

**MAHARSHI DAYANAND UNIVERSITY, ROHTAK**  
**SCHEME OF STUDIES & EXAMINATIONS**  
**B.Tech 3<sup>rd</sup> YEAR TEXTILE TECHNOLOGY (TT)**  
**5th SEMESTER**  
**Proposed 'F' Scheme w.e.f 2011-12**

Course No.	Course Title	Teaching Schedule				Marks of Class work	Examination		Total Marks	Duration of Exam
		L	T	P	Total		Theory	Practical		
TT-301-F	Structure & Properties of Fibres (Common with TC)	3	1	-	4	50	100	-	150	3
TT-303-F	Yarn Manufacture-III	3	1	-	4	50	100	-	150	3
TT-305-F	Fabric Manufacture-III	3	1	-	4	50	100	-	150	3
TT-307-F	Textile Testing-I (Common with TC)	3	1	-	4	50	100	-	150	3
TT-309-F	Textile Chemical Processing-I	3	1	-	4	50	100	-	150	3
TT-311-F	Garment Manufacturing Technology (Common with TC)	3	1	-	4	50	100	-	150	3
	<b>Practicals</b>									
TT-313-F	Spinning Practical-III	-	-	3	3	50	-	50	100	4
TT-315-F	Weaving Practical-III	-	-	3	3	50	-	50	100	4
TT-317-F	Textile Testing Practical-I (Common with TC)	-	-	2	2	50	-	50	100	4
TT-319-F	Patterning Cutting & Making-UP (Common with TC)	-	-	2	2	50	-	50	100	4
<b>Total</b>		<b>18</b>	<b>6</b>	<b>10</b>	<b>34</b>	<b>500</b>	<b>600</b>	<b>200</b>	<b>1300</b>	

## TT-301-F STRUCTURE AND PROPERTIES OF FIBRES (COMMON WITH TC)

L     T     P  
3     1     -

Classwork     :     50  
Examination   :     100  
Total            :     150  
Duration of exam:     3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### UNIT – I

Structure of fibres: Morphology and order in fibre structure. Theories of fine structure of fibres. Methods of determination of molecular structures (crystallinity and orientation, crystal size etc.) by X-Ray methods.

Mechanical properties: Mechanism of deformation in fibres. Principles of elasticity and viscoelasticity.

Phenomenological approach – stress-strain, creep and stress-relaxation behaviour of fibres. Simple spring and dashpot models simulating fibres.

### UNIT – II

Moisture properties: Absorption in fibres, hysteresis. Quantitative analysis of moisture absorption, Pierce's theory. Swelling, heat of sorption.

### UNIT – III

Optical properties: Polarization and refractive index. Birefringence and its measurement. Absorption and dichroism.

Thermal properties: Molecular motions and transition phenomenon. First order and second order transition phenomenon. Thermal expansion behaviour. Concept of heat setting and pleating. Specific heat of fibres – theoretical and actual.

### UNIT – IV

Electrical properties: Di-electric properties and its measurement. Effect of frequency and temperature on dielectric constant. Electrical resistance and its measurement. Static electricity and measurement of static charge in fibres.

Frictional properties of fibres – nature and measurement.

### Reading list

Title	Author
Physical properties of fibres	Morton and Hearle

## TT-303-F YARN MANUFACTURE-III

L     T     P  
3     1     -

Classwork     :     50  
Examination   :     100  
Total            :     150  
Duration of exam:     3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### UNIT – 1

Objective, principle and mechanism involved in drafting, twisting and winding. Ordinary and high draft systems. Concept of twist multiplier and yarn contraction due to twisting. Types of builds. Limitations of large package spinning.

### UNIT – II

Design and types of spindle, ring and traveler. Studies on control of yarn tension in high speed ring frame. Mechanism of package formation. Types of spinning waste and system of waste collection.

### UNIT – III

Limitation of ring spinning and factors responsible for loss in efficiency. Processing of man-made fibre on ring-frame. Recent developments in ringframe. Concept of average count and 20s conversion. Yarn faults and their remedies, Causes of end breakage and its control.

### UNIT – IV

Objective of doubling. Different systems of doubling. Study of ring doubler, two for one twister. Requirements of feed package for yarn plying. Fancy yarns. Sewing threads, core spun yarn and other speciality yarns.

