021 – 22 onwards ]**

**Course Name : DIPLOMA IN TEXTILE TECHNOLOGY**

**Subject Code : 46042**

**Semester : IV**

**Subject Title : YARN MANUFACTURE - II**

**TEACHING AND SCHEME OF EXAMINATION**

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
			Internal Assessment	Board Examinations	Total	
<b>YARN MANUFACTURE – II</b>	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**

UNIT	Topic	Hrs.
I	COMBER	15
II	SPEED FRAME	14
III	RING FRAME	15
IV	MODERN RING FRAME	15
V	DOUBLING, REELING, BUNDLING AND BALING	14
Test & Model Exam		7
<b>Total =</b>		<b>80</b>

## **OBJECTIVES:**

1. To understand the principles of operation, working of various machine parts and calculate the production and draft in comber.
2. To understand the principles of operation, working of various machine parts and calculate the production and draft in speed frame.
3. To teach the principles of operation, working of various machine parts and calculate the production and draft in ring frame.
4. To know the principles of operation, working of various machine parts and latest developments in modern ring frame.
5. To know the principles of operation, working of various machine parts and latest developments in doubling, reeling, bundling and baling.

## **COURSE OUTCOME:**

By the end of this course the student will be able to:

1. Explain the principles of operation, working of various machine parts and perform the production and draft calculation in comber.
2. Explain the principles of operation, working of various machine parts and perform the production and draft calculation in speed frame.
3. Explain the principles of operation, working of various machine parts and perform the production and draft calculation in ring frame.
4. Explain the principles of operation, working of various machine parts and latest developments in modern ring frame.
5. Discuss the principles of operation, working of various machine parts and latest developments in doubling, reeling, bundling and baling.

## DETAILED SYLLABUS

Unit	Name of the Topics	Hours
I	<p style="text-align: center;"><b>UNIT - I - COMBER</b></p> <p>Preparatory process for Combing - Objectives - Different process sequences in the combing preparation. Hook reversal theory. Material passage through Sliver lap, Ribbon lap and lap former machines. Comber - Objectives, Degree of combing, Passage of material, working of the Comber and Combing cycle. Determination of noil percentage and characteristics of combed yarn. Comber settings - Nipper to detaching rollers - nipper to unicombed and top comb. Comber timing diagram. Salient features of modern comber and lap forming machines. Defects in combing - their causes and remedies. Popular machine manufacturers. Calculation pertaining to sliver lap, ribbon lap, lap former and comber production, combing fractionating Index.</p>	15
II	<p style="text-align: center;"><b>UNIT - II SPEED FRAME</b></p> <p>Speed Frame - Objectives - Passage of material through the Speed Frame. Functions of different parts of the speed Frame. Roller setting and its importance. Study of 3 over 3 and 4 over 4 drafting system. Spring and pneumatic top arms : SKF and Texparts. Principles of winding - Flyer lead and bobbin lead. Functions of the cone drums and differential motion. Objectives and brief study of builder mechanism. Brief study of servo drives, automatic roving tension controller in speed frame. Salient features of modern speed frames. Defects in speed frame roving - causes and remedies. Monitoring device - sliver and roving stop motion - Calculations pertaining to draft, twist and production.</p>	14

III	<p style="text-align: center;"><b>UNIT III RING FRAME</b></p> <p>Ring Frame - Objectives and passage of material through the Ring frame. Functions of different parts of the Ring Frame. Traverse motion for roving feed and its importance. Functions of drafting rollers, aprons, cots, and spacers. Study of top arm drafting systems - SKF, SUSSEN and Lakshmi High Drafting systems. Brief study of different types of rings and travellers and high speed spindles. Study of winding and binding coils and spindle driving systems. Study of working of building motion - cop builds, ring rail movement, Running-in procedure for new Rings. Roller stands inclination and its effect on spinning tension. Calculations pertaining to draft, twist and production.</p>	15
IV	<p style="text-align: center;"><b>UNIT IV MODERN RING FRAME</b></p> <p>Salient features of modern Ring Frames. Special attachments such as Individual spindle monitoring, Rovo stop, auto doffing, Link Coner. Brief study of Pneumafil and balloon control rings. Study of compact spinning system. Methods of driving – study of inverter drives used in long Ring Frames. Common defects in ring spun yarns, causes and remedies. Causes of end breakages in ring frame. Brief study of twist factor and its effect on yarn quality. Study of twist, strength, moisture absorbency and count relationship. Twist factors adopted for different end uses of yarn such as warp, weft, hosiery and high twist yarns. Study of changes made in ring frame during count change. Brief study of Spinning mill control system and related App.</p>	15
V	<p style="text-align: center;"><b>UNIT – V DOUBLING, REELING, BUNDLING AND BALING</b></p> <p>Doubling - Objectives and methods of doubling. Brief study of wet &amp; dry doubling machine. Yarn conditioning process. Direction of twist in doubled yarn and its relation to single yarn. Balancing of twist in doubled yarn. Calculation of resultant counts. Study of ring Doubler, Passage of material through Doubler winder. Working</p>	14

	<p>and salient features of Two-for-one- Twister. Reeling: Objectives, types- straight and cross reeling, Study of working of 7 lea and cross lea motion. Study of doffing mechanism.</p> <p>Bundling, Baling and Packing: Objectives of bundling and baling. Need for bundling weight correction and its importance. HDPE bagand pallet packing, packing identification lables. Checking procedures for EOU. Brief study of fancy yarns: slub yarn, elitwist, core spun and mélange yarn. Calculations related to fancy yarn count.</p> <p>Erection procedures followed in ring frame</p>	
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### TEXT BOOKS:

S.No	Titile	Authors	Publisher
1	Cotton spinners Hand book	Jaganathan.R	Mahajan Brotheres Ahmedabad 380009
2	Cotton waste industry	Srinivasamoort hy.H.V	Victoria Jubilee Technical Institute,Matunga, Bombay 400019

### REFERENCE BOOKS:

S.No	Titile	Authors	Publisher
1	Manual of cotton spinning volume IV & V	Hanter.W.A	Textile Institute Manchester
2	Cotton spinning	Taggart.W.S	S.S.Shroff
3	Cotton ring spinning	MerrillG.R	Gilbert R-Menill 364 Varnam Ave-Lowell Man
4	A practical guide to Ringspinning	Klein.W	The Textile Institute UK
5	Rieter manual of spinning , Volume 1 , 2,3,4	W. Klein	Rieter machine works ltd, Wintherthur

**46042 YARN MANUFACTURE - II**  
**Model Question Paper**  
**N2 – Scheme**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Part – A**

**Answer Fifteen questions. All questions carry equal marks. (15 × 2 = 30)**

1.	What are the objectives of combers?
2.	What is the function of nipper in comber?
3.	Define combing fractionating efficiency.
4.	What do you mean by degrees of combing?
5.	Write the functions of flyer.
6.	The speed frame is running with 1.2 <sup>s</sup> roving hank with 1.3 twist factor. Calculate TPI
7.	List out the 5 salient features of modern speed frame.
8.	Write the importance of roller setting in speed frame.
9.	What are the objectives of ring frame?
10.	When do the spacers are to be changed in a ring frame?
11.	What is a traveler lag?
12.	What is cradle length? Write down the variants in cradle length.
13.	Mention the range of spindle speed and draft applied in modern ring frames.
14.	What are the advantages of compact spinning?
15.	How yarn strength is affected by altering the twist?
16.	List out any three spinning mill control system available commercially.
17.	What is meant by balanced yarn?
18.	What are the different methods of doubling?
19.	What is mélange yarn?
20.	What are the information available in packing identification labels?

**Part – C**

Answer **ALL** questions by choosing either **A (or) B**

**(5 × 14 = 70)**

21.A).	i).	Draw the passage of material through modern comber.	(7)
	ii).	Explain the working of modern comber.	(7)
		<b>[OR]</b>	
B).	i).	Explain any 3 comber defects, their causes and remedies	(7)
	ii).	Explain the following in Modern comber i. Draw box arrangement      ii. Can changer	(7)
22.A).	i).	Draw the passage of material through the speed frame.	(7)
	ii).	Explain the passage of material through the speed frame.	(7)
		<b>[OR]</b>	
B).	i).	Calculate the production in Kgs/shift of a speed frame department running with the following particulars: Number of spindles/frame : 144 Twist multiplier used : 1.15 Number of speed frames : 5 Efficiency : 88% Spindle speed : 1100 rpm Duration of the shift : 8 hrs Hank of roving : 1.25 Ne	(14)
23.A).	i).	Draw the spindle drive system used in ring frame	(7)
	ii).	Explain the different types of rings used in ring frame.	(7)
		<b>[OR]</b>	
B).	i).	Calculate the production of ring frame in kilograms per frame per shift of 8 hours. The particulars of the ring frames are as follows : Number of spindles = 1440 Spindle rpm = 18,000 Count of yarn = 40 <sup>s</sup> Efficiency = 92% Twist Multiplier (TM) = 4.0	(14)
24.A).	i).	Draw the constructional details of compact spinning system	(7)
	ii).	Explain the principle and working of compact spinning system	(7)
		<b>[OR]</b>	
B).	i).	Explain any 5 latest developments in ring frame	(7)
	ii).	Explain the benefits of using auto doffer and link coners	(7)
25.A).	i).	Draw the construction and passage of material through TFO.	(7)
	ii).	Explain the working principle of TFO.	(7)
		<b>[OR]</b>	
B).	i).	With a neat sketch, explain the different types of fancy yarn.	(7)
	ii).	Explain yarn conditioning process.	(7)

# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2 – SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 46043

Semester : IV Semester

Subject Title : FABRIC MANUFACTURE- II

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject Title	Instructions		Examination			
	Hours / Week	Hours / Semester	Marks			Duration
Fabric Manufacture – II	5 Hrs	80 Hrs	Internal Assessment	Board Examination	Total	
			25	100*	100	

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

### TOPICS AND ALLOCATION OF HOURS

UNIT	TOPIC	HOURS
I	DOBBY SHEDDING	15
II	JACQUARD SHEDDING	15
III	MULTIPLE BOX MOTION AND TERRY WEAVING	15
IV	AUTOMATIC WEAVING	14
V	WEAVING OF SYNTHETIC TEXTILES & LOOM CALCULATIONS	14
TEST & MODEL EXAM		07
Total		80

**Course Objectives:**

1. To know about various types of Dobby mechanism
2. To know about various types of Jacquard mechanisms
3. To study about multiple box motion and Terry motions
4. To study about automatic looms
5. To study about weaving of synthetic textiles and loom calculations

**Course Outcomes:**

By the end of this course, student will able to

1. Explain the principle of working of different types doobby mechanism.
2. Describe the principle of working of different types of jacquard mechanism and multiple box motion.
3. Describe the principle of working of different types of multiple box motion and terry motions.
4. Describe the mechanisms related to automatic looms.
5. Describe the weaving of synthetic textiles and production calculations in auto loom and about fabric defects

## DETAILED SYLLABUS

Unit	Name of the Topic	Hours
I	<p><b>Dobby Shedding</b></p> <p>Objectives and Classification. Types of dobbie – Single lift and Double lift – Characteristics comparison between Single lift and Double lift dobbies. - Positive and Negative dobbies. Right hand and Left hand dobbies. Working of Climax dobbie. Pegging for a design. Jack missing</p> <p>– Definition and Causes. Pick finding devices. Cam Dobby – Types - Working of Negative Cam dobbie. Study Electronic dobbie – manufacturers – working principle of electronic dobbie.</p>	15
II	<p><b>Jacquard Shedding</b></p> <p>Objectives - Types of Jacquards. Principle of Jacquard shedding. Size of a Jacquard machine. Working of Double Lift Double Cylinder Jacquard with Timing and Setting. Advantages and Disadvantages of Double Lift Double Cylinder Jacquard. Jacquard harness mounting - Norwich and London systems and its comparison. Design ties - Types and Casting out. Study of Electronic Jacquards- types and manufacturers – Working principle – Advantages of electronic jacquards.</p>	15
III	<p><b>Multiple Box Motion and Terry Weaving</b></p> <p>Multiple Box Motion: Object – classification. Working of 2 x 1 drop box motion. Working of Eccle’s drop box motion. Preparation of pattern chain for 4 x 1 drop box motion with and without card saving device. Brief study of Pick-at-will motion. Brief study of box safety device and setting up of drop box motion. Terry weaving: - Object - Principles of terry weaving - Working of loose reed terry motion - adjustment of pile length - fringing motion.</p>	15

IV	<p><b>Automatic Weaving :</b></p> <p>Automatic Looms – Features - Advantages and Classification. Optical Weft stop motion Objectives – working principle . Warp stop motion – Object and working of mechanical and electrical Warp stop motions. Working of weft replenishment mechanism. Study of Weft feeler mechanism – mechanical, electrical and optical types. Working of self threading shuttle. Working of Positive warp let-off motion. Comparison of Fabric quality in plain power loom and Auto loom. Fabric defects –Causes and Remedies.</p>	14
V	<p><b>Weaving of Synthetic Textiles and Loom Calculations</b></p> <p>Loom requirements to weave synthetic and blended spun yarns and filament yarns. Common Synthetic Fabric Defects and its remedies. Finding the speed of power looms, Production calculation of a power loom for two particular sorts, Calculating the Efficiency of loom. Weft yarn requirement calculations, Balancing of machineries in a weaving factory having 200 looms capacity. Calculation of the Ex-Mill price of fabric per meter.</p>	14

#### REFERENCE BOOKS

S.No	Title	Author	Publisher
1	Modern Preparation and Weaving	A.Ormerod	Wood Head PublishingLtd, London
2	Principles of Weaving	Marks & Robinson (ATC)	The Textile Institute, Manchester.
3	Weaving Calculations	R.Sengupta	D.B.Taraporevala sons& co Ltd., Mumbai

**Fabric Manufacture II**  
**MODEL QUESTION PAPER**  
**N2 – Scheme**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Part – A**

**Answer Fifteen questions. All questions carry equal marks.**

**(15 × 2 = 30)**

1.	What do you mean by negative dobbie?
2.	What do you mean by double-lift dobbie?
3.	Write the advantages of modern cam dobbie systems.
4.	What do you mean by cross border dobbie?
5.	What are the objects of jacquard?
6.	Mention different jacquards.
7.	Mention the applications of Cross border jacquard?
8.	What do you mean by Jacquard harness mounting?
9.	Mention the different drop box motions.
10.	Why card saving device is normally used for drop-box loom?
11.	State the purpose of terry mechanism.
12.	Mention different terry motions.
13.	Write any two advantages of automatic looms over non-automatic looms?
14.	Mention the mechanisms in automatics looms to term it as automatic.
15.	What do you mean by bunch?
16.	What are the different types of positive let off motion?
17.	Mention common defects found in fabrics produced in synthetic weaving
18.	Write the formula to calculate the production per shift of 8 hrs in loom in meters.
19.	State the loom requirements for synthetic weaving
20.	Write the formula to find the efficiency of loom.