Objective of reeling. Types of reeling. Construction and working of reel. Yarn bundling.

### Reading List

#### Title

Cotton Ring Spinning

Cotton Spinning

Manual of Cotton Spinning

Process Control in Spinning

Essential Elements of Practical Cotton Spinning

Spinning of Manmade and their blends on cotton system

#### Author

GR Merrill

WS Taggart

DeBarr & Catling

ATIRA

TK Pattabhiram

K R Salhotra

## TT-305-F FABRIC MANUFACTURE-III

L	T	P
3	1	-

Classwork	:	50
Examination	:	100
Total	:	150
Duration of exam:		3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### UNIT – I

Principle and working of:

Modern Shedding mechanisms - crank, matched cam, electronic dobbie, electronic jacquard, e-shedding

Beat up mechanisms - matched cam beatup, Multi link crank beat up

### UNIT – II

Principle and working of take up (mechanical & electronic take up) and let off (mechanical & electronic let off) mechanisms used in shuttleless looms

Introduction to Shuttleless weaving:

Restrictions as well as merits of Shuttle weaving; types of shuttleless looms, their development, typical speeds, production rates and application domain

### UNIT – III

Projectile weaving machine:

Principle of weft insertion, typical specification & features of modern projectile looms. Merits, demerits and standard application domain

Torsion bar picking - construction, working, settings, mechanics

Path of weft, function of each component, projectile types, projectile circulation, weft transfer to projectile, projectile brake

Sequence of weft insertion, typical timings, projectile velocity calculation

Types and features of shedding, beat up, take up and let off motions used in projectile looms; standard manufacturers,

### UNIT – IV

Rapier Weaving Machine:

Principle of weft insertion, typical specification & features of modern rapier looms; Merits, demerits and standard application domain

Classification of rapier looms, brief description of each type under classification.

Gabler and Dewas system of weft insertion and their comparison.

Path of weft in modern rigid and flexible rapier looms, function of each component in the path, sequence of weft insertion

Rapier heads, negative and positive weft transfer at shed center, their comparison

Typical timings, synchronous and asynchronous rapier movement, calculation of rapier/weft velocities, figure of merit

Rapier drives: Eccentric and cam drive systems, working of some standard drive mechanisms

Types and features of shedding, beat up, take up and let off motions used in rapier looms; standard manufacturers

### **Reading List**

#### **Title**

Hand Book of Weaving

Weaving: Technology & Operations

Weaving: Machines, Mechanisms, Management

Weaving:

Woven Fabric Production Vol-II

#### **Author**

Sabit Adanur

Ormerod

Ajgaonkar et al

Mark & Robinson

NCUTE

## TT-307-F TEXTILE TESTING-I (COMMON WITH TC)

L	T	P
3	1	-

Classwork	:	50
Examination	:	100
Total	:	150
Duration of exam:		3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### UNIT – I

Introduction to textile testing - aim and scope.

Statistical Quality control in Textiles: tolerance limit, their setting, Control charts, Types of control charts – X-R chart, P chart, nP chart. Uses of Normal, Binomial and Poisson distribution in textiles

Sampling techniques: General requirements, squaring, cut squaring and zoning methods for sampling of raw material. Sampling techniques for yarns and fabrics for specific tests; Routine sampling techniques used in the textile industry.

### UNIT – II

Hygrometry and moisture relations of textiles: Terms and definitions, relation between R.H. and regain of textile materials; equilibrium regain, hysteresis. Measurement of regain – Principle, construction and operation of equipments; Official regain and concept of correct invoice weight.

Measurement of physical characteristics, viz. length, fineness of cotton and other fibres including principle, construction, operation and calibration of the equipment in common use.

### UNIT – III

Measurement of physical characteristics viz. maturity and foreign matter of cotton and other fibres including principle, construction, operation and calibration of equipments in common use, Grading of different cottons,

Nep testing of cotton,

Fibre friction: Theories and measurement of friction of single fibre and fibre assemblies during drafting.

### UNIT – IV

Yarn numbering systems, conversion methods, and measurement of yarn number, Measurement of twist in continuous filament, spun and plied yarns.

Evenness testing of yarns, Nature and causes of irregularities, principles and methods of evenness testing: evaluation and interpretation of evenness measurements, length variance curves and their associated equipment.

### Reading List

#### Title

Principles of Textile Testing

#### Author

JE Booth

Physical Properties of Textile Fibres  
Handbook of Textile Testing & Quality Control  
Textile Physics

WE Morton & JWS Hearle  
Hamby & Grover  
RCD Kaushik

## TT-309-F TEXTILE CHEMICAL PROCESSING-I

L     T     P  
3     1     -

Classwork     :     50  
Examination   :     100  
Total            :     150  
Duration of exam:     3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### UNIT – I

Preparatory Processes: Sequence of chemical processing of textiles, natural and added impurities in textiles. Various preparatory processes for cotton e.g singeing, various types of desizing, scouring, bleaching, mercerization etc. Silk degumming, bleaching of polyester, acrylic including optical whitening.

### UNIT – II

Dyeing: Introduction to dyeing of natural fibres/fabrics with various dye classes eg. Direct, Reactive, Acid, Basic and vat dyes.

### UNIT – III

Introduction to processing machinery eg. Padding mangles, Jigger, Jet dyeing machine and garment dyeing machine.

### UNIT – IV

Introduction to dyeing of synthetic materials: Polyester, nylon, acrylic with dyes eg. Disperse, modified basic dyes, significance of dyeing parameters. Indigo dyeing of denim- its continuous range.

### Reading List

<b>Title</b>	<b>Author</b>
Technology of Textile Processing Vol.2,3,4,6 and 10	Shenai VA
Mercerising	Marsh JT
An Introduction to Textile Finishing	Marsh JT
Dyeing & Chemical Technology of Textile Fibres	Trotman ER
Instrumental Colour Measurement	Shah & Gandhi



## TT-311-F GARMENT MANUFACTURING TECHNOLOGY (COMMON WITH TC)

L     T     P  
3     1     -

Classwork     :     50  
Examination   :     100  
Total            :     150  
Duration of exam:     3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### UNIT – I

Concepts of Fashion: various terms used- fashion cycle, fad, style etc.

### UNIT – II

Planning, drawing and reproduction of the marker, requirements of marker-planning, marker efficiency, methods of marker planning and marker use – normal marker, planning and computerized marker planning, requirement of spreading process, nature of fabric packages, Objectives and methods of cutting straight knife, band knife, notches, drills, computer controlled knives, Die cutting, Laser cutting, Plasma cutting, Microprocessor based machinery in pattern construction and planning, marking and cutting processes.

### UNIT – III

Sewing: Properties of seams, seam types, stitch types, sewing machine feed mechanism, sewing machine needles, sewing threads, sewing problems.

Introduction to Sewing Machinery: Basic sewing machines and associated work aids.

Automation in Garment Industry, Information Technology in Garment Industry

### UNIT – IV

Pressing: Purpose of pressing, pressing equipment and methods

General description to alternative methods of joining materials and the use of components, trimmings to care labeling in garment manufacturing.

### Reading List

#### Title

Fashion from Concept to Consumer  
The Technology of Clothing Manufacture  
The Apparel Industry in India

#### Author

Emilio Puc  
Harold Carr & B Latham  
ILA Kanti

### TT-313-F SPINNING PRACTICAL-III

L	T	P
-	-	3

Classwork	:	50
Examination	:	50
Total	:	100
Duration of exam:		4 hrs

Practice in handling, Operating, setting and gauging ring frame and doubling frame. Study of constructional details of machinery: various control, change places etc. Practice in checking the quality of single and double yarn. Calculations pertaining to gearing, speeds, constant, drafts, tpi and production etc

### TT-315-F WEAVING PRACTICAL-III

L	T	P
-	-	3

Classwork	:	50
Examination	:	50
Total	:	100
Duration of exam:		4 hrs

Study of construction, working and related calculation/settings of shedding (matched cam, electronic dobby and jacquard), beat-up (matched cam, multi link crank), let-off (positive) and take-up mechanisms used in shuttle-less looms.