**Part – B**

**Answer ALL questions by choosing either A (or) B**

**(5 × 14 = 70)**

21.A).	(i)	Draw the neat sketch of climax dobbie	(7)
	(ii)	Explain the working of climax dobbie	(7)
		<b>[OR]</b>	
B).	(i)	Draw the sketch of cam dobbie	(7)
	(ii)	Explain the working of cam dobbie	(7)
22.A).	(i)	Draw the neat sketch of Double Lift Double Cylinder Jacquard	(7)
	(ii)	Explain the working of DLDC Jacquard Double Lift Double Cylinder Jacquard	(7)
		<b>[OR]</b>	
B).	(i)	Write short note on harness mounting	(7)
	(ii)	Explain different tie ups	(7)
23.A).	(i)	Draw the neat sketch of Eccles drop box motion	(7)
	(ii)	Explain the working of Eccles drop box motion	(7)
		<b>[OR]</b>	
B).	(i)	Draw the neat sketch of any one loose reed terry motion	(7)
	(ii)	Explain the working of the above loose reed terry motion	(7)
24.A).	(i)	Draw the neat sketch of any one mechanical warp stop motion	(7)
	(ii)	Explain the working of the above mechanical warp stop motion	(7)
		<b>[OR]</b>	
B).	(i)	Draw the neat sketch of weft replenishment mechanism	(7)
	(ii)	Explain the working of the above weft replenishment mechanism	(7)
25.A).		Calculate the number of machineries required from preparatory to weaving for a weaving mill running with 200 automatic looms assuming all relevant particulars	(14)
		<b>[OR]</b>	
B).		Calculate the Ex-Mill price per meter of cloth produced in a weaving mill assuming all relevant particulars	(14)
		* * * * *	

# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2 -SCHEME

(Implemented from the Academic year 2021-2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 46044

Semester : IV Semester

Subject Title : TEXTILE WET PROCESSING

### TEACHING AND SCHEME OF EXAMINATION

No.of weeks per semester:16weeks

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

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

### Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	Preparatory and Bleaching Process	15
II	Dyeing Process	15
III	Printing Process	15
IV	Finishing Process	14
V	Quality and pollution Control	14
	TEST & MODEL EXAM	07
<b>Total</b>		<b>80</b>

## **RATIONALE**

1. To enhance knowledge in processing concepts ,this subject is introduced.
2. To understand the preparatory process in processing, a well detailed syllabus is given.
3. To improve the knowledge in dyeing, printing, finishing, quality & pollution control topics are included.

## **Objectives**

1. To understand the Preparatory process of Textiles
2. To learn about Process of Bleaching.
3. To learn different types of Dyes and applications
4. To learn about varies processing machinery.
5. To understand the types of Printing and Techniques
6. To know about the screen preparation
7. To know about different Textile finishes and Application
8. To learn about special finishes and advantages
9. To understand the Quality control methods in Wet Processing.
10. To understand the Eco-friendly Processing & Effluent Treatment process

**46044 - TEXTILE WET PROCESSING  
DETAILED SYLLABUS**

Unit	Name of the Topic	Hours
<b>I</b>	<p><b>Preparatory and Bleaching Process</b></p> <p>Impurities present in grey cotton and cotton fabric - Sequence of wet processing treatments for Yarn, Woven and Knitted with objectives of each treatment - Singeing - Gas Singeing Machine for woven fabric with line diagram- Desizing- Object- Continuous Enzyme desizing method and its merits - Scouring - Mechanism of scouring-Process of caustic scouring using high pressure kier-Assessment of desizing / scouring efficiency. Calculation on weight loss due to desizing.</p> <p>Bleaching – Objects – different bleaching agent - Hydrogen Peroxide Bleaching- Continuous scouring and bleaching using Continuous Bleaching Range (CBR) – Advantages of H<sub>2</sub>O<sub>2</sub> bleaching - Optical Brightening Agent treatment.</p>	<b>15</b>
<b>II</b>	<p><b>Dyeing Process</b></p> <p>Definition of dyeing - Classification of dyes based on their mode of application - Dyeing of cotton with Reactive dyes and vat dyes -Dyeing of wool with acid dyes - Dyeing of silk with basic dyes –Dyeing of Polyester with Disperse dyes–salt free dyeing using pad batch method - Dyeing machines - Working of jigger Soft flow jet dyeing machine, Air flow jet dyeing machine - HTHP Beam dyeing machine, cheese dyeing machine. Garment dyeing – Advantage and disadvantage–Working of drum type Garment dyeing machine</p>	<b>15</b>

III	<p><b>Printing Process</b></p> <p>Definition and objective of printing - Comparison between dyeing and printing - Styles and methods of printing - Advantages of screen printing - Screen preparation - Flat bed screen printing machine - Rotary screen printing machine Definition and functions of Ingredients of printing paste - Role of thickener.</p> <p>Direct style of printing with pigments on cotton - Direct style of printing with reactive dyes on cotton - Direct style of printing with Disperse dyes on polyester -- curing machine - steamer.</p>	15
IV	<p><b>Finishing Process</b></p> <p>Finishing treatment - Advantages - Purpose of finishing- Mechanical and Chemical finishing treatments - Stiff finishing of cotton fabric with Starch, Polyvinyl Acetate -Types of softeners and their properties - wrinkle free finish - Sanforizing- Mercerisation - Hank and fabric mercerization - Advantages- Chainless mercerising machine - calendering - Hot air stenters - Compacting.</p> <p>Anti-crease finish with DMDHEU Resin - Brief study on antimicrobial finish- Anti viral finish - UV protective finish - water repellent finish - Flame retardant finish (Only objectives and recipe)</p>	14
V	<p><b>Quality and pollution Control</b></p> <p>Importance of Quality Control - Different Fastness Tests for dyed and printed materials - Determination of wash fastness - Wet and Dry rubbing fastness - Shrinkage test - Computer Colour Matching - Objectives &amp; Limitations - Importance and need of environment protection - Air, water and noise pollution.</p> <p>Brief study on Effluent Treatment Process flowchart only.</p> <p>Brief study on eco-friendly processing - List of banned chemicals and alternatives. Calculation of BAN - Ecolabels - brief study of ISO 4000 standards, EMS, AATCC standards.</p>	14

### TEXT BOOKS

S.No	Title	Authors	Publisher	Year
1	Technology of Textile Processing Vol.3 Technology of Bleaching	ShenaiV.A.	ShevakPublications306 Shri Hanuman Industria lEstate Gousmbekar Road, Wadala Mumbai-37	1981
2	Technology of Textile Processing, Vol.2Chemistry of dyes &Principles of dyeing	ShenaiV.A.	ShevakPublications306 Shri Hanuman Industrial Estate Gousmbekar Road Wadala,Mumbai-37	1983
3	Technology of Textile Processing, Vol.6TechnologyofDyeing	ShenaiV.A.	ShevakPublications306 Shri Hanuman Industrial Estate Gousmbekar Road Wadala,Mumbai-37	1980

### REFERENCE BOOKS

S.No	Title	Authors	Publisher	Year
1	Technology of Textile Processing,Vol.4 Technology of Printing	ShenaiV.A.	ShevakPublications306 Shri Hanuman Industrial Estate Gousmbekar Road Wadala,Mumbai-37	1979
2	Technology of Textile Processing,Vol.10 Technology of Finishing	ShenaiV.A.	ShevakPublications306 Shri Hanuman Industrial Estate Gousmbekar Road Wadala,Mumbai-37	1987

3	Textile Printing	MilesL.W.C.	Society of Dyers & Colourist Perlein House 82 Gratlan Road, Broardfard WestYarkshire ,England	1981
4	An Introduction to Textile Finishing	MarshJ.T.	B.I.Publications 54Janpath NewDelhi110001	1982

**46044 - Textile wet processing**  
**Model question paper**  
**N2 – Scheme**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Part – A**

**Answer Fifteen questions. All questions carry equal marks.**

**(15 × 2 = 30)**

1.	What are the different methods of singeing?
2.	Write the advantages of enzyme desizing?
3.	What are the chemical reactions takes place during scouring?
4.	Write a short note on optical brightening agents?
5.	What do you mean by dyes and pigments?
6.	Name any two water soluble and water insoluble dyes.
7.	Give the properties of Reactive dyes.
8.	What are the advantages of HTHP method.
9.	What are the styles of printing?
10.	What is binder?
11.	What are the ingredients to be taken to prepare paste?
12.	What are the advantages of roller printing?
13.	What are the objects of finishing?
14.	What is the purpose of anti-microbial finish?
15.	What are the various calendaring process?
16.	Explain the permanent finish.
17.	Write the name of the instruments to assess washing fastness and rubbing fastness of dyed sample?
18.	What are the two types of grey scale?
19.	What is ECO – Labels?
20.	What are the advantages of computer colour matching system?

**Part - B**

**Answer ALL questions by choosing either A (or) B (5 × 14 = 70)**

21.A).	i).	Draw and mention the parts of vertical kier with neat sketch.	(7)
	ii).	Explain the working procedure of vertical kier.	(7)
		[OR]	
B).	i).	Explain the process of continuous scouring and bleaching using Hydrogen Peroxide in 'J' Box.	(14)
22.A).	i).	Explain the conventional leuco vat method of dyeing of cotton using vat dye.	(14)
		[OR]	
B).	i).	Draw and mention the parts of jet dyeing machine with neat sketch.	(7)
	ii).	Explain the working procedure of jet dyeing machine.	(7)
23.A).	i).	Write a short note on different styles of printing	(7)
	ii).	Write a note on wax resist printing and tie and dye resist printing.	(7)
		[OR]	
B).	i).	Explain with neat sketch the working of Rotary screen printing machine.	(14)
24.A).	i).	What are the objects of calendaring process? And Write a note on various calendaring process?	(14)
		[OR]	
B).	i).	Write notes on i) Anti-microbial finish ii) Water repellent finish	(7)
	ii).	Write a note on UV finish.	(7)
25.A).	i).	Explain the principle of computer colour matching and mention the merits and demerits	(14)
		[OR]	
B).	i).	Write a note on air, water and noise pollution	(7)
	ii).	Elaborate on the importance and need of Environment protection	(7)
		* * * * *	

# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name	:	DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	46045
Semester	:	IV Semester
Subject Title	:	YARN MANUFACTURE – II PRACTICAL

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
YARN MANUFACTURE – II PRACTICAL	4 Hrs	64Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	100*	100	

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

### RATIONALE:

In Diploma level Engineering education skill development plays a vital role. The skill development can be achieved by on hand experience in various instruments, apparatus and equipment. This is accomplished by doing engineering related experiments in practical classes in various laboratories.

### COURSE OBJECTIVES

#### COMBER DEPARTMENT

1. To calculate the speed, draft distribution and production of Sliver lap machine
2. To calculate the speed, draft distribution and production of Ribbon lap machine
3. To calculate the speed, draft distribution and production of comber machine

#### SPEED FRAME

4. To calculate the Draft, Twist and the machine constants of the Speed frame.
5. To calculate the speed, production and efficiency of the Speed frame.
6. To study the working of the builder mechanisms of the Speed frame and set the same for proper working.

## **SPINNING DEPARTMENT**

7. To calculate the speed, production and efficiency of the Ring frame.
8. To calculate the Draft, Twist and the machine constants of the Ring frame.
9. To practice the various settings of the Ring frame
10. To study the working of the builder mechanisms of the Ring frame and set the same for proper working.
11. To practice spindle and lappet gauging in the Ring frame.
12. To calculate the speed, TPI, production and efficiency of OE machine.

## **REELING & DOUBLING FRAME**

13. To calculate the speed, production and efficiency of the Reeling Machine.
14. To calculate the speed, production and efficiency of the TFO Machine.

## **COURSE OUTCOME**

By the end of this course, students will be able to:

1. Trace the gearing diagram and calculate the draft and production and perform settings between various parts in draw frame.
2. Trace the gearing diagram and calculate the draft and production and perform settings between various parts in comber preparatory and comber machine.
3. Trace the gearing diagram and calculate the draft , twist and production and perform settings between various parts, dismantle and assemble the building mechanism in speed frame.
4. Trace the gearing diagram and calculate the draft , twist and production and perform settings between various parts, dismantle and assemble the building mechanism in ring frame .

## **GUIDELINES**

1. All the experiments given in the list of experiments should be completed and given for the end semester practical examination.
2. 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 equipment set up for doing experiments in the laboratory.
3. The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

## **DETAILED ALLOCATION OF MARKS**

**Single experiment is to be given per student**

<b>PARTICULARS</b>	<b>MARKS</b>
Experiment	50
Write up / diagram / calculations	40
Viva	10
Total	100

## LIST OF EXPERIMENTS

<b>1.</b>	Draw the gearing diagram and calculate the speeds and surface speeds of the following parts in Rieter Sliver Lap machine (E2/4A): a) Front and back shell rollers      b) Front and back calendar rollers c) Drafting rollers   d) Feed roller   e) Lifting roller
<b>2.</b>	Draw the gearing diagram and calculate the following in Rieter sliver lap machine (E2/4A) a) Draft constant      b) Total draft using draft constant      c) Shell roller speed      d) Production constant   e) Actual production using production constant. Hank of sliver lap ..... Efficiency .....
<b>3.</b>	Draw the gearing diagram and calculate the speeds and surface speeds of the following parts in Rieter Ribbon Lap machine (E4/1A): a) Front and back shell rollers   b) Front and back calendar rollers      c) Table calendar roller   d) Drafting rollers   e) Feed roller   f) Lap roller
<b>4.</b>	Draw the gearing diagram and calculate the following in Rieter Ribbon Lap machine. a) Draft constant .      b) Total draft using draft constant      c) Shell Roller Speed   d) Production constant. e) Actual production using production constant. Hank of ribbon lap ..... Efficiency .....
<b>5.</b>	Draw the gearing diagram and calculate speeds and surface speed s of the following in Rieter. E7/2 comber a) Cylinder   b) Brush roller   c) Lap unwinding roller   d) Detaching rollers
<b>6.</b>	Draw the gearing diagram and calculate speeds and surface speeds of the following in Rieter E7/2 comber a) Cylinder      b) Table calendar roller c) Back drafting roller   d) Front drafting roller e) Coiler tube speed   f) can plate speed   g) Delivery calendar roller
<b>7.</b>	Draw the gearing diagram and calculate the following Rieter E7/2 comber a) Draft constant .      b) Mechanical draft using draft constant c) Coiler calender roller speed   d) Production constant e) Actual production using production constant. Hank of sliver ..... Efficiency .....
<b>8.</b>	Draw the gearing diagram in .L.R. simplex and calculate the following a) Draft distribution   b) Total draft   c) Draft constant   d) Total draft using draft constant
<b>9.</b>	Draw the twist gearing diagram in L.R. Simplex and calculate the following: a) Front roller speed      b) Spindle speed      c) Twist constant d) TPI using Twist constant      e) Production constant f) Actual production using production constant. Hank of roving ..... Efficiency .....

10.	Draw a neat gearing diagram of <b>Jenntex Ring spinning machine</b> and calculate the following: a) Speed of the drafting rollers b) Surface speed of drafting rollers c) Spindle speed      d) Break draft   e) Main draft   f) Total draft
11.	Draw a neat diagram of <b>twisting gearing in Jenntex Ring spinning machine</b> and calculate the following: a) Twist constant b) TPI on yarn at front roller nip c) Production constant d) Actual production in grams/spindle/shift for yarn count of _____ with _____ Efficiency
12.	Study of SKF drafting system in Jenntex and trace the following a) Drafting angle b) Bottom roller specifications: Dia, working width, type of flutes, no. of flutes c) Impression of bottom drafting rollers d) Top arm specifications      e) Nipping diagram of drafting rollers
13.	Study the specifications and numbering of given ring and traveler a) Ring specifications: Diameter, Flange and cross section b) Traveller specifications: Height, width, toe gap, weight, cross section c) Calculate the traveler speed (m/sec) for the Jenntex ring frame at a spindle speed of _____ rpm d) Find out the optimum traveler speed for various ring diameter ( 36mm, 40mm, 45mm) and spindle speed (12000, 14000 and 18000 rpm)
14.	Draw a neat gearing diagram of various parts in TFO machine and calculate the following a) Speed of spindle, winding drum and take up roller   b) TPI
15.	Draw the gearing diagram of Open end Spinning machine and calculate the following a) Speeds and surface speed of various parts for processing _____ <sup>s</sup> count b) Actual TPI
16.	Suggesting suitable settings, speeds and other important changes to be made from blow room to ring frame for processing Cotton to man-made fibre.
17.	Estimating balancing of machinery for 12,000 / 30,000 spindles capacity for processing carded yarn /combed yarn and draw spin plan.
18.	Estimating the ex-mill price for one kg of carded yarn / combed yarn.

## LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS

Material :- Cans of carding sliver, Sliver laps, Ribbon laps, Roving bobbins and RingCops.

1. Sliver lap machine	1
2. Ribbon lap machine	1
3. Comber	1
4. Speed frame	1
5. Ring frame	1
6. Open end machine	1
7. TFO Machine	1

### SPECIFIC INSTRUCTIONS TO CARRY OUT IN THE PRACTICAL CLASS WORKAS WELL AS THE BOARD PRACTICAL EXAMINATIONS

The students are instructed

1. To do the activities which are pertaining only to the specific experiments they are doing
2. To maintain their work place clean and tidy
3. To handle the tools and other gauges properly and with due care.
4. Not to wander from place to place unnecessarily
5. Not to talk with other students unnecessarily
6. To get their observation notes signed by the staff in charge immediately on completing the experiment
7. To complete their record notes and get it signed by the staff in charge when they come to the next practical class.
8. Not to indulge in any malpractice

### SAFETY PRECAUTIONS TO BE FOLLOWED

The students while doing the experiments,

1. Should wear safe foot wear, preferably shoes.
2. Should keep their shirts tucked in.
3. Should do settings on the machines only after the mains supply is switched off.
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 machine without doing regular safety checks and closing the safety doors.

## MODEL QUESTION PAPER

<b>1.</b>	<p>Draw the gearing diagram and calculate the speeds and surface speeds of the following parts in Rieter Sliver Lap machine (E2/4A):</p> <p>a) Front and back shell rollers      b) Front and back calendar rollers  c) Drafting rollers   d) Feed roller   e) Lifting roller</p>
<b>2.</b>	<p>Draw the gearing diagram and calculate the following in Rieter sliver lap machine (E2/4A)</p> <p>a) Draft constant                      b) Total draft using draft constant  c) Shell roller speed      d) Production constant   e) Actual production using production constant. Hank of sliver lap ..... Efficiency .....</p>
<b>3.</b>	<p>Draw the gearing diagram and calculate the speeds and surface speeds of the following parts in Rieter Ribbon Lap machine (E4/1A):</p> <p>a) Front and back shell rollers   b) Front and back calendar rollers  c) Table calendar roller   d) Drafting rollers   e) Feed roller   f) Lap roller</p>
<b>4.</b>	<p>Draw the gearing diagram and calculate the following in Rieter Ribbon Lap machine.</p> <p>a) Draft constant .      b) Total draft using draft constant  c) Shell Roller Speed   d) Production constant. e) Actual production using production constant.  Hank of ribbon lap ..... Efficiency .....</p>
<b>5.</b>	<p>Draw the gearing diagram and calculate speeds and surface speed s of the following in Rieter. E7/2 comber</p> <p>a) Cylinder   b) Brush roller   c) Lap unwinding roller   d) Detaching rollers</p>
<b>6.</b>	<p>Draw the gearing diagram and calculate speeds and surface speeds of the following in Rieter E7/2 comber</p> <p>a) Cylinder                      b) Table calendar roller  c) Back drafting roller   d) Front drafting roller  e) Coiler tube speed   f) can plate speed   g) Delivery calendar roller</p>
<b>7.</b>	<p>Draw the gearing diagram and calculate the following Rieter E7/2 comber</p> <p>a) Draft constant .                      b) Mechanical draft using draft constant  c) Coiler calender roller speed   d) Production constant  e) Actual production using production constant.  Hank of sliver ..... Efficiency .....</p>
<b>8.</b>	<p>Draw the gearing diagram in .L.R. simplex and calculate the following</p> <p>a) Draft distribution   b) Total draft   c) Draft constant   d) Total draft using draft constant.</p>

9.	<p>Draw the twist gearing diagram in L.R. Simplex and calculate the following:</p> <p>a) Front roller speed                      b) Spindle speed              c) Twist constant  d) TPI using Twist constant              e) Production constant  f) Actual production using production constant.  Hank of roving ..... Efficiency .....</p>
10.	<p>Draw a neat gearing diagram of Jenntex Ring spinning machine and calculate the following:</p> <p>d) Speed of the drafting rollers  e) Surface speed of drafting rollers  f) Spindle speed              d) Break draft    e) Main draft    f) Total draft</p>
11.	<p>Draw a neat diagram of twisting gearing in Jenntex Ring spinning machine and calculate the following:</p> <p>e) Twist constant  f) TPI on yarn at front roller nip  g) Production constant  h) Actual production in grams/spindle/shift for yarn count of ____ with ____ Efficiency</p>
12.	<p>Study of SKF drafting system in Jenntex and trace the following</p> <p>e) Drafting angle  f) Bottom roller specifications: Dia, working width, type of flutes, no. of flutes  g) Impression of bottom drafting rollers  h) Top arm specifications              e) Nipping diagram of drafting rollers</p>
13.	<p>Study the specifications and numbering of given ring and traveler</p> <p>e) Ring specifications: Diameter, Flange and cross section  f) Traveller specifications: Height, width, toe gap, weight, cross section  g) Calculate the traveler speed (m/sec) for the Jenntex ring frame at a spindle speed of ____ rpm  h) Find out the optimum traveler speed for various ring diameter ( 36mm, 40mm, 45mm) and spindle speed (12000, 14000 and 18000 rpm)</p>
14.	<p>Draw a neat gearing diagram of various parts in TFO machine and calculate the following</p> <p>b) Speed of spindle, winding drum and take up roller  c) TPI</p>
15.	<p>Draw the gearing diagram of Open end Spinning machine and calculate the following</p> <p>c) Speeds and surface speed of various parts for processing ____ s count  d) Actual TPI</p>
16.	<p>Suggesting suitable settings, speeds and other important changes to be made from blow room to ring frame for processing Cotton to man-made fibre.</p>
17.	<p>Estimating balancing of machinery for 12,000 / 30,000 spindles capacity for processing carded yarn /combed yarn and draw spin plan.</p>
18.	<p>Estimating the ex-mill price for one kg of carded yarn / combed yarn.</p>

# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2-SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 46046

Semester : IV Semester

Subject Title : FABRIC MANUFACTURE – II PRACTICAL

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
Fabric Manufacture – II Practical	4	64	Internal Assessment	Board Examination	Total	3 Hrs
			25	100*	100	

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

### RATIONALE

To enhance practical knowledge about the dobby, jacquard, drop box and terrymechanisms students will get hands on training by studying each mechanism individually. And also, the mechanisms of automatic shuttle looms like positive let-off, cop changing, warp stop motion will be dismantled and assembled during the practical.

## **OBJECTIVES**

### **Dobby**

1. To study the various parts of the Dobby mechanism.
2. To set the dobbie for correct working with timing and setting.
3. To peg the lattice for LH dobbie for the given weaves
4. To peg the lattice for RH dobbie for the given weaves

### **Drop box**

5. To study the various parts of the Drop box mechanism for correct working with timing and setting.
6. To prepare a chain of metallic cards for weaving a given pattern without card saving device in a drop box loom.
7. To prepare a chain of metallic cards for weaving a given pattern with card saving device in a drop box loom

### **Jacquard**

8. To draw the diagram of a jacquard and to understand the working of a Jacquard mechanism with functions of various parts.
9. To draw the timing diagram of a jacquard for various actions.

### **Automatic loom**

10. To Dismantle and assemble the various mechanisms of the automatic loom with timing and settings.

## 46046 - FABRIC MANUFACTURE – II PRACTICAL

### LIST OF EXPERIMENTS

1. Setting the Dobby mechanism for correct working with timing.
2. Pegging the lattice for LH dobbie for the given weaves: Honey Comb and Mock Leno.
3. Pegging the lattice for RH dobbie for the given weaves: Huck-a-back and Herring Bone Twill
4. Setting the Drop box mechanism for correct working with timing.
5. Preparation of a chain of metallic cards for weaving a given pattern without card saving device in a drop box loom.
6. Preparation of a chain of metallic cards for weaving a given pattern with card saving device in a drop box loom.
7. Sketching the Jacquard mechanism with timing diagram for correct working
8. Sketching the Terry mechanism & setting for correct working with timing.
9. Setting the Mechanical weft feeler in cop changing mechanism for correct working with timing
10. Setting the Cop changing mechanism for correct working with timing.
11. Setting the Warp stop motion for correct working with timing.
12. Setting the Positive let-off motion for correct working with timing.
13. Estimating balancing machinery for 200 automatic looms capacity

### LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS

Dobby loom - 1 no

Jacquard loom - 1 no

Terry loom - 1 no

Drop box loom - 1 no

Automatic loom - 1 no

## BOARD EXAMINATION

### GUIDELINES

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

### DETAILED ALLOCATION OF MARKS

**Single experiment is to be given per student**

PARTICULARS	MARKS
Experiment	50
Write up / diagram / calculations	40
Viva	10
Total	100

## 46046 - FABRIC MANUFACTURE – II PRACTICAL

### MODEL QUESTION PAPER

1. Set the Dobby mechanism for correct working with timing.
2. Peg the lattice for LH dobbie for the given weaves: Honey Comb and Mock Leno.
3. Peg the lattice for RH dobbie for the given weaves: Huck-a-back and Herring Bone Twill
4. Set the Drop box mechanism for correct working with timing.
5. Prepare of a chain of metallic cards for weaving a given pattern without card saving device in a drop box loom.
6. Prepare of a chain of metallic cards for weaving a given pattern with card saving device in a drop box loom.
7. Sketch the Jacquard mechanism with timing diagram for correct working
8. Sketch the Terry mechanism & setting for correct working with timing.
9. Set the Mechanical weft feeler in cop changing mechanism for correct working with timing
10. Set the Cop changing mechanism for correct working with timing.
11. Set the Warp stop motion for correct working with timing.
12. Set the Positive let-off motion for correct working with timing.
13. Estimating balancing machinery for 200 automatic looms capacity.

# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2 -SCHEME

( Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46047  
Semester : IV Semester  
Subject Title : TEXTILE WET PROCESSING - PRACTICAL

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
TEXTILE WET PROCESSING PRACTICAL	4 Hrs	64 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	100*	100	

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

### RATIONALE

To get knowledge on the method of preparing the dye liquor to printing paste and dyeing and printing the yarn/ fabric. To know the different finishing treatment given to dyed fabric.

### OBJECTIVES

1. To get knowledge on the method of analyzing the blended yarn / fabric.
2. To get the practical experience in preparing the liquor for the complete Wet processing treatments.
3. To get the practical experience in preparing the print paste and printing the fabric.
4. To know the different finishing treatments given to the dyed fabric, depending on their end use.
5. To know the different testing methods, to assess fastness of dyes to washing & rubbing.

## GUIDELINES

1. All the 12 experiments given in the list of experiments should be completed and given for the end semester practical examination.
2. 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 equipment set up for doing experiments in the laboratory.
3. The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

## DETAILED ALLOCATION OF MARKS

Single experiment is to be given per student

PARTICULARS	MARKS
Experiment	50
Write up / diagram / calculations	40
Viva	10
Total	100

## DETAILED SYLLABUS

Name of the Topics:

Preparatory, Printing, Finishing, Testing of dyed fabrics

IV SEMESTER	
46047- TEXTILE WET PROCESSING PRACTICAL	
LIST OF EXPERIMENTS	
1.	De-sizing the fabric sample using enzyme.
2.	Scouring the given fabric
3.	Bleaching the yarn / fabric using Hydrogen Peroxide.
4.	Dyeing the cotton material with vat dyes.
5.	Dyeing the cotton material with Bi-Functional reactive dyes.
6.	Dyeing the polyester material with disperse dye.
7.	Dyeing the wool sample with acid dye.
8.	Dyeing the silk sample with basic dyes.
9.	Printing the cotton fabric with reactive dye in direct style.
10.	Printing the cotton fabric using Pigment by direct style.
11.	Finishing of cotton fabric with starch.
12.	Finishing of cotton fabric with softener.
13.	Finishing of cotton fabric with PVA.
14.	Testing the colour fastness of dyed textile materials to washing.
15.	Testing colour fastness of dyed textile materials to rubbing
16.	Estimating the ex-mill price of given woven dyed fabric by assuming necessary data.

No. of students : 30  
No. of students / Batch : 03  
Total No. of batches : 10

### List of Equipment Required for a Batch of 30 Students

01.	Dye bath for dyeing, desizing, scouring, bleaching	- 05 Nos.
02.	Crockmeter for rubbing fastness testing	- 01 Nos.
03.	Laundero meter for washing fastness testing	- 01 Nos.
04.	Printing table	- 01 Nos.
05.	Printing Screens	- 02 Nos.
06.	Padding Mangle	- 01 Nos.
	Manual	- Lab
	Manual	

<b>MODEL QUESTION PAPER</b>
De-size the fabric sample using enzyme.
Do the Scour the given yarn / fabric.
Do the Bleach the yarn / fabric using Hydrogen Peroxide.
Dye the cotton material with vat dyes.
Dye the cotton material with Bi-Functional reactive dyes.
Dye the polyester material with disperse dye.
Dye the wool sample with acid dye.
Dye the silk sample with basic dyes.
Print the cotton fabric with reactive dye in direct style.
Print the cotton fabric using Pigment by direct style.
Finish the cotton fabric with starch.
Finish the cotton fabric with softener.
Finish the cotton fabric with PVA.
Test the colour fastness of dyed textile materials to washing.
Test colour fastness of dyed textile materials to rubbing.
Estimate the ex-mill price of given woven dyed fabric by assuming necessary data.

# **V SEMESTER**

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 46051

Semester : V Semester

Subject Title : TEXTILE TESTING

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

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

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

### Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	MOISTURE AND ITS RELATIONS IN TEXTILES	15
II	FIBRE TESTING	15
III	YARN TESTING:	15
IV	FABRIC TESTING:	14
V	STATISTICAL QUALITY CONTROL	14
	TEST & MODEL EXAM	07
<b>Total</b>		<b>80</b>

**Course Objectives:**

1. To understand the procedure of determining the moisture in atmosphere, moisture in textile materials, fibre length, fibre fineness and rating of fibres based on results.
2. To teach the procedures involved in determination of fibre maturity, fibre strength, trash content, fibre colour and rating of fibres based on the results.
3. To aware the procedure to determine the yarn count, twist, strength, evenness, appearance, classimat faults and yarn hairiness.
4. To know the procedure of determining the various fabric characteristics.
5. To teach the various statistical techniques for process control and quality control in the textile industry.

**Course Outcomes:**

By the end of this course, student will be able to

1. Explain the procedure to determine the moisture in atmosphere, moisture in textile materials, fibre length, fibre fineness by using various instruments and classify the fibres based on results.
2. Describe the procedure to determine the fibre maturity, fibre strength, trash content, fibre colour by using various instruments and classify the fibres based on the results.
3. Explain the procedure to determine the yarn count, twist, strength, evenness, appearance, classimat faults and yarn hairiness by using various instruments.
4. Describe the procedure to determine the crimp, fabric strength, handle, drape, stiffness, crease recovery, abrasion resistance, pilling and air permeability by using various instruments.
5. Employ the various statistical techniques for process control and quality control in the textile industry.