Projectile loom: study of salient features, construction & working of torsion bar picking mechanism, path of weft, different components in the path and their working, weft transfer, projectile circulation, sequence of weft insertion, timings, related calculations, shedding, beat-up, secondary and auxiliary motions, selvedge mechanism, settings/operation.

Tape loom: study of salient features, picking mechanism, selvedge mechanism, beam formation, weave design input through CAD, operation.

**TT-317-F TEXTILE TESTING PRACTICAL-I (COMMON WITH TC)**

L     T     P  
-     -     2

Classwork     :     50  
Examination   :     50  
Total           :     100  
Duration of exam:   4 hrs

Measurement of fibre length and its distribution, fineness, maturity, moisture content and strength etc using different methods and instruments. Fibre diameter and its variability, cleanliness of cotton, testing of Neps in card web, sliver, roving and yarns. Analysis and interpretation of test results.

Measurement of hank of sliver roving and count of yarn and their variability. Single yarn strength and elongation; Lea strength measurement. Use of statistical techniques for evaluation of experimental results.

## **TT-319-F PATTERN CUTTING AND MAKING-UP (COMMON WITH TC)**

L      T      P  
-      -      3

Classwork      :      50  
Examination    :      50  
Total            :      100  
Duration of exam:    4 hrs

Sewing machine – Parts of sewing machine, threading, working, defects and remedies, oiling and maintenance of sewing machine. Practice of sewing on paper and fabric. Tools and equipment used in clothing construction.

Practice of different types of machines – lock stitch over-lock, buttonhole, button attaching, feed off the arm, double needle lock stitch, etc.

Measurement size and introduction to methods of pattern making – drafting, flat pattern and draping.

Drafting of child's basic bodice block and sleeve block. Adaptation of child's basic bodice block to an A-line frock.

Stitching: Neckline variations, Pocket variations, Darts, pleats, tucks, gathers and placket variations.

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**SCHEME OF STUDIES & EXAMINATIONS**  
**B.Tech 3<sup>rd</sup> YEAR TEXTILE TECHNOLOGY (TT)**  
**6<sup>th</sup> SEMESTER**  
**Proposed 'F' Scheme w.e.f 2011-12**

Course No.	Course Title	Teaching Schedule				Marks of Class work	Examination		Total Marks	Duration of Exam
		L	T	P	Total		Theory	Practical		
TT-302-F	Modern Methods of Yarn Production	3	1	-	4	50	100	-	150	3
TT-304-F	Fabric Manufacture-IV	3	1	-	4	50	100	-	150	3
TT-306-F	Textile Testing-II (Common with TC)	3	1	-	4	50	100	-	150	3
TT-308-F	Mechanics of Textile Machinery	3	1	-	4	50	100	-	150	3
TT-310-F	Textile Chemical Processing-II	3	1	-	4	50	100	-	150	3
HUM-312-F	Merchandising & Export Management (Common with TC)	3	1	-	4	50	100	-	150	3
	<b>Practicals</b>									
TT-314-F	Spinning Practical-IV	-	-	3	3	50	-	50	100	4
TT-316-F	Weaving Practical-IV	-	-	3	3	50	-	50	100	4
TT-318-F	Textile Testing Practical-II (Common with TC)	-	-	2	2	50	-	50	100	4
TT-320-F	Textile Chemical Processing Lab	-	-	2	2	50	-	50	100	4
<b>Total</b>		<b>18</b>	<b>6</b>	<b>10</b>	<b>34</b>	<b>500</b>	<b>600</b>	<b>200</b>	<b>1300</b>	

## TT-302-F MODERN METHODS OF YARN PRODUCTION

L     T     P  
3     1     -

Classwork     :     50  
Examination   :     100  
Total            :     150  
Duration of exam:   3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### UNIT – I

Causes leading to the advent of unconventional systems of spinning; Basic Principle of Open-end Spinning systems; Variables for classification of unconventional methods of yarn production; Different Classifications of unconventional methods of yarn production; Principle involved in each group of classification. Introduction to Rotor Spinning

### UNIT – II

Principle and Engineering design of various parts of rotor spinning, effect of rotor machine variables and fibre properties on the properties of rotor spun yarns.  
Limitations of rotor spinning, advances in rotor spinning,

### UNIT – III

Study of other spinning systems, viz. Friction and Air-jet etc; Mechanism of yarn formation, Structure, properties and end uses of yarns spun on these systems,  
Various developments in these systems