## 46051 – TEXTILE TESTING

Unit	Name of the Topic	Hours
I	<p><b>MOISTURE AND ITS RELATIONS IN TEXTILES</b></p> <p>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.</p>	15
II	<p><b>FIBRE TESTING</b></p> <p>Length – Importance of fibre length - Definition of effective length ,span length and Uniformity ratio - 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.</p> <p>Fibre Quality Index – Principles of measurement of Fibre properties in High volume instrument, Brief Idea about Advanced Fibre Information System (AFIS).</p>	15

III	<p><b>YARN TESTING</b></p> <p>Yarn count – Determination of yarn count by Wrap reel ,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 irregularities – thick, thin, slub, nep - Methods of Assessing yarn evenness by yarn -appearance board and Uster Evenness Tester 4 - Brief study of Uster classmate, Yarn Hariness Index – Definition. Comparison between Online and Offline</p> <p>Testing of Yarn.</p>	15
IV	<p><b>FABRIC TESTING</b></p> <p>Crimp and Crimp % - Definition, Importance – Shirley crimp tester. Cover factor of fabric ,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, tearing and bursting strength tester. Definition of Fabric Air Permeability and Fabric Air Resistance, study of Shirley Air permeability Tester Kawabata – Objective measurement of Subjective Properties.</p>	14

V	<p><b>STATISTICAL QUALITY CONTROL</b></p> <p>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 &amp; CV. Normal distribution curve, Variance Length Curve and its properties. Tests of significance - 't' test for Mean only - Quality Control Chart - Definition, use, Construction of control chart for Averages and Ranges, Six Sigma Concept.</p>	14
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### TEXT BOOKS

S.No	Title	Authors	Publisher
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
2	Hand Book of Methods of Test for Cotton Fibers Yarn and Fabrics	V.Sundaram and R.L.N.Iyengar	CTRL.,Mumbai
3	ISI Hand book of Textile Testing		Indian Standard Institution, New Delhi, India

## REFERENCE BOOKS

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

**46051 - TEXTILE TESTING  
MODEL QUESTION PAPER  
N2 - SCHEME**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Part – A**

**Answer Fifteen questions. All questions carry equal marks. (15 × 2 = 30)**

1.	Define absolute humidity and relative humidity
2.	Name any three instruments used for measuring the R.H
3.	Why regain values are different for different textile fibers?
4.	Write the standard regain values for silk, Polyester and viscose
5.	Define: Effective length and span length
6.	What are the different methods of determination of maturity?
7.	Write the uses of Shirley Trash analyser
8.	Explain the term: FQI ?
9.	Write the features of auto sorter
10.	Explain principle of CRE in strength testing
11.	List out the methods of measuring yarn evenness
12.	What are yarn irregularities?
13.	What is mean by crimp percentage?
14.	What do you mean by cloth cover factor?
15.	Define the term: Fabric handle and Drape
16.	What do you mean by Fabric air Permeability?
17.	What is meant by Histogram ?
18.	Define: Standard deviation
19.	Write any three uses of Quality Control Chart
20.	Write the formula of control chart for range

**Part – C**

Answer **ALL** questions by choosing either **A (or) B**

**(5 × 14 = 70)**

21.A).	i).	Explain in detail about Humidity and its importance of Textiles	(7)											
	ii).	Explain briefly the factors affecting fibre regain	(7)											
		<b>[OR]</b>												
B).	i).	Draw a neat sketch the wet and dry bulb hygrometer	(7)											
	ii).	Explain the working principle of wet and dry bulb hygrometer	(7)											
22.A).	i).	Explain the importance of fibre length	(7)											
	ii).	Draw a neat sketch Sheffield micronaire instrument	(7)											
		<b>[OR]</b>												
B).	i).	Draw a neat sketch Shirley Trash analyser	(7)											
	ii).	Write a short note on Advanced Fibre Information System (AFIS)	(7)											
23.A).	i).	Draw a neat sketch electronic twist tester	(7)											
	ii).	Write the test procedure to determine twist in single yarn	(7)											
		<b>[OR]</b>												
B).	i).	Explain the importance of yarn strength	(7)											
	ii).	Draw a neat sketch Lea strength tester	(7)											
24.A).	i).	Write the test procedure of Shirley crimp tester	(7)											
	ii).	Draw a neat sketch Shirley crimp tester	(7)											
		<b>[OR]</b>												
B).	i).	Explain the working principle of stiffness tester	(7)											
	ii).	With neat sketch explain construction of crease recovery tester	(7)											
25.A).	i).	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td>Value (X)</td> <td>25</td> <td>30</td> <td>22</td> <td>26</td> <td>23</td> <td>28</td> <td>24</td> <td>23</td> <td>27</td> <td>22</td> </tr> </table>	Value (X)	25	30	22	26	23	28	24	23	27	22	(7)
Value (X)	25	30	22	26	23	28	24	23	27	22				
		Calculate the: i) Mean      ii) Mean deviation												
	ii).	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td>Value (X)</td> <td>25</td> <td>30</td> <td>22</td> <td>26</td> <td>23</td> <td>28</td> <td>24</td> <td>23</td> <td>27</td> <td>22</td> </tr> </table>	Value (X)	25	30	22	26	23	28	24	23	27	22	(7)
Value (X)	25	30	22	26	23	28	24	23	27	22				
		Calculate the: i) Standard deviation      ii) C.V%												
		<b>[OR]</b>												

B).	i).	Explain the step by step procedure suitable example in construction of control chart for Average an	(7)												
	ii).	<p>A fabric was tested for warp way tensile strength before and after a chemical treatment. In each case ten specimens were tested and the following results were obtained:</p> <table border="1"> <thead> <tr> <th></th> <th>Treated fabric</th> <th>Untreated fabric</th> </tr> </thead> <tbody> <tr> <td>Number of tests</td> <td>10</td> <td>10</td> </tr> <tr> <td>Mean strength (lbs)</td> <td>48</td> <td>46</td> </tr> <tr> <td>Standard deviation</td> <td>4</td> <td>5</td> </tr> </tbody> </table> <p>Is there sufficient evidence to show that the chemical treatment has really weakened the fabric?</p>		Treated fabric	Untreated fabric	Number of tests	10	10	Mean strength (lbs)	48	46	Standard deviation	4	5	(7)
	Treated fabric	Untreated fabric													
Number of tests	10	10													
Mean strength (lbs)	48	46													
Standard deviation	4	5													
		*****													

# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46052  
Semester : V Semester  
Subject Title : FABRIC STRUCTURE

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours /Week	Hours /Semester	Marks			
FABRIC STRUCTURE	5 Hrs	80 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	100	100	

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

### TOPICS AND ALLOCATION OF HOURS

UNIT	TOPIC	HOURS
I	PLAIN, TWILL AND SATIN SATEEN WEAVES	15
II	CREPE, HONEYCOMB & HUCK-A-BACK WEAVES	15
III	MOCK-LENO, BEDFORDCORD WELTS AND PIQUES	15
IV	WARP AND WEFT PILE & LENO STRUCTURES	14
V	EXTRA WARP/WEFT FIGURING, BACKED AND DOUBLE CLOTHS	14
Test & Model Exam		7
Total		80

## COURSE OBJECTIVES:

1. To teach about the construction of design, draft & peg plan for plain weave, twill weave, satin and sateen weave & its derivatives.
2. To understand the construction of design, draft & peg plan for the huck-a-back, crepe & honey comb weaves & its derivatives
3. To know the construction of mock-leno, bedford cord welts and piques
4. To teach the construction of design, draft & peg plan for warp and weft pile & leno structures.
5. To know the construction of design, draft & peg plan for extra warp/weft figuring, backed and double cloths

## COURSE OUTCOME:

By the end of this course, students will be able to

1. Explain the construction of elements of woven design such as design, draft & peg plan and construct the same for plain weave, twill weave, satin and sateen weave & its derivatives. ( c )
2. Draw the design, draft & peg plan for the huck-a-back, crepe & honey comb weaves & its derivatives ( c )
3. Construct design, draft & peg plan for mock-leno, bedford cord welts and piques ( c )
4. Construct design, draft & peg plan for warp and weft pile & leno structures.
5. Develop various motifs for construction of the extra warp and extra weft figuring and construct design, draft and peg plan for the above designs and .backed and multi layered fabrics like double cloth & treble cloths. ( AP )

## 46052 - FABRIC STRUCTURE

### DETAILED SYLLABUS

Unit	Name of the Topics	Hours
I	<p><b>PLAIN, TWILL, SATIN AND SATEEN WEAVES</b></p> <p>Methods of weave representation – repeat unit – construction of draft and peg plans from given design - construction of draft from design and peg plans - construction of designs from given draft and peg plans - types of drafting – denting – plain and its derivatives – characteristics and uses. Twill and its derivatives – characteristics and uses.</p> <p>Sateen and satin weaves - its characteristics – regular and irregular sateen</p> <p>and satins- uses of sateen weaves</p>	15
II	<p><b>CREPE, HONEYCOMB &amp; HUCK-A-BACK WEAVES</b></p> <p>Crepe weaves - characteristics - construction of crepe weaves upon sateen bases, combinations of floating weave with plain threads, crepe weaves produced by reversing, insertion of one weave over another – uses of crepe weaves.</p> <p>Honey comb weaves - its characteristics, ordinary and brighten honey comb weaves - uses of honey comb weaves</p> <p>Huck-a-back weaves - Characteristics and uses</p>	15
III	<p><b>MOCK-LENO, BEDFORDCORD WELTS AND PIQUES</b></p> <p>Mock-leno weaves – perforated fabrics - Characteristics and uses</p> <p>Bedford cord – plain faced and twill faced bedford cords – Uses</p> <p>WELTS and Piques - classifications of the structures – ordinary wadded welts</p> <p>– piques - loose back piques - fast back piques - method of designing - fourpick fast back pique structures.</p>	15

IV	<p><b>WARP AND WEFT PILE &amp; LENO STRUCTURES</b></p> <p>Terry pile structures - formation of the piles characteristics – uses – 3 pick and 4 pick terry – terry ornamentation - stripe and check dobby designs. Velvets and velveteens – all over and continuous pile structures – fast pile structures , corded velveteens- characteristics and end uses.</p> <p>Leno structure - the principle of leno structure- formation of basic sheds in leno weaving - leno weaving with flat steel doup with an eye – design, draft and lifting plan for leno weave.</p>	14
V	<p><b>EXTRA WARP/WEFT FIGURING, BACKED AND DOUBLE CLOTHS</b></p> <p>Figuring with extra warp and extra weft threads – development of motif indifferent combinations - uses</p> <p>Backed cloths – definition - constructing backed cloths - weft backed cloths and warp backed cloths using standard weaves –wadded backed cloths Double cloths – definition – types and classification - construction of self stitched double cloths</p> <p>Treble cloth – definition – construction of self stitched treble cloth</p>	14

**REFERENCE BOOKS :**

S.No	Title	Authors	Publisher
1	Watson's Textile Design & Colour,	Z.Crosiciki	Universal Publishing Corporation, Newnes, Butterworths, England
2	Structural Fabric Design	James W. Klibbe	North Carolina State University Printshop
3	Woven Cloth Construction	ATC Robinson R. Mark	Textile Institute, Manchester

**Fabric Structure**  
**MODEL QUESTION PAPER**  
**N2 – Scheme**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Part – A**

**Answer Fifteen questions. All questions carry equal marks. (15 × 2 = 30)**

1.	Mention the different methods of weave representation.
2.	What do you mean by repeat in design?
3.	Name different types of drafting
4.	List the derivatives of twill weave
5.	Mention the characteristics of crepe wave?
6.	List the applications of crepe weaves
7.	List the differences between ordinary honeycomb and brighton honeycomb.
8.	Mention the characteristics and uses of huck a back weaves.
9.	Name the effects which are improved by mock leno weaves and mention the weaves combined to form a mock leno weave?
10.	How many series of warp threads are used in bed ford cords and mention its uses?
11.	State the purpose of wadded threads introduced during weaving welt cloth?
12.	Bring out the important differences between a plain and a twill faced Bedford cord.
13.	Classify pile structures.
14.	How 3 pick terry structure is formed?
15.	What is all over velveteen?
16.	Name the different accessories that are used to produce Leno weaving.
17.	What is the purpose of introducing extra threads in extra figured fabrics?
18.	How many no. of warp beams required to construct the warp backed fabrics & weft backed fabrics?
19.	What are the characteristics and the use of backed cloths?
20.	Define multi layered cloths.

**Part - B**

Answer **ALL** questions by choosing either **A (or) B**

(5 × 14 = 70)

21.A).	What are the three derivatives of plain weave? Also mark design, draft and lifting plan.	(14)
	<b>[OR]</b>	
B).	Mark the design, draft and peg plan for the following. (i) Transposed twill	(7)
	(ii) Waved twill with 2/2	(7)
22.A).	Write down the methods of constructing crepe weaves & Mark design with draft & peg plan for any two methods.	(14)
	<b>[OR]</b>	
B).	Draw any two different Honey comb designs with draft & peg plan	(14)
23.A).	Briefly describe the characteristics and uses of the mock leno weaves? Draw a suitable mock leno weave with draft and peg plan.	(7)
	<b>[OR]</b>	
B).	Mention the classification of welt structures and draw the design, draft and peg plan for fast back pique Structure.	(7)
24.A).	Show the design & loop diagram of three pick and four pick terry pile structure construction	(7+7)
	<b>[OR]</b>	
B).	Draw the construction of leno weaving in which two crossing ends and two standard ends are employed.	(14)
25.A).	Select a suitable motif, and develop it to extra weft figuring in 2 and 2 combinations. Give the design draft and peg plan.	(14)
	<b>[OR]</b>	
B).	Give the design and draft of a weft stitched double cloths.	(14)
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# DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

## N2 -SCHEME

(Implemented from the Academic year 2021-2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46071  
Semester : V Semester  
Subject Title : ELECTIVE – I ADVANCED TEXTILE MANUFACTURE

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester:16 weeks

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

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

### Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	TEXTURISATION	15
II	MODERN SPINNING	15
III	MODERN WEAVING	15
IV	NON-WOVENS	14
V	KNITTING TECHNOLOGY	14
	TEST & MODEL EXAM	07
Total		80

## **RATIONALE**

1. To study the latest Texturisation process, Modern developments in spinning, Weaving, Knitting and non-woven's, and this subject is included in the scheme.
2. To enhance the knowledge in false twist texturing, non-woven manufacturing detailed syllabus is given.
3. To enhance the knowledge in Rotor spinning, Friction spinning, Warp knitting and Weft knitting detailed syllabus in projectile , rapier , jet, multiphase weaving is given.

## **Objectives**

1. To know about the various processes involved in Texturisation process.
2. To have knowledge about Rotor spinning machine, DREF spinning.
3. To know about various other systems of modern spinning and yarn properties.
4. To know about the modern shuttleless weaving machines and multi-phase looms
5. To know about different types of non-woven and their manufacturing methods.
6. To know the applications of non-woven.
7. To know about weft & warp knitting – working and uses.

**46071 - ADVANCED TEXTILE MANUFACTURE**

**DETAILED SYLLABUS**

<b>Unit</b>	<b>Topic</b>	<b>Time</b>
I	<p><b>TEXTURISATION</b></p> <p>Texturisation-Definition-objectives-Classification-Type of Textured yarns- Properties of Textured yarns with their longitudinal view. Brief study of Texturing methods: False twist texturing-stuffer box texturing - edge crimping texturing - gear crimping texturing - de knit texturing - Air jet texturing - Advantages of textured yarns - <b>Applications of different types of textured yarns.5</b></p>	15
II	<p><b>MODERN SPINNING</b></p> <p>Rotor spinning: Introduction-Basic principle, constructional details and working of the Rotor Spinning Machine - Detailed study of all the parts of Rotor Spinning machine - structure of rotor yarn - yarn characteristics: Strength, elongation, unevenness, hairiness and imperfections. Yarn faults and remedial measures-end uses.</p> <p>Friction Spinning: Principle of operation - yarn formation in DREF2 and DREF 3 processes - Advantages and Disadvantages - raw material requirement and fibre characteristics for friction spinning. <b>False twist spinning - working principle - end uses.</b></p> <p>Airjet/Vortex Spinning- Working principle, Characteristics of airjet/Vortex yarn. Core and cover yarn spinning. <b>Basic principle of twist spinning, self twist spinning, wrap spinning and characteristics of these yarns</b> Comparison of Ring, Rotor, DREF and Vortex yarns.</p> <p><b>Calculations: production calculation in rotor spinning.</b></p>	15

III	<p><b>MODERN WEAVING</b></p> <p>Shuttlelessweaving–TypesofShuttlelesslooms.Projectileweaving– BriefstudyofProjectileweavingmachine,study of torsion bar picking mechanism and matched cam beat up mechanism. Rapier weaving– Principles of Rapier weaving (Dewas and Gabler), principles of Rigid and flexible rapiers. Air Jet weaving –weft inserting mechanism.</p> <p>Weft accumulators–need and importance. Types of selvages formed in Shuttle less weaving machines. Brief idea about multiphase weaving machines.</p>	15
IV	<p><b>NON WOVENS</b></p> <p>Introduction – Definition – classification of different types of nonwoven – Nonwoven fabric properties – <b>fibres for nonwoven: basic types of staple fibres, properties of basic types of fibres.</b> production process: web formation - principles of dry laid, wet laid and spun laid web formation.</p> <p>Types of Web bonding: Brief study of Mechanical bonding: needle punching and spun lace. Thermal bonding: calendar bonding and through air bonding. Chemical bonding-saturation and spray techniques.</p> <p>Applications of nonwoven fabrics.</p>	14
V	<p><b>KNITTING TECHNOLOGY</b></p> <p><b>knitting:-</b> Introduction, classification – knitting terms and definitions – Course, Wales, stitch density, stitch length, face loop – back loop. <b>Weft knitting</b> - Knitting machine – knitting elements – needles – latch, beard, compound needles. Knitting action of latch needle.- Passage of material through single jersey weft knitting machine. Arrangement of needles in double jersey machine. Representation of plain single jersey fabrics and 1X1 rib fabrics -- Properties of knitted fabrics.</p> <p><b>Warp knitting:-</b> Introduction, classification – definition of over lap &amp; under lap. Knitting action of bearded needle – Tricot machine. Properties of warp knitted fabrics. Comparison of weft knitting and warp knitting.</p> <p>Common knitted fabric defects. Production Calculations in weft knitting machines.</p>	14

**TEXT BOOKS:**

S.No	Title	Author	Publisher
1	Practical Open-end Spinning	S-Haran Halli	Mahajan Publications Ahemadabad
2	Norms for Spinning	D.Mohanraj	SITRA

**REFERENCEBOOKS:**

S.No	Title	Author	Publisher
1	Man-made Fibres	P.W.Moncrieff,	Newens Buttesworth London
2	Textile FibresVol-IV.	A.Shenai	Sevak publication
3	Modern Preparation and Weaving Machinery	A.Ormerod	Butterworth,London
4	Process control in Spinning	Grade and Subramania m	ATIRA
5	Open-end Spinning	Rohlenaetal	Elsevier scientific Publishing Co. AmsterdamNewYork
6	Winding	BTRA	BTRA,Silver Jubilee MonographSeries
7	Knitting Technology	David.J.Spencer	Acadamicpublication
8	An Introduction to weft knitting	A.Smirfitt	Merrow publication England
9	An Introduction to warp knitting	Thomson	Merrow publication England
10	Hand book of nonwovens	S.J.Russell	Woodhead Publishing Ltd, England

## 46071 - ADVANCED TEXTILE MANUFACTURE

### Model question paper

#### N2 – Scheme

Time: 3 Hrs.

Max. Marks: 100

#### Part – A

Answer **Fifteen** questions. All questions carry equal marks.

(15 × 2 =

30)

1.	Define: Texturisation.
2.	How modified stretch yarn is produced?
3.	What are the various methods of texturing?
4.	What is meant by draw texturing?
5.	Write two end uses of rotor spun yarns?
6.	Write the principle of Dref-III spinning.
7.	Write the sequence of process involved in open end spinning principle?
8.	What is wrapping fibres?
9.	What do you mean by a course and wale?
10.	Define loop length.
11.	How tuck stitches are formed?
12.	What are the end uses of fabrics produced using warp knitting technology?
13.	Name the three types of webs prepared for non-woven.
14.	Give any two methods of adhesive bonded fabric production.
15.	List out the different methods of manufacturing thermal bonded non-woven fabrics.
16.	Mention any three fibres to produce non-wovens suitable for building panels for reinforcement.
17.	What is filtration?
18.	Write any two implantable medical textile products.
19.	Write the four key factors that determine how the body reacts to the implant.
20.	What are protection textiles?

**Part – B**

**Answer ALL questions by choosing either A (or) B**

**(5 × 14 = 70)**

21.A)	i).	Explain air-jet texturing process with a neat sketch.	(7)
	ii).	Write a detailed note on false twist texturing process	(7)
		[OR]	
B).	i).	Explain with a neat sketch the simultaneous draw texturing process.	(7)
		Explain with a neat sketch the sequential draw texturing process	(7)
22.A)	i).	Explain short notes about the following parts of the rotor spinning machine. I) Opening roller ii) Feed tube iii) rotor iv) navel.	(14)
		[OR]	
B).	i).	0.16s sliver is fed on to the OE spinning frame. The delivery rate is 120 meters / min and the count required to be delivered is 16s with 4.4 T.M. A. Find the rotor rpm. B. Find the total draft. C. Find the feeding rate. D. Calculate the production in gms/ shift / rotor at 90% efficiency.	(14)
23.A)	i).	Draw the passage of material through Circular knitting machine with neat sketch.	(7)
	ii).	Explain the passage of material through Circular knitting machine.	(7)
		[OR]	
B).	i).	Compare the Warp and weft knitted fabric properties	(7)
	ii).	Compare Tricot and Raschel warp knitting machines.	(7)
24.A)	i).	List out the important types of non-woven and discuss their uses.	(7)
	ii).	List out the different methods of production of web for non-woven fabric production.	(7)
		[OR]	
B).	i).	With a neat sketch briefly explain any two methods of Thermally bonded non-woven fabric production	(14)
25.A)	i).	Define Technical textiles and Write any six applications of it?	(7)
	ii).	Write a detailed note on the four basic functions of geo textiles?	(7)
		[OR]	
B).	i).	Explain the steps for manufacturing conveyor belt.	(7)
	ii).	Explain the construction of hoses	(7)
		*****	

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 -SCHEME

(Implemented from the Academic year 2020 - 2021 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46072  
Semester : V Semester  
Subject Title : ELECTIVE THEORY - I TECHNICAL TEXTILES

#### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
ELECTIVE THEORY - I TECHNICAL TEXTILES	5 Hrs	80 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	100*	100	

\*

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

#### Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	INTRODUCTION	15
II	MEDICAL TEXTILES	15
III	GEO TEXTILES	15
IV	FUNCTIONAL CLOTHING	14
V	TRANSPORTATION TEXTILES	14
	TEST & MODEL EXAM	07
Total		80

## **RATIONALE**

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

## **OBJECTIVES**

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

## V Semester

### ELECTIVE I - 46072 - TECHNICAL TEXTILES

#### DETAILED SYLLABUS

Unit	Name of the Topic	Hours
I	<p><b>INTRODUCTION</b></p> <p>Introduction to technical textiles – Definition – Difference between technical textiles and traditional textiles – classification of Technical textiles and applications (Industrial, Agriculture, Medical, Geo Textile, Transportation, Safety and sports)</p> <p>Types of fibres used and properties – Conventional fibres, new fibres - Ultra fine, Micro fibres, Nano fibres, Hollow fibres, Aramid fibres, Carbon, Nomex, Kevlar and Glass fibres. Bicomponent fibres</p> <p>Various Manufacturing methods - Braiding, Netting, Needle punching, Chemical bonding, 3D weaving and Composites</p>	15
II	<p><b>MEDICAL TEXTILES</b></p> <p>Definitions – Classification of medical textiles – Applications characteristics of material used - Fibres used in Non-implantable materials like wound dressing, Bandage and gauze cloth. Fibres types and manufacturing methods used in implantable materials like vascular graft, sutures and heart valves.</p> <p>Fibre requirements for Extra corporeal devices such as artificial skin, liver and kidney. Fibre requirements and finishing treatment adopted in healthcare and hygiene products such as surgical gowns, masks and wipes.</p> <p>Test methods: Bacterial filtration efficiency, Breathing resistance, Splash resistance, Knot pull strength</p>	15
III	<p><b>GEO TEXTILES</b></p> <p>Geo Textile: Definition and classification – Function of geo textiles (separation, Filtration, reinforcement, drainage and protection) Geo textile properties: physical, mechanical, hydraulic and</p>	15

	<p>environmental. Fibre and fabric types used.</p> <p>Types of Geo textiles:- Brief study of Geo grids, Geo membranes - Woven and Non Woven geo textile products. Application of geo textiles - Road work, railway work, erosion control, Drainage systems.</p> <p>Test methods: Biological clogging, Tensile properties by strip method, water permeability, filtration efficiency and abrasion resistance</p>	
IV	<p><b>FUNCTIONAL CLOTHING</b></p> <p>Definition - Property requirements, classification - safety and Protective Clothing - Fibres used, properties and application of High temperature clothing - flame protective clothing - chemical Protective Clothing - Electro Protective Clothing - High visibility clothing.</p> <p>Defense clothing (Camouflage dress, Bullet proof, non-visibility clothing, tent and parachute) - Application and fibres uses in Sports wear - Water proof and water resistant, breathable laminate fabric.</p>	14
V	<p><b>TRANSPORTATION TEXTILES</b></p> <p>Introduction - Fibre requirement and applications seat belts, Air bags and seat cover. Applications, Fibres and Yarns used Conveyor and Transmission belt. Fibres and Yarns used in Tyre cords fabrics and their manufacturing process flow chart. Fibre and yarns used in industrial hoses, Textiles in car, train, air craft and marine applications.</p>	14

### TEXT BOOKS

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

### REFERENCE BOOKS

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

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name	:	DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	46054
Semester	:	V Semester
Subject Title	:	TEXTILE TESTING – PRACTICAL

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

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

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

### RATIONALE

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

### OBJECTIVES

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

#### **Fibre testing**

To have practical knowledge in the textile testing areas.

1. Determination of trash content by Trash Analyser.
2. Determination of fibre fineness by Sheffield Micronaire.

#### **Yarn Testing**

3. Determination of count by cutting and weighing method.
4. Determination of single yarn twist by twist tester.
5. Determination of ply yarn twist by take up twist tester.

6. Determination of single yarn strength.
7. Determination of Lea strength and CSP.
8. Determination of yarn appearance grade as per ASTM visual examination method.

#### **Fabric testing**

9. Determination of fabric tensile strength by tensile strength tester (Warp way & Weft way).
10. Determination of fabric tearing strength (Warp way & Weft way).
11. Determination of bending modulus by stiffness tester for given sample of fabric (Warp way & Weft way).
12. Estimation of bursting strength of a given fabric.
13. Determination of crease recovery angle in warp way & weft way.

#### **GUIDELINES**

1. All the experiments given in the list of experiments should be completed and given for the end semester practical examination.
2. 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 equipment set up for doing experiments in the laboratory.
3. The external examiners are requested to ensure that a single experimental question should not be given to more than four students while admitting a batch of 30 students during Board Examinations.

#### **DETAILED ALLOCATION OF MARKS**

Single experiment is to be given per student

PARTICULARS	MARKS
Experiment	50
Write up / diagram / calculations	40
Viva	10
Total	100

## LIST OF EXPERIMENTS

1. Determination of fibre fineness by Micronaire.
2. Determination of single yarn twist by tension type twist tester.
3. Determination of ply yarn twist.
4. Determination of single yarn strength.
5. Determination of Lea strength and CSP.
6. Determination of yarn appearance grade as per ASTM visual examination method.
7. Determination of yarn unevenness using PREMIER TESTER 7000
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.
13. Estimation of Air Permeability of fabric
14. Determination of Abrasion Resistance of Fabric

### List of equipment required for a batch of 30 students:

Fibre fineness tester, Wrap block, Wrap reel, Twist tester, Lea strength tester, Yarn appearance winder, Fabric tensile strength tester, Elmendorf / Ballistic tearing strength tester, Fabric thickness tester, Crease recovery tester and Stiffness tester – each 1 no, physical balance – 2no.

### Materials required for a batch of 30 students.

- |                  |                            |
|------------------|----------------------------|
| 1. Cotton fibre  | - 2.0 Kgs                  |
| 2. Roving bobbin | - 5 bobbins                |
| 3. Yarn          | - cops/ cones of any count |
| 4. Fabric        | - 30 meters                |

**Manual: Laboratory manual.**

## MODEL QUESTION PAPER

1. Determination of fibre fineness by Micronaire.
2. Determination of single yarn twist by tension type twist tester.
3. Determination of ply yarn twist.
4. Determination of single yarn strength.
5. Determination of Lea strength and CSP.
6. Determination of yarn appearance grade as per ASTM visual examination method.
7. Determination of yarn unevenness using PREMIER TESTER 7000
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.
13. Estimation of Air Permeability of fabric
14. Determination of Abrasion Resistance of Fabric

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name	:	DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	46055
Semester	:	V Semester
Subject Title	:	FABRIC STRUCTURE PRACTICAL

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject RATIONAL a	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
			Internal Assessment	Board Examination	Total	
FABRIC STRUCTURE PRACTICAL	4 Hrs	64 Hrs	25	100*	100	3 Hrs

To enhance the practical knowledge to analyse the sample of cloth, this fundamental, help the students to acquire knowledge about the design, draft and peg plan loom requirement to weave the cloth.

#### OBJECTIVES

##### Woven fabric analysis

To identify warp and weft threads, selvedge, weaving method and machine to produce the fabric.

To analyze the given fabric and find out design, draft and peg plan.

##### Woven fabric quality particulars

To find out the particulars like Ends and picks per unit length, Count of warp and weft, crimp percentage.

##### Fabric costing

With the above particulars the student has to do fabric costing by suitable formulae explained to them during practical.

## GUIDELINES

1. All the cloth samples given in the list of experiments should be completed and given for the end semester practical examination.
2. In order to develop best skills every student should be provided with a separate fabric sample of suitable size.
3. The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations

### DETAILED ALLOCATION OF MARKS

Single experiment is to be given per student

PARTICULARS	MARKS
Experiment / Design Work	60
Write up	30
Viva - Vice	10
Total	100

### LIST OF EXPERIMENTS

1. Analysis of a given plain weave Grey cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
2. Analysis of a given plain weave Poplin cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
3. Analysis of a given plain weave Voile cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
4. Analysis of a given Striped cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
5. Analysis of a given Checked cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
6. Analysis of a given Mat weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
7. Analysis of a given Herring bone twill weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
8. Analysis of a given Left / Right hand twill weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric
9. Analysis of a given Drill weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
10. Analysis of a given satin weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
11. Analysis of a given sateen weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
12. Analysis of a given crepe weave cloth sample for the cloth particulars and estimation of the cost per metre of the fabric.
13. Estimating the ex-mill price of given woven fabric by assuming necessary data.