### UNIT – IV

Electrostatic, air-vortex, Wrap, Twist less, Self-twist and other non conventional methods of yarn production: Structure, properties and end uses of these yarns,  
Potential and limitations of various spinning technologies

### Reading List

<b>Title</b>	<b>Author</b>
Spinning in 70's	PR Lord
Spun Yarn Technology	E Oxtoby
Short Staple Spinning	W Klein
Textile Research Journal	
Journal of Textile Institute	
Textile Progress	

## TT-304-F FABRIC MANUFACTURE-IV

L	T	P
3	1	-

Classwork	:	50
Examination	:	100
Total	:	150
Duration of exam:		3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit.

### UNIT – I

Selvedges - types, mechanism, features

Airjet weaving machine:

Principle of weft insertion, typical specification & features of modern air jet looms; Merits, demerits and standard application domain

Path of weft, function of each component, sequence of weft insertion, typical timings

Types, design, working of accumulators and main nozzles

### UNIT – II

Airjet weaving machine:

Types of air-guide systems, their design and comparison

Types, spacing, arrangement, blowing action of relay nozzles; stretch nozzle

Air supply to nozzles, blowing sequence and timing control (Automatic Pick Control systems);

Calculation of weft velocity, number of relay nozzles and timings of different nozzles

Quality of air required; Air drag theory, factors affecting air drag force

Weft breaks in air jet looms - reason and control devices

Types and features of shedding, beat up, take up and let off motions used in modern air jet looms; standard manufacturers

### UNIT – III

Water jet weaving machine:

Principle of weft insertion, typical specification & features of modern water jet looms; Merits, demerits and standard application domain

Path of weft, function of each component, sequence of weft insertion, typical timings, calculation of weft velocity

Nozzle and jet pump design, working and settings.

Quality of water required, water extraction from fabric in loom

Types and features of shedding, beat up, take up and let off motions used in modern water jet looms; standard manufacturers.

Developments in shuttle less weaving as applicable from time to time

### UNIT – IV

Multiphase weaving:

Classification: Warp- and weft-directional multiphase looms and their principle.



Weft-directional multiphase looms: different methods of shedding, picking and beat-up, advantages and disadvantages; Circular looms – classification, working, uses and limitations.  
Warp directional multiphase looms: Principle of drum type weaving machines; Sulzer M8300 – specification, features, working, advantages and limitations

### **Reading List**

#### **Title**

Hand Book of Weaving

Weaving: Technology & Operations

Weaving: Machines, Mechanisms, Management

Weaving:

#### **Author**

Sabit Adanur

Ormerod

Ajgaonkar et al

Mark & Robinson

## TT-306-F TEXTILE TESTING-II (COMMON WITH TC)

L     T     P  
3     1     -

Classwork     :     50  
Examination   :     100  
Total            :     150  
Duration of exam:     3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### UNIT-I

Mechanical behaviour of textiles. Terms and definitions, expressing the results, quantities and units. Mechanical conditioning and recovery properties of textiles.

Experimental methods: Principle of CRL, CRT and CRE type tensile testing machines - various instruments, Working of Tensojet and Tensorapid, Factors affecting the results of tensile testing. Evaluation and interpretation of tensile test results. Constant Tension winding test for yarns.

### UNIT-II

Fabric Strength Testing: Tensile, tearing and bursting strength tests; principles and operation of equipment,

Fabric bending, shearing and drape esting: Principle, terminology and measurement.

### UNIT-III

Serviceability, wear and abrasion: Definitions, methods for measuring abrasion resistance and evaluation of results. Fabric pilling, creasing and crease recovery testing.

Methods of tests for fabric dimensional and other physical properties; thickness, weight, crimp, shrinkage, Dimensional stability, Fabric shrinkage. Seam slippage.

### UNIT-IV

Comfort and water related testing: Thermal comfort, Water vapour permeability, Moisture transport, air permeability, wettability, shower-proofness, water-proofness and flame-resistance.

Introduction to Fabric Handle Measurement by FAST and KAWABATA.