**List of equipment required for a batch of 30 students:**

**Equipment required** : Beesley`s Balance 1 no

**Materials required** : 2 Meters of each samples for a batch of 30 students.

**SAFETY PRECAUTIONS TO BE FOLLOWED**

The students while doing the experiments,

1. Should wear safe foot wear, preferably shoes.
2. Should keep their shirts tucked in.

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2- SCHEME

(Implemented from the Academic Year 2021-2022)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 46056

Semester : V Semester

Subject Title : Communication Skills Practical

### TEACHING AND SCHEME OF EXAMINATION

No. of weeks per semester: 16

Subject	Instructions		Examination			Duration
	Hours/ Week	Hours/ Semester	Marks			
			Internal Assessment	Autonomous Examinations	Total	
Communication Skills Practical	4	64	25	100*	100	3 Hrs.

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

### Units and Allocation of Hours

S. No.	Unit	Time
1.	Listening Skill	20
2.	Reading Skill	12
3.	Speaking Skill	20
4.	Writing Skill	12
	Total	64

### RATIONALE:

1. "The quality of your life is in the quality of your communication," opined Antony Robins. Language is the means of self-expression and one of the prime most tools for communication. Communicative fluency augments one's personal, academic, social and professional life.
2. The present syllabus, focusing on four Communication Skills, viz. Listening, Reading, Speaking and Writing, enables the students at Diploma level gain confidence and fluency in communication which in turn would enhance them face their career commitments with globalized standards.

### OBJECTIVES:

At the completion of the study, the students will be able to

1. Improve their auditory skills to attentively listen, effectively comprehend and identify important information and keywords.

2. Fine tune their reading skills and make them articulate lucidly with proper stress and intonation
3. Perfect their reading comprehending skills using the techniques like Skimming to get the general idea and Scanning to grasp specific information.
4. Pronounce words with renewed confidence.
5. Express their needs, obligations, suggestions, gratitude and apology with poise and conviction.
6. Introduce themselves and others in a self-assuring manner.
7. Partake in face to face conversation with skilled agility.
8. Emphatically write and complete the missing parts.
9. Acquire a sound knowledge on the usage of non-verbal communication.
10. Follow the ethical principles in their workplace and society.

## 46056 – Communication Skills Practical

### Detailed Syllabus

Unit	Name of the Topic	Hours
I	<b>Listening Skill</b> Listening to Speeches by Great Speakers/ TV News (Assessment Through note taking) Listening to Short Stories (Assessment by Vocabulary Check) Listening to Indian / British / American English (Assessment by Cloze)	20
II	<b>Reading Skill</b> Stress & Intonation Tongue Twisters / Tongue Modulators Frequently Mispronounced Words Reading Newspaper – (Skimming & Scanning)	12
III	<b>Speaking Skill</b> Polite Expressions (Greeting, Requesting, Thanking, Apologizing, Opinions, Suggestions) Introducing Yourself/ Friends/ Family Recite - quotes of Leaders/ Scholars/Scientists Face to Face Conversation	20
IV	<b>Writing Skill</b> Thought Fillers Completing an Incomplete Story Non-Verbal Communication Professional Ethics	12

## Autonomous Practical Examinations

### Note:

1. The students should be given proper practice in all the exercises. All the exercises should be completed before the examinations.
2. The students should maintain a worksheet and the same should be submitted during the Autonomous Practical Examinations.
3. The external examiner should verify the availability of the facility for the batch strength before the commencement of Practical Examination.
4. PART D should be conducted first for all the students. Part A, Part B and Part C can be conducted by both examiners by dividing the students into two groups.

### Part A – Listening (No. of Exercises: 3, Duration: 45 min.)

**Question No.1:** The examiner shall play either the audio of the speech of a great speaker or that of TV news running from 3 to 5 min. The audio can be played twice. The candidates may be given 10 minutes to take notes as directed in the question paper.

**Question No.2:** A short story selected by the external examiner shall be played only once without transcript. The objective of this exercise is to test the Listening ability of the candidate and therefore questions should be framed accordingly in the pattern of question and answer. The time to complete this exercise is 5 minutes.

**Question No.3:** Any one of the audios (British English, American English or Indian English) may be selected by the external examiner and the same shall be played only once. Maximum of 5 questions for filling in the blanks may be given and the candidates may be provided maximum of 10 minutes to answer the questions.

*(This part shall be completed within 45 minutes including the time used for playing listening audios.)*

### Part B – Reading (No. of Exercises: 3, Duration: 45 min.)

Each batch may be divided into two. Both examiners may engage all the students.

Question No. 1 – Readout the tongue twister.

Question No. 2 - A passage from newspaper can be given for reading.

Question No.3 - Pronounce the words correctly. Part B shall be completed within 45 minutes.

### Part C – Speaking (No. of Exercises: 4, Duration: 45 min.)

Divide the students into pairs to make it convenient for conversations in English.

Both examiners can handle.

**Question No.1:** Polite expressions for the context provided.

**Question No. 2:** Self-introduction for the interview.

**Question No.3:** Any five quotes can be recited from the given list of quotes of Leaders, Scholars and Scientists.

**Question No. 4:** The candidates have to speak as directed by the examiner concerned. All the questions are mandatory. Part C shall be completed within 45 minutes.

**Part D – Writing (No. of Exercises: 3, Duration: 45 min.)**

All students should appear for this part.

**Question No.1:** Five questions with blanks shall be asked based on a list of 25 frequently used thought fillers already trained during lab classes.

**Question No. 2:** Shall consist of an unknown incomplete story providing scope for further development and application of imagination. (minimum 3 lines for completion with suitable title and moral)

**Question No. 3:** This question has two sections viz., Section-A and Section-B. Each section contains 4 questions. Section-A is for Non-verbal Communication and Section-B is for Professional Ethics. Students have to answer 5 questions choosing at least 2 questions from each section.

**Detailed Allocation of Marks**

<b>Sl. No.</b>	<b>Detailed Allocation of Marks</b>	<b>Maximum Marks</b>	<b>Marks Awarded</b>
A	Listening	30	
B	Reading	20	
C	Speaking	30	
D	Writing	20	
	<b>Total</b>	<b>100</b>	

## Guidelines for conduct of Practical Classes and Writing Worksheet

There are 14 Exercises in total equally distributed to each skill as follows:

S. No.	Name of the Exercise	Minimum Exercises to be Practiced / Written in Worksheet
<b>Listening Skill</b>		
1	Listening to Speeches by Great Speakers / TV News	Each One exercise
2	Listening to Short Stories	Minimum of two exercises
3	Listening to Indian / British / American English	Minimum of two exercises
<b>Reading Skill</b>		
4	Reading Tongue Twisters	A list of 25 tongue twisters
5	Reading English Newspapers	Minimum 2 passages from any English Newspaper
6	Frequently mispronounced words	List of 25 words
<b>Speaking Skill</b>		
7	Making Polite Expressions	Polite expressions - Greeting, Requesting, Thanking, Apologizing, Opinions, Suggestions
8	Introducing oneself / friends/family	Minimum two exercises for introducing oneself and introducing others
9	Reciting quotes	Quotes of Leaders/Scholars/Scientists (List of 25 quotes)
10	Face to face conversation	Minimum two exercises
<b>Writing Skill</b>		
11	Use of Thought Fillers	A list of 25 frequently used thought fillers
12	Completing an Incomplete Story	Minimum of two exercises (conclusion – minimum 3 lines, title & moral)
13	Non-Verbal Communication	A list of 5 questions and answers relating to non- verbal communication.
14	Professional Ethics	A list of 10 questions and answers relating to Professional Ethics

### LABORATORY REQUIREMENT:

- a. An echo-free room
- b. A Projector
- c. A minimum of two computers with internet access
- d. P.A system with two nos. of wired/wireless mike
- e. Any Standard English Newspaper
- f. A White Board with Markers
- g. Comics / Story books – 2 Nos.

**COMMUNICATION SKILLS PRACTICAL  
MODEL QUESTION PAPER**

Duration: 3 Hrs.

Max. Marks: 100

**PART A: LISTENING (30 Marks)**

**I. Answer the following:**

1. Listen to the speech of a Great Speaker / TV News played to you and take notes. (10)
2. Listen to the Short Story / conversation read out/ played to you and answer the questions. (10)
3. Listen to the following American English / British English / Indian English Audio and Fill in the blanks. (10)

**PART B: READING (20 Marks)**

**II. Answer the following:**

1. Read out the following tongue twisters as fast as possible: (10)
  - a. Find a kind mind to wind and bind you with the kind mind like a wind.
  - b. How many cookies could a good cook cook if a good cook could cook cookies?
  - c. We should fight for our rights as fight is might.
  - d. Can you can a can as a canner can can a can?
  - e. Lesser leather never weathered wetter weather better.
2. Read the given newspaper passage with proper intonation. (5)
3. Pronounce the following commonly mispronounced words rightly. (5)
  - a) Pizza    b) dengue    c) bury    d) asthma    e) Wednesday

**PART C: SPEAKING (30 Marks)**

**III. Answer the following:**

1. Make polite expressions for the contexts provided: (5)
  - a. Request your teacher for a book.
  - b. How will you politely apologize for coming late to the meeting?
2. Introduce yourself /friend/family member as a candidate appearing for the interview. (10)
3. Recite any five quotes of Leaders/scholars/Scientists. (5)
4. Attempt a face to face conversation with your friend about the addiction to mobile phone by youngsters.(5 exchanges) (10)

**PART D: WRITING (20 Marks)**

**IV. Answer the following:**

1. Fill in the blanks with suitable thought fillers given in the brackets. (5)  
(look, I mean, you know, well, anyway)
  - a. I can't tell her name, , she may grow angry.
  - b. \_\_\_\_\_What do you want me to do for that?
  - c. Nobody told me about this marriage, no one even in my own department.
  - d. \_\_\_\_\_as I said, I'm going to talk to the manager to cancel this meeting.
  - e. \_\_\_\_\_it is not the way to talk to your senior.

2. Complete the following story by adding three more lines and give a suitable title to it. (5)

Once upon a time there was a poor farmer in a village. He had two sons and a daughter. Both sons were lazy whereas the daughter was so intelligent. One day the father was sick at bed. The daughter who went to market in the morning did not return till late night....

3. Answer any FIVE of the following in about 50 words choosing at least 2 questions from each section. (5x2=10)

**Section A: (Non-verbal Communication)**

1. What is the definition of nonverbal communication?
2. What does good eye contact mean?
3. What are the Types of Nonverbal Communication?
4. What is the importance of non-verbal communication?

**Section B: (Professional Ethics)**

1. What is integrity?
  2. What is team work?
  3. What is self-confidence?
  4. What are the universally accepted ethical principles?
-

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 - SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY\*

Subject Code : 46057

Semester : V Semester

Subject Title : ENTREPRENEURSHIP AND STARTUPS

\* All Branches of Diploma in Engineering and Technology and Special programme.

### TEACHING AND SCHEME OF EXAMINATION

No. of Weeks per Semester: 16 Weeks

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

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

### Topics and Allocation of Hours

UNIT	TOPIC	HOURS
I	Entrepreneurship – Introduction and Process	10
II	Business Idea and Banking	10
III	Start-ups, E-cell and Success Stories	10
IV	Pricing & Cost Analysis	10
V	Business Plan Preparation	10
Revision, Field visit and Preparation of case study report		14
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

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

## DETAILED SYLLABUS

Unit	Name of the Topics	Hours
I	<p><b>Entrepreneurship – Introduction and Process</b></p> <ul style="list-style-type: none"> <li>● Concept, Functions and Importance</li> <li>● Myths about Entrepreneurship</li> <li>● Pros and Cons of Entrepreneurship</li> <li>● Process of Entrepreneurship</li> <li>● Benefits of Entrepreneur</li> <li>● Competencies and characteristics</li> <li>● Ethical Entrepreneurship</li> <li>● Entrepreneurial Values and Attitudes</li> <li>● Motivation</li> <li>● Creativity</li> <li>● Innovation</li> <li>● Entrepreneurs - as problem solvers</li> <li>● Mindset of an employee and an entrepreneur</li> <li>● Business Failure – causes and remedies</li> <li>● Role of Networking in entrepreneurship</li> </ul>	10
II	<p><b>Business Idea and Banking</b></p> <ul style="list-style-type: none"> <li>● Types of Business: Manufacturing, Trading and Services.</li> <li>● Stakeholders: sellers, vendors and consumers and Competitors</li> <li>● E- commerce Business Models</li> <li>● Types of Resources - Human, Capital and Entrepreneurial tools and resources</li> <li>● Selection and utilization of human resources and professionals, etc.</li> <li>● Goals of Business; Goal Setting</li> <li>● Patent, copyright and Intellectual property rights</li> <li>● Negotiations - Importance and methods</li> <li>● Customer Relations and Vendor Management</li> <li>● Size and capital-based classification of business enterprises</li> </ul>	10

	<ul style="list-style-type: none"> <li>● Various sources of Information</li> <li>● Role of financial institutions</li> <li>● Role of Government policy</li> <li>● Entrepreneurial support systems</li> <li>● Incentive schemes for state government</li> <li>● Incentive schemes for Central governments.</li> </ul>	
III	<p><b>Start ups, E-cell and Success Stories</b></p> <ul style="list-style-type: none"> <li>● Concept of Incubation centre's</li> <li>● Visit and report of DIC , financial institutions and other relevance institutions</li> <li>● Success stories of Indian and global business legends</li> <li>● Field Visit to MSME's</li> <li>● Study visit to Incubation centers and start ups</li> <li>● Learn to earn</li> <li>● Startup and its stages</li> <li>● Role of Technology – E-commerce and Social Media</li> <li>● Role of E-Cell</li> <li>● E-Cell to Entrepreneurship</li> </ul>	10
IV	<p><b>Pricing &amp; Cost Analysis and entrepreneurial traits</b></p> <ul style="list-style-type: none"> <li>● Identifying and testing business opportunities in Textiles decomposing complex business problems in the field of textiles.</li> <li>● Identify your entrepreneurial traits to put up a spinning related business.</li> <li>● Identify the business opportunities that suits you in spinning/weaving.</li> <li>● Use the support systems to zero down to your business idea in technical textiles</li> <li>● Develop comprehensive business plans to market Tencel fabric</li> <li>● Prepare plans to manage modern weaving plant effectively.</li> </ul>	10

V	<p><b>Business Plan Preparation</b></p> <ul style="list-style-type: none"> <li>● Describe the procedure to evaluate your entrepreneurial traits as a career option for the high-quality OE yearn to be manufactured.</li> <li>● Steps in setting up of a denim business.</li> <li>● Arrive at a business opportunity on the basis of given data/circumstances with justification.</li> <li>● Describe the schemes offered by the government for starting the specified enterprise.</li> <li>● Suggest a suitable place for setting up Medical textiles on the basis of given data/circumstances with justification.</li> </ul>	10
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**REFERENCE 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	-	15
<b>Total</b>	-	<b>25</b>

**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
	<b>Total</b>	<b>100</b>

<b>ENTREPRENEURSHIP AND STARTUPS</b>	
<b>MODEL QUESTION PAPER</b>	
Time: 3 Hrs.	Max.Marks:100
<b>PART - A</b>	
<b>I</b>	<b>Answer all the questions. (10 x 3 = 30)</b>
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.
<b>II</b>	<b>Answer all the questions (3 x 5 = 15)</b>
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?

<b>PART - B</b>	
Practical Examination – Submission on Business Plan / Feasibility Report or Report on Unit 4 & 5	<b>(40)</b>
<b>PART - C</b>	
Viva Voce	<b>(15)</b>

# **VI SEMESTER**

**DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS  
N2 -SCHEME**

**(Implemented from the Academic year 2021 - 2022 onwards)**

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
 Subject Code : 46061  
 Semester : VI Semester  
 Subject Title : TEXTILE MANAGEMENT

**TEACHING AND SCHEME OF EXAMINATION**

No of weeks per semester: 16 weeks

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

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

**Topics and allocation of Hours**

UNIT	TOPIC	HOURS
I	INTRODUCTION TO MANAGEMENT, SITE SELECTION, PLANT LAY OUTS	15
II	PRODUCTION AND FINANCIAL MANAGEMENT	15
III	HUMAN RESOURCE MANAGEMENT	15
IV	SUPERVISORY AND SAFETY MANAGEMENT	14
V	EXPORT MANAGEMENT	14
	TEST & MODEL EXAM	07
Total		80

### **Course Objectives :**

1. To teach the fundamentals of management system of wage payment and the various labour welfare activities in a textile mill.
2. To understand the production layouts and industrial buildings, selection of site and factors affecting the productivity.
3. To know the inventory control methods, material handling in textile mills, financial management, cost and its components & method of calculating Ex-mill price.
4. To understand the role of supervisor, precautions and prevention of industrial accidents and safety devices used in textile mills.
5. To teach the export policy, export order processing and entrepreneurship.

### **Course Outcomes:**

By the end of this course, students will be able to

1. Explain the fundamentals of management system of wage payment and the various labour welfare activities in a textile mill. ( c )
2. Describe the production layouts and industrial buildings, selection of site and factors affecting the productivity. ( c )
3. Outline the inventory control methods, material handling in textile mills, financial management, cost and its components & method of calculating Ex mill price. ( c )
4. Explain the role of supervisor, precautions and prevention of industrial accidents and safety devices used in textile mills. ( c )
5. Describe the export policy, export order processing and entrepreneurship.( c )

## 46061 - TEXTILE MANAGEMENT

### DETAILED SYLLABUS

Unit	Name of the Topic	Hours
I	<b>INTRODUCTION TO MANAGEMENT, SITE SELECTION, PLANT LAYOUTS</b> 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.	15
II	<b>PRODUCTION AND FINANCIAL MANAGEMENT</b> 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 Equipment 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

III	<p><b>HUMAN RESOURCE MANAGEMENT</b></p> <p>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.</p>	15
IV	<p><b>SUPERVISORY AND SAFETY MANAGEMENT</b></p> <p>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.</p>	14
V	<p><b>EXPORT MANAGEMENT</b></p> <p>Importance and benefits of international marketing. World Trade Organization (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. Export pricing-Ex factory, Free On Truck (FOT), Free On Board (FOB), Cost &amp; Freight(C&amp;F), Cost Insurance Freight (CIF) and Franco pricing. Brief Idea about Management Information System (MIS), Just In Time (JIT) and Total Quality Management (TQM).</p>	14

**TEXT BOOKS:**

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

**REFERENCE BOOKS**

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

**46061 TEXTILE MANAGEMENT**  
**MODEL QUESTION PAPER**  
**N2 Scheme**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Part – A**

**Answer Fifteen questions. All questions carry equal marks.**

**(15 × 2 = 30)**

1.	Name the functions of management
2.	Define : Goal.
3.	Name the different types of training provided for an employee.
4.	What is span of control?
5.	Write TWO methods of ventilation?
6.	Why humidification is important in textile mills?
7.	Define “ Work study ”.
8.	State the objectives of PPC.
9.	What is called as inventory?
10.	State any two important principles for proper material handling.
11.	Write down the objectives of Financial Management.
12.	List down the objectives of depreciation.
13.	Mention some important qualities for a supervisor.
14.	Write the different types of communication.
15.	State any two unsafe act for accidents.
16.	Mention the objects of safety committee.
17.	What is known as international marketing?
18.	Define : documentary credit.
19.	Mention any two of the export incentives.
20.	How an entrepreneur has to register a firm?

**Part – B**

**Answer ALL questions by choosing either A (or) B**

**(5 × 14 = 70)**

21.A).	i).	Explain the functions of management ?	(7)
	ii).	Explain the Steps involved in Job Analysis.	(7)
		<b>[OR]</b>	
B).	i).	Explain the different types of wage payment systems.	(7)
	ii).	Explain the various Methods of Training Adopted in a Textile Mills.	(7)
22.A).	i).	Explain the different types of roof construction in Industry.	(7)
	ii).	Draw the layout suitable for a textile mill?	(7)
		<b>[OR]</b>	
B).	i).	Write an essay on importance of Ventilation and Humidification in Textile Mill.	(7)
	ii).	Illustrate the symbols with symbols.	(7)
23.A).	i).	Write down the elements of cost.	(7)
	ii).	How is selling price could be determined ?	(7)
		<b>[OR]</b>	
B).	i).	State the objectives of inventory control.	(7)
	ii).	Draw the neat sketches of any four material handling equipment commonly used in textile mills.	(7)
24.A).	i).	Explain about the different types of Communication.	(7)
	ii).	State the difference between leader and supervisor.	(7)
		<b>[OR]</b>	
B).	i).	What are the causes for Industrial Accidents ?	(7)
	ii).	Explain the preventive measures to reduce Accidents.	(7)
25.A).	i).	Explain the importance of exports in relation to our national economy?	(7)
	ii).	Write in detail about the various steps involved in an export order execution .	(7)
		<b>[OR]</b>	
B).	i).	Write a note on the product identification for export?	(7)
	ii).	Explain the Characteristics and functions of an Entrepreneur.	(7)
		*****	

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name	:	DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	46062
Semester	:	VI Semester
Subject Title	:	GARMENT MANUFACTURE

#### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

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

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

#### Topics and allocation of Hours

UNIT	TOPIC	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 DESIGN	14
	TEST & REVISION	07
Total		80

## **RATIONALE**

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

## **OBJECTIVES**

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

## 46062 - GARMENT MANUFACTURE

### DETAILED SYLLABUS

Unit	Name of the Topic	Hours
I	<p><b>MEASUREMENTS, PATTERNS AND TOOLS FOR GARMENT CONSTRUCTION</b></p> <p>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.</p>	15
II	<p><b>DRAFTING AND PATTERN LAYOUT</b></p> <p>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.</p>	15
III	<p><b>CUTTING AND GARMENT CONSTRUCTION</b></p> <p>Objectives of spreading &amp; 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 &amp; Slot seam. Construction of ‘A’ line frock, Ladies skirt, Gent’s half sleeve shirt and Ladies nightwear.</p>	15

IV	<p><b>PACKING AND QUALITY REQUIREMENTS</b></p> <p>Types of pressing and its Objectives. 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. Objectives of Organic cotton certification - GOTS, WRAP, SA8000, Oeko-Tex and Supima</p>	14
V	<p><b>FASHION DESIGNING</b></p> <p>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.</p>	14

### TEXT BOOKS

S.NO	Author	Title	Publisher	Edition
1	Carr and Lathem	The Technology of Clothing Manufacture	Blackwell Publication Oxford UK	2 <sup>nd</sup> Indian Reprint
2	Gerry Cooklin	Introduction toClothing Manufacture	Blackwell Publication Oxford UK	2 <sup>nd</sup> Indian Reprint
3	Pradip V.Metha & Satish. K. Bharadwaj	Managing Quality in the Apparel Industry	New Age Internationa IPublishing, New Delhi	1st Edition Reprint

## REFERENCE BOOKS

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

**46062- GARMENT MANUFACTURE**

**MODEL QUESTION PAPER**

**N2 SCHEME**

**Time: 3 Hrs**

**Max Marks:100**

**PART - A: Answer 15 Questions. All Questions carry equal marks. ( 15 x 2 = 30 )**

1. Define Paper Pattern.
2. Name the two types of Patterns.
3. Define Pattern Grading.
4. Mention the names of two Measuring tools.
5. What is Plaid fabric?
6. Specify the two major types of layout.
7. What is Asymmetrical design?
8. Name the two types of lay.
9. Specify the objective of Spreading?
10. Name two cutting machines.
11. Mention the two Uses of 5 thread flatlock stitch.
12. Define Seam.
13. Specify the Objective of Pressing.
14. What is Ratio Pack?
15. What is Raw Material Inspection?
16. What is AQL?
17. Define Texture.
18. What is Harmony?
19. List down the Primary colours.
20. What is Tone?

**PART - B: Answer ALL Questions by choosing either A ( or) B. ( 5 X 14 = 70 )**

21. A) i). Write about Eight Head Theory and it's uses. ( 7 )  
ii). State any Seven Measurements to be taken for Ladies Garments. ( 7 )  
B). i). State the important Principles of Pattern Drafting. ( 7 )  
ii). Write about Cutting Tools. ( 7 )
22. A). i).Draft the Patterns required for A - Line Frock. ( 7 )  
ii). Write about the Fabrics used in Garment Manufacture. ( 7 )  
B). i). Write down the Rules for Pattern Layout. ( 7 )  
ii). Write about Marker Planning and Lay length. ( 7 )
23. A. i). Write about Straight Knife Cutting Machine. ( 7 )  
ii). State the Functions of Various Parts of a Sewing machine. ( 7 )  
B. i). Write down the Properties of important Machine Stitches. ( 7 )  
ii). Write Construction of Ladies nightwear. ( 7 )
- 24.A.i). Write about Fabric Inspection Systems. ( 7 )  
ii). Write Packing Materials used in the Manufacture of Garment. ( 7 )  
B.i). Write about In-Process Inspection. ( 7 )  
ii). Write about Pressing. ( 7 )
25. A i). State the Elements of Design. ( 7 )  
ii).Write Pigment theory of Colours. ( 7 )  
B.i).State the Principles of Design. ( 7 )  
ii).Write about Warm and Cool colours. ( 7 )

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46081  
Semester : VI Semester  
Subject Title : ELECTIVE THEORY –II MAINTENANCE OF TEXTILE  
MACHINERY

#### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
ELECTIVE THEORY-II MAINTENANCE OF TEXTILE MACHINERY	5 Hrs	80 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	100*	100	

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

#### Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	BASIC OF MAINTENANCE - PLANNING, SCHEDULING AND CONTROLLING	15
II	STORE CONTROL, ASSESSMENT OF MAINTENANCE, APPLICATION OF NEW CONCEPTS	15
III	GAUGES AND TOOLS, VIBRATION AND LEVELLING	15
IV	MAINTENANCE OF SPINNING MACHINERIES	14
V	MAINTENANCE OF WEAVING KNITTING AND SEWING MACHINES	14
	TEST & MODEL EXAM	07
Total		80

## **RATIONALE**

1. To study the fundamental concept in basics of maintenance, store control & maintenance of spinning and weaving machineries.
2. To enhance the knowledge for the maintenance supervisory job in textile mills, their authority and responsibility will be taught to the students.
3. To improve the knowledge in inventory control in stores and also maintenance cost will be taught to the students.

## **OBJECTIVES**

1. To know about the basics of maintenance
2. To understand about planning, scheduling and controlling.
3. To have knowledge about stores and inventory control.
4. To know about the tools and gauges used in Textile industry.
5. To understand the balancing of machines.
6. To gain knowledge in routine and preventive maintenance of spinning machines.
7. To acquire knowledge about lubrication of spinning preparatory machines.
8. To understand the routine and preventive maintenance of Weaving machines.
9. To understand the routine and preventive maintenance of knitting and sewing machines.

**ELECTIVE THEORY – II 46081 MAINTENANCE OF TEXTILE MACHINERY  
DETAILED SYLLABUS**

Content: Theory

Sl.No.	Name of Topic	Time
I	<p><b>Basics of Maintenance - Planning, Scheduling and Controlling</b> Organisation chart of spinning mill. Objectives of Maintenance. - Basics requirements for good maintenance, Different types of Maintenance-Planned and break down maintenance. Scope and their suitability.</p> <p>Maintenance Planning. Fundamentals of planning-Duration, frequency, list of activities. Factors involved in Maintenance planning - Equipment history record, recommendation of machinery manufacturer and experts, Yearly maintenance programme.</p> <p>Maintenance Scheduling – Yearly maintenance plan, weekly work order, Rescheduling of maintenance.</p> <p>Maintenance Control - Objective. Records for effective control - machine card, emergency work order, monthly computations of spares and lubrication record, maintenance ledger, OT register, accident register. Duties and responsibilities of maintenance supervisor.</p>	15
II	<p><b>Store control, Assessment of Maintenance, Application of New Concepts</b></p> <p>Stores – definition of store. Requirements for good store control. Bin card - Importance and Advantages of bin card. ABC analysis. Records maintained in stores - indent on store, material refund note, store ledger. Duties and responsibilities of a store keeper. Importance of coordination of production, quality and maintenance departments in textile mills.</p> <p>Assessment of existing maintenance-objectives-machine availability %, Maintenance cost %, labour performance index, machine performance. Delay analysis and maintenance audit. Housekeeping and 5S work practice. Concepts of Total Productive Maintenance (TPM) &amp; Selective Maintenance Program (SMP). Total quality management (TQM), Six sigma.</p>	15

III	<p><b>Gauges and Tools, Vibration and Levelling</b></p> <p>Gauges and Tools- Brief study of various gauges used in textile industry for Maintenance-leaf gauge, Tacho meter, Dial gauge, shore hardness tester, Top roller cot diameter checking gauge, , Top Arm Roller Pressure (TARP) checking gauge, AITRA pneumafil suction pressure checking gauge, Bottom roller setting gauge, Torque wrench, Card wire inspection microscope. Special lubricating equipment for spindle oil topping, flushing andreplenishing (lubristor).</p> <p>Vibration - Causes of vibration - Effects of vibration - Measurement of vibration - Shirley roller vibration detector- brief study of stroboscope.</p> <p>Levelling- Purpose of levelling. Various levelling instruments- Sprit level and water level. Static and dynamic balancing of card cylinder.</p>	15
IV	<p><b>Maintenance of Spinning Machineries</b></p> <p>Metallic Card wire clothing-Procedure and equipment used for card clothing. Card grinding - importance of grinding – procedure and equipment used for grinding. Cots buffing- importance of cots buffing - procedure and equipment used- Berkoloation. Roller eccentricity- causes of roller eccentricity. Spindle and lappet gauging – importance and procedure.</p> <p>Routine and Preventive maintenance - Maintenance program for Blow room, Carding, Draw frame, Comber, Simplex, Spinning frame. Maintenance of spinning machineries during strike and lock out periods. Erection procedure for carding machine, simplex, and ring frame.</p>	14
V	<p><b>Maintenance of Weaving, Knitting and Sewing Machines</b></p> <p>Routine and Preventive maintenance - Maintenance program for winding - warping - pirn winding – sizing machines. Maintenance program for plain, automatic looms. Maintenance of loom parts - Care and maintenance of heald, reed, shuttle, picker. Conversion of plain looms to semi automatic looms. Stepby step procedure for loom erection. Maintenance of weaving preparatory machines and looms during strikeand lay off periods.</p> <p>Maintenance of knitting and simple sewing machines. Maintenance of humidification plant and air compressor.</p>	14

### TEXT BOOKS

S.NO	TITLE	AUTHOR	PUBLISHERS
1	Maintenance Management in Spinning	T.V.Rathinam K.P.Chellamani	SITRA Coimbatore
2	Maintenance in Ring Spinning	AT.Shahani, B.P.Todankar, C.K.Mistry and N.Balasubramanian	BTRA Publications, LBS marg Ghatkoper, Bombay - 86

### REFERENCE BOOKS

S.NO	TITLE	AUTHOR	PUBLISHERS
1	Maintenance of Textile Machinery (Spinning, Weaving and Processing)	---	TAIRO publication Baroda
2	Norms for Mechanical Processing	---	BTRA Bombay - 86
3	Repair and Adjustment of Textile Machineries	T.Granovsky	MIR publisher Moscow
4	Maintenance Schedules, Practice and Check Points in Spinning	---	BTRA Bombay
5	Contemporary Textile Engineering	Prof. F. Happy	University of Bradford Academic press 24/28 Oval road London LW 1
6	Process Control in Spinning	A.R.Grade	ATIRA

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name	:	DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	46082
Semester	:	VI Semester
Subject Title	:	ELECTIVE THEORY –II PROCESS CONTROL IN SPINNING

#### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
PROCESS CONTROL IN SPINNING	5 Hrs	80Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	100*	100	

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

#### Topics and allocation of Hours

UNIT	TOPIC	HOURS
I	PROCESS CONTROL IN FIBRE MIXING	15
II	PROCESS CONTROL IN BLOWROOM, CARDING AND COMBER	15
III	PROCESS CONTROL IN SPINNING	15
IV	CONTROL OF YARN QUALITY- COUNT AND STRENGTH	14
V	CONTROL OF YARN QUALITY – UNEVENNESS AND IMPERFECTION	14
	TEST & MODEL EXAM	07
	Total	80

#### RATIONALE

This subject covers the process control in fibre mixing, blowroom, carding and spinning. This subject helps to find out the control of the yarn qualities which are mostly used in spinning mills. By studying this subject student will become as a quality control officer. This subject covers how to control all the spinning process.