### Reading List

<b>Title</b>	<b>Author</b>
Principles of Textile Testing	JE Booth
Handbook of Textile Testing & Quality Control	Elliot B Grover & DS Hamby
Physical Testing of Textiles	B P Saville
Textile Fibres, Yarns and Fabrics	ER Kaswell
Textile Testing	JH Skinkle

## TT-308-F MECHANICS OF TEXTILE MACHINERY

L     T     P  
3     1     -

Classwork     :     50  
Examination   :     100  
Total            :     150  
Duration of exam:     3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### UNIT – I

Designing of cone drum for Scutcher and speed frames, Roller weighting at different stages of spinning, Inertia a carding engine, Epicyclic wheel trains used in textile machinery, Differential motions used in speed frames.

Types of motions: Simple, compound and modified harmonic motion. Static and dynamic balancing, Balancing of rotating masses, balancing of reciprocating masses, balancing machines, speed frame balancing

### UNIT – II

Introduction to machine vibration, ring frame vibration, loom vibrations

The physics and theory of spinning balloon, Yarn tension in ring spinning,

Power requirements: for operating various motions and for machines as a whole, at various stages of spinning.

### UNIT – III

Introduction to Brakes and clutches, Sliding contact bearings, friction in journal bearings  
Classification and use of ball and roller bearings, Equivalent bearing load and load-life relationship, Type of Bearings used in various stages of spinning machinery

Types of cams and followers, cam terminology, types of motion of the follower, analysis of motion of the follower for cams with specified contours

Design of cam and tappet profiles for textile machinery

### UNIT – IV

Mechanics of Winding tension and tension variation and other weaving preparatory mechanisms, Velocity profile of shuttle during acceleration and retardation, picking force, Kinematics of sley for shuttle and shuttle less looms, Warp and Fabric Tension under Normal and Bumping conditions and their measurement, Excess tension theory, Power requirements for operating various motion and for machines as a whole, at various stages of weaving.

### Reading List

#### Title

Textile Mathematics Vol. 1, 2 and 3

Principles of Mechanism

Mechanics for Textile Students

#### Author

J E Booth

F Dyson

W A Hanton

Textile Mechanics Vol 1, 2 & 3  
Manual of Cotton Spinning Vol 5  
Short Staple Spinning Series  
Cotton Spinning  
Principles of Weaving  
Mechanisms of Weaving

K Slater  
A F De Barr & M Catling  
W Klein  
K Pattabhiram  
Marks & Robinson  
W T Fox

## TT-310-F TEXTILE CHEMICAL PROCESSING-II

L     T     P  
3     1     -

Classwork     :     50  
Examination   :     100  
Total            :     150  
Duration of exam:     3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### UNIT – I

Printing: Introduction to printing methods viz. block, roller and screen printing (Table, Flat bed and rotary screen printing), and style such as Direct, discharge and resist style, transfer printing.

### UNIT – II

Printing of natural and synthetic fibre fabrics, printing with kerosene.

### UNIT – III

Introduction to mechanical finishing of natural and synthetic fibre/fabrics eg. Raising, antishrinkage, calendars, heat setting, milling etc.

### UNIT – IV

Introduction to chemical finishing biopolishing, softening, stenters and mangles, easy care finishing of cotton, low liquor application technique in finishing including foam finishing, wash down effects on denim garments.

### Reading List

<b>Title</b>	<b>Author</b>
Technology of Textile Processing Vol.2,3,4,6 and 10	Shenai VA
Mercerising	Marsh JT
An Introduction to Textile Finishing	Marsh JT
Dyeing & Chemical Technology of Textile Fibres	Trotman ER
Instrumental Colour Measurement	Shah & Gandhi

## **HUM-312-F MERCHANDISING & EXPORT MANAGEMENT (COMMON WITH TC)**

L     T     P  
3     1     -

Classwork     :     50  
Examination   :     100  
Total            :     150  
Duration of exam:     3 hrs

**NOTE:** Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

### **UNIT – I**

Fundamentals of Marketing Management. Type of Marketing –Target marketing and Mass Marketing. Concept and definition of Market Segmentation. Basis and variables of market segmentation. Niche Marketing and Micro marketing.

Explanation of various concept of marketing with example. – production concept, product Concept, Selling concept, marketing concept and societal concept.