## OBJECTIVES

1. To know about the process control in fibre mixing.
2. To understand about the process control in blowroom, carding and comber.
3. To have knowledge about the process control in spinning.
4. To gain knowledge in control of the yarn quality - count & strength
5. To acquire knowledge about the control of the yarn quality – unevenness & imperfection.

## ELECTIVE THEORY – II 46082 - PROCESS CONTROL IN SPINNING

### DETAILED SYLLABUS

Content: Theory

Sl.No.	Topic	Time
I	<b>PROCESS CONTROL IN FIBRE MIXING</b> Role and scope of process control in spinning – key variables for process control – control of mixing quality through fibre characteristic - control of mixing cost and material quality – linear programming for cotton mix - Application of linear programming in a mill. Yarn realization – Definition -formula-Control of yarn realization and waste – Norms for yarn realization – Accounting of reusable soft waste- Judging yarn realization of mill.	15
II	<b>PROCESS CONTROL IN BLOWROOM, CARDING AND COMBER</b> Control of waste and cleaning in blowroom and carding – determination of trash content and clearing efficiency – Norms for cleaning efficiency of individual machines in blowroom. Assessing the performance of Blow room – Optimizing cleaning at cards – Brief study on control of neps and fibre rupture in blowroom and card - control of comber waste – optimum level of comber waste. Norms of improvement in mean length on combing –Need for routing check of comber waste – procedure for control of comber waste.	15

III	<p><b>PROCESS CONTROL IN SPINNING</b>  Introduction to measurement and analysis of productivity – definitions of indices of Productivity – productivity analysis – Improvement in productivity – maximizing machine efficiency in ring spinning – Reduction of end breakage in Ring frame – Recording and analyzing end breakage rate - Control of hairiness of ring spun yarns – Process control measures to be adopted for Rotor spinning.</p>	15
IV	<p><b>CONTROL OF YARN QUALITY- COUNT AND STRENGTH</b>  Control of yarn quality – count and strength and their variability – Reducing within bobbin count variation – Control of sliver evenness – control of stretch at fly frames – reducing between bobbin count variation – Routine control of count – control of variability of lea strength – Factors affecting yarn strength – norms for lea strength – Single yarn strength and elongation.</p>	14
V	<p><b>CONTROL OF YARN QUALITY – UNEVENNESS AND IMPERFECTION</b>  Introduction – Measurement and assessment of yarn unevenness, Assessment of sliver and roving unevenness. Types of yarn irregularity: Random irregularity – Periodic irregularity – Quasi – Contributions to yarn irregularity. Measurement and assessment of imperfections – causes of thick and thin places – Fibre neps : Assessment and control – Judging of yarn appearance – check list for control of yarn unevenness and thick and thin places. Yarn faults and package defects.</p>	14

**TEXT BOOKS :**

<b>S.NO</b>	<b>TITLE</b>	<b>AUTHOR</b>	<b>PUBLISHERS</b>
1	Process control in spinning	A. R. Grade & T.A. Subramaniam	ATIRA SILVER JUBILEE MONOGRAPGS, ATIRA - AhamedabadPin - 380 015
2	Process control and yarn quality in spinning	G.Thilagavathi and T. Karthik	Woodhead publishingIndia Pvt Ltd, Delhi

**REFERENCE BOOKS :**

<b>S.NO</b>	<b>TITLE</b>	<b>AUTHOR</b>	<b>PUBLISHERS</b>
1	End breaks inRing spinning	A.R. Grade T.A. Subramaniam	ATIRA Ahamedabad - India
2	Quality control in spinning	TV Ratnam K.P.chellamani	SITRA Coimbatore-641014

**46082 - PROCESS CONTROL IN SPINNING**  
**MODEL QUESTION PAPER**  
**N2 Scheme**

**Time: 3 Hrs.**

**Max. Marks: 100**

**Part – A**

**Answer Fifteen questions. All questions carry equal marks. (15 × 2 = 30)**

1.	State the scope of process control in spinning.
2.	What is the application of linear programming in a mill?
3.	What are the fibre characteristics used to control mixing quality?
4.	What is meant by yarn realisation?
5.	How is trash content determined in blow room?
6.	What are neps?
7.	Briefly explain about the control of comber waste.
8.	What is meant by fibre rupture?
9.	Define productivity.
10.	Define HOK
11.	Mention the importance of recording the end breakage in spinning.
12.	Define the term OHS.
13.	How is the sliver evenness controlled?
14.	What is stretch at fly frames? Suggest suitable steps to control stretch at fly frames.
15.	How is the variability of lea strength controlled?
16.	What are the factors affecting yarn strength?
17.	Define periodic irregularity.
18.	What are the causes of thick places in yarn?
19.	Define Quasi.
20.	Define random irregularity.

**Part – B**

**Answer ALL questions by choosing either A (or) B**

**(5 × 14 = 70)**

21.A).	i).	Write short notes on account of reusable soft waste	(7)
	ii).	Explain the control of mixing quality through fibre characteristics	(7)
		<b>[OR]</b>	
B).	i).	Explain about the control of mixing cost	(7)
	ii).	Write about the control of yarn realization.	(7)
22.A).	i).	Write the importance of reducing neps in blow room	(7)
	ii).	Explain the procedure to control the comber waste.	(7)
		<b>[OR]</b>	
B).	i).	Explain about assessing the performance of Blow room.	(7)
	ii).	Write about the norms for improvement in mean length on combing.	(7)
23.A).	i).	Write short note on Process control in rotor spinning.	(7)
	ii).	Describe the steps to asses and control productivity.	(7)
		<b>[OR]</b>	
B).	i).	Write short note on maximizing machine efficiency in ring spinning.	(7)
	ii).	Explain the different ways to improve productivity in spinning	(7)
24.A).	i).	Explain the Control of yarn quality.	(7)
	ii).	Explain the Control of sliver evenness.	(7)
		<b>[OR]</b>	
B).	i).	Explain the Control of stretch at fly frames	(7)
	ii).	Explain the Routine control of count.	(7)
25.A).	i).	Discuss about various yarn faults in spinning.	(7)
	ii).	Discuss about various package defects in spinning.	(7)
		<b>[OR]</b>	
B).	i).	Write short notes on Judging of yarn appearance	(7)
	ii).	Write the check list for control of yarn unevenness, thick and thin places.	(7)
		* * * * *	

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name	:	DIPLOMA IN TEXTILE TECHNOLOGY
Subject Code	:	46064
Semester	:	VI Semester
Subject Title	:	GARMENT MANUFACTURE AND GARMENT CAD PRACTICAL

#### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

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

\* Examinations will be conducted for 100 marks and it 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 career 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.

#### OBJECTIVES

1. To learn the fundamentals of pattern drafting.
2. To understand the concepts of garment making.
3. To familiarize them with colour theory and fashion concepts.
4. To know the application of design in men's and kids garments through computer.

#### GUIDELINES

1. All the experiments given in the list of experiments should be completed and given for the Board Practical Examination.

2. To develop best skills in handling Instruments / Equipment 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.
3. 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.

### **LIST OF EXPERIMENTS**

1. Preparation of a pattern for Basic T-shirt.
2. Preparation of a pattern for A-line frock.
3. Preparation of a pattern for Ladies skirt
4. Preparation of a pattern for Ladies nightwear.
5. Preparation of a pattern for Gent's shirt with half sleeve.
6. Construction of a A- line frock using the given paper pattern
7. Construction of ladies skirt using the given paper pattern
8. Construction of ladies nightwear using the given paper pattern
9. Construction of Gents shirt with half sleeve using the given paper pattern
10. Designing a kids party wear and decorate it with suitable colour scheme using computer (paint & brush)
11. Designing a ladies night wear using computer (paint & brush)
12. Designing a men's T-shirt with suitable column using computer (paint & brush)

### **DETAILED ALLOCATION OF MARKS**

**Single experiment is to be given per student**

<b>PARTICULARS</b>	<b>MARKS</b>
Experiment	50
Write up / diagram	40
Viva - Voce	10
<b>Total</b>	<b>100</b>

## EQUIPMENT LIST

S.NO.	NAME OF EQUIPMENT
1	Lock Stitch Pedal Sewing Machine – 10 Nos.
2	Steam Iron Box – 1 No.
3	Drafting & Cutting Table – 1 No.
4	Two numbers of personal computers

## MODEL QUESTION PAPER

1. Prepare a pattern for Basic T-shirt.
2. Prepare a pattern for A-line frock.
3. Prepare a pattern for Ladies skirt
4. Prepare a pattern for Ladies nightwear.
5. Prepare a pattern for Gent's shirt with half sleeve.
6. Construct a of A- line frock using the given paper pattern
7. Construct of ladies skirt using the given paper pattern
8. Construct of ladies nightwear using the given paper pattern
9. Construct of Gents shirt with half sleeve using the given paper pattern
10. Design a kids party wear and decorate it with suitable colour scheme using computer  
(paint & brush)
11. Design a ladies night wear using computer (paint & brush)
12. Design a men's T-shirt with suitable column using computer (paint & brush)

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 -SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY  
Subject Code : 46065  
Semester : VI Semester  
Subject Title : ADVANCED FABRIC DESIGN ANALYSIS PRACTICAL

#### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
			Internal Assessment	Board Examination	Total	
ADVANCED FABRIC DESIGN ANALYSIS PRACTICAL	4 Hrs	64 Hrs	25	100*	100	3 Hrs

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

#### RATIONALE

To enhance the practical knowledge to analyse the sample of cloth, this fundamental, help the students to acquire knowledge about the design, draft and peg plan loom requirement to weave the cloth.

## **OBJECTIVES**

### **Woven fabric analysis**

To identify warp and weft threads, selvedge, weaving method and machine to produce the fabric.

To analyze the given fabric and find out design, draft and peg plan.

### **Woven fabric quality particulars**

To find out the particulars like Ends and picks per unit length, Count of warp and weft, crimp percentage.

### **Knitted fabric analysis**

To identify warp and weft threads, selvedge, weaving method and machine to produce the fabric.

To analyze the given fabric and find out design, draft and peg plan

### **Knitted fabric quality particulars**

To find out the particulars like Ends and picks per unit length, Count of warp and weft, crimp percentage

### **Fabric costing**

With the above particulars the student has to do fabric costing by suitable formulae explained to them during practical.

## **GUIDELINES**

1. All the cloth samples given in the list of experiments should be completed and given for the end semester practical examination.
2. In order to develop best skills every student should be provided with a separate fabric sample of suitable size.
3. The external examiners are requested to ensure that a single experimental question should not be given to more than two students while examining a batch of 30 students during Board Examinations

### DETAILED ALLOCATION OF MARKS

Single experiment is to be given per student

PARTICULARS	MARKS
Experiment / Design Work	60
Write up	30
Viva	10
Total	100

### LIST OF EXPERIMENTS

1. Analysis of a given honey comb weave cloth sample for the cloth particulars.
2. Analysis of a given huck-a-back weave cloth sample for the cloth particulars.
3. Analysis of a given mock leno weave cloth sample for the cloth particulars.
4. Analysis of a given Bedford cord weave cloth sample for the cloth particulars.
5. Analysis of a given Three pick Terry cloth weave cloth sample for the cloth particulars.
6. Analysis of a given Double cloth sample for the cloth particulars.
7. Analysis of a given Extra warp figuring cloth sample for the cloth particulars.
8. Analysis of a given Extra weft figuring cloth sample for the cloth particulars.
9. Analysis of a given warp / weft Backed cloth sample for the cloth particulars.
10. Analysis of a given single jersey knitted cloth sample for the cloth particulars.
11. Analysis of a given 1 X 1 Rib knitted cloth sample for the cloth particulars.
12. Analysis of a given 1 X 1 interlock knitted cloth sample for the cloth particulars.

### **LIST OF EQUIPMENT REQUIRED FOR A BATCH OF 30 STUDENTS**

**Equipment required** : Beesley`s Balance 1 no  
**Materials required** : 2 Meters of each samples for a batch of 30 students.

### **SAFETY PRECAUTIONS TO BE FOLLOWED**

The students while doing the experiments,

1. Should wear safe foot wear, preferably shoes.
2. Should keep their shirts tucked in.

### **MODEL QUESTION PAPER**

1. Analyze the given honey comb weave cloth sample for the cloth particulars.
2. Analyze the given huck-a-back weave cloth sample for the cloth particulars.
3. Analyze the given mock leno weave cloth sample for the cloth particulars.
4. Analyze the given Bedford cord weave cloth sample for the cloth particulars.
5. Analyze the given Three pick Terry cloth weave cloth sample for the cloth particulars.
6. Analyze the given Double cloth sample for the cloth particulars.
7. Analyze the given Extra warp figuring cloth sample for the cloth particulars.
8. Analyze the given Extra weft figuring cloth sample for the cloth particulars.
9. Analyze the given warp / weft Backed cloth sample for the cloth particulars.
10. Analyze the given single jersey knitted cloth sample for the cloth particulars.
11. Analyze the given 1 X 1 Rib knitted cloth sample for the cloth particulars.
12. Analyze the given 1 X 1 interlock knitted cloth sample for the cloth particulars.

## DIPLOMA IN TEXTILE TECHNOLOGY SYLLABUS

### N2 - SCHEME

(Implemented from the Academic year 2021 - 2022 onwards)

Course Name : DIPLOMA IN TEXTILE TECHNOLOGY

Subject Code : 46066

Semester : VI Semester

Subject Title : PROJECT WORK & INTERNSHIP

### TEACHING AND SCHEME OF EXAMINATION

No of weeks per semester: 16 weeks

Subject	Instructions		Examination			Duration
	Hours / Week	Hours / Semester	Marks			
PROJECT WORK & INTERNSHIP	6 Hrs	96 Hrs	Internal Assessment	Board Examination	Total	3 Hrs
			25	100*	100	

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

### 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.
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.

## 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	15
Total		25

## 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.**

## ALLOCATION OF MARKS

PARTICULARS	MARKS
Demonstration / presentation	25
Report	25
Viva Voce	30
Internship Report	20
Total	100