Need of New product development. Various stages involved in new product development.

Concept of product life cycle, behavior of sales and profit during various stages of product life cycle. Strategy to be followed at various stages of product life cycle.

### **UNIT – II**

Marketing mix - Concept and definition.. Variables of market mix - 4Ps. Product, Price Promotion and Place.

Various factors affecting the pricing decision of a product

Distribution channel and various functions performed by the distribution channel.

Promotion mix – Importance of promotion mix. Various kinds of promotion mix.

Scope of application and their relative merits and demerits.

### **UNIT – III**

Export Management. – Concept and definition. Importance of export

Terms of payment of in Export Marketing. Letter of credit and their relative merits and demerits.

Various kinds of document to be prepared and maintained by the exporters

Pre shipment and post shipment finance. Brief discussions on various steps involved in Export.

### **UNIT – IV**

Merchandising – concept and definition.

Various activities involved in merchandising - Product line Planning, Development and Presentation. Brief idea on different steps involved in product line planning and development.

Various functions performed by merchandisers in organization with special reference to an apparel production firm. Visual Merchandising, Role of information technology in merchandising

#### **Reading List**

##### **Title**

Marketing : An Introduction

##### **Author**

Kotler Philip & Armstrong, Gray

Marketing Management  
Marketing Management  
International Marketing  
International Marketing

Kotler Philip  
Saxena, Rajan  
Oak Onkvisit & JJ Shaw  
PR Eateora

### TT-314-F SPINNING PRACTICAL-IV

L     T     P  
-     -     3

Classwork     :     50  
Examination   :     50  
Total            :     100  
Duration of exam:   4 hrs

Study of drafting, twisting and winding operations of Rotor and air-jet spinning machines; Familiarity with established processing parameters for producing carded, combed, blended, folded and fancy yarns.

Case studies pertaining to waste analysis, estimation of the total productivity, actual efficiency levels and causes of loss of efficiency in different spinning preparatory departments, viz. blowroom, card, comber, draw-frame and simplex. Study of blow-room and card performance, Nep count in card web. Checking of comber waste,

Assessment and control of variability before yarn formation, Practice in handling and setting of the various spinning preparatory machines. Workload measurements in spinning preparatory, Oiling and maintenance schedules, Idea of time and motion study.



### TT-316-F WEAVING PRACTICAL-IV

L     T     P  
-     -     3

Classwork     :     50  
Examination   :     50  
Total            :     100  
Duration of exam:   4 hrs

Rapier loom: study of salient features, path of weft, different components in the path and their working, weft transfer at shed center, timings, rapier displacement curves, related calculations, shedding, beat-up, secondary and auxiliary motions, colour mixing, selvedge mechanism, settings/operation.

Air jet loom: study of salient features, path of weft, different components in the path and their working, air supply, timings, related calculations, shedding, beat-up, secondary and auxiliary motions, selvedge mechanism, settings/operation.

Water jet loom: study of salient features, path of weft, different components in the path and their working, jet pump and nozzle, timings, related calculations, shedding, beat-up, secondary and auxiliary motions, selvedge mechanism, settings/operation.

## TT-318-F TEXTILE TESTING PRACTICAL –II (COMMON WITH TC)

L      T      P  
-      -      2

Classwork      :      50  
Examination    :      50  
Total            :      100  
Duration of exam:    4 hrs

Use of Microscopes for testing of yarns for appearance, twist and diameter. Measurement of evenness by conventional and modern testing instruments. Interpretation of results and construction of X & R Charts.

Fabric testing for dimensions, construction, weight, thickness, crimp, cover, shrinkage and air permeability.

Fabric testing for load, elongation, tensile, bursting and tearing strength, Abrasion, flexural rigidity, crease-recovery and draping qualities of fabrics.

## **TT-320-F TEXTILE CHEMICAL PROCESSING LAB**

L	T	P
-	-	2

Classwork	:	50
Examination	:	50
Total	:	100
Duration of exam:		4 hrs

Pre-treatments such as desizing, scouring and bleaching. Dyeing of cotton, rayon, wool and synthetic fibres with different dyes, e.g. direct, reactive, vat, acid and disperse. Printing of cotton fabrics. Application of finishing agents such as starches, resins, etc.