VISVESVARAYA TECHNOLOGICAL UNIVERSITY
BELGAUM

Scheme and Syllabus

2010 0nwards

Bachelor of Technology in

TEXTILE TECHNOLOGY

VISVEWARAIAH TECHNOLOGICAL UNIVERSITY, BELGAUM

SCHEME OF SYLLABUS - 2010

III SEMESTER B.TECH. (TEXTILE TECHNOLOGY)/ B.TECH. (SILK TECHNOLOGY)
(Common to Textile & Silk Tech. Courses)

Sl. No.	Sub. Code	Title	Teaching Dept.	Teaching Hours / Week		Examination			
				Theory	Practical	Duration Hrs.	I.A. Max. Marks	Theory/ Practical	Total Marks
1.	10TX31	Textile Polymer Science	Textile / Silk	04	--	03	25	100	125
2.	10TX32	Textile Fibres	Textile / Silk	04	--	03	25	100	125
3.	10TX33	Yarn Manufacture-1	Textile / Silk	04	--	03	25	100	125
4.	10TX34	Fabric Manufacture-I	Textile / Silk	04	--	03	25	100	125
5.	10TX35	Chemical Processing of Textiles-I	Textile / Silk	04	--	03	25	100	125
6.	10TXL36	Yarn Manufacture Lab.-I	Textile / Silk	--	03	03	25	50	75
7.	10TXL37	Fabric Manufacture Lab.-I	Textile / Silk	--	03	03	25	50	75
8.	10TXL38	Chemical Processing of Textiles-Lab-I	Textile / Silk	--	03	03	25	50	75
		TOTAL		**20**	**09**	**24**	**200**	**650**	**850**

VISVEWARAIAH TECHNOLOGICAL UNIVERSITY, BELGAUM

SCHEME OF SYLLABUS- 2010

IV SEMESTER B.TECH. (TEXTILE TECHNOLOGY)/ B.TECH. (SILK TECHNOLOGY)
(Common to Textile & Silk Tech. Courses)

Sl. No.	Sub. Code	Title	Teaching Dept.	Teaching Hours / Week		Examination			
				Theory	Practical	Duration Hrs.	I.A. Max. Marks	Theory/ Practical	Total Marks
1.	10TX41	Textile Fibre Physics	Textile / Silk	04	--	03	25	100	125
2.	10TX42	Manufactured Fibre Technology	Textile / Silk	04	--	03	25	100	125
3.	10TX43	Yarn Manufacture-II	Textile / Silk	04	--	03	25	100	125
4.	10TX44	Fabric Manufacture-II	Textile / Silk	04	--	03	25	100	125
5.	10TX45	Chemical Processing of Textiles-II	Textile / Silk	04	--	03	25	100	125
6.	10TXL46	Yarn Manufacture Lab.-II	Textile / Silk	-	03	03	25	50	75
7.	10TXL47	Fabric Manufacture Lab.-II	Textile / Silk	--	03	03	25	50	75
8.	10TXL48	Chemical Processing of Textiles-Lab-II	Textile / Silk	--	03	03	25	50	75
		Total		**20**	**09**	**24**	**200**	**650**	**850**

VISVEWARAIAH TECHNOLOGICAL UNIVERSITY, BELGAUM

SCHEME OF SYLLABUS- 2010

V SEMESTER B.TECH. (TEXTILE TECHNOLOGY)/ B.TECH. (SILK TECHNOLOGY)
(Common to Textile & Silk Tech. Courses)

Sl. No.	Sub. Code	Title	Teaching Dept.	Teaching Hours / Week		Examination			
				Theory	Practical	Duration Hrs.	I.A. Max. Marks	Theory/ Practical	Total Marks
1.	10AL51	Management and Entrepreneurship	All	04	--	03	25	100	125
2.	10TX52	Knitting Technology	Textile / Silk	04	--	03	25	100	125
3.	10TX53	Yarn Manufacture-III	Textile / Silk	04	--	03	25	100	125
4.	10TX54	Fabric Manufacture-III	Textile / Silk	04	--	03	25	100	125
5.	10TX55	Chemical Processing of Textiles – III	Textile / Silk	04	--	03	25	100	125
6.	10TXL56	Yarn Manufacture Lab.-III	Textile / Silk	--	03	03	25	50	75
7.	10TXL57	Fabric Manufacture Lab-III	Textile / Silk	--	03	03	25	50	75
8.	10TXL58	Chemical Processing of Textiles lab.–III	Textile / Silk	--	03	03	25	50	75
		Total		**20**	**09**	**24**	**200**	**650**	**850**

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SCHEME OF SYLLABUS- 2010

VI SEMESTER B.TECH. (TEXTILE TECHNOLOGY)/ B.TECH. (SILK TECHNOLOGY)
(Common to Textile & Silk Tech. Courses)

Sl. No.	Sub. Code	Title	Teaching Dept.	Teaching Hours / Week		Examination			
				Theory	Practical	Duration Hrs.	I.A. Max. Marks	Theory/ Practical	Total Marks
1.	10TX61	Statistical Applications to Textiles	Textile / Silk	04	--	03	25	100	125
2.	10TX62	Textile Testing - I	Textile / Silk	04	--	03	25	100	125
3.	10TX63	Fashion Design & Garment Manufacture	Textile / Silk	04	--	03	25	100	125
4.	10TX64	Fabric Structure and Design	Textile / Silk	04	--	03	25	100	125
5.		**Elective – I (Group A)**	Textile / Silk	04	--	03	25	100	125
6.	10TXL66	Textile Testing Lab.-I	Textile / Silk	-	03	03	25	50	75
7.	10TXL67	Fashion Design & Garment Manufacture Lab	Textile / Silk	--	03	03	25	50	75
8.	10TXL68	Fabric Structure and Design Lab	Textile / Silk	--	03	03	25	50	75
		Total		**20**	**09**	**24**	**200**	**650**	**850**

Elective- I (Group – A)	
10TX651	Non Woven Technology
10TX652	Environmental Management in Textile Industry
10TX653	Textile Mechanics & Calculations

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SCHEME OF SYLLABUS- 2010

VII SEMESTER B.TECH. (TEXTILE TECHNOLOGY)

Sl. No.	Sub. Code	Title	Teaching Dept.	Teaching Hours / Week		Examination			
				Theory	Practical	Duration Hrs.	I.A. Max. Marks	Theory/ Practical	Total Marks
1.	10TX71	Apparel Marketing & Merchandising	Textile / Silk	04	--	03	25	100	125
2.	10TX72	Textile Testing - II	Textile / Silk	04	--	03	25	100	125
3.	10TX73	Total Quality Management	Textile / Silk	04	--	03	25	100	125
4.	10TX74	Advanced Fabric Structure and Design	Textile / Silk	04	--	03	25	100	125
5.		**Elective – II (Group B)**	Textile / Silk	04	--	03	25	100	125
6.		**Elective – III (Group C)**	Textile / Silk	04	--	03	25	100	125
7.	10TXL77	Textile Testing Lab - II	Textile / Silk	--	03	03	25	50	75
8.	10TXL78	Advanced Fabric Structure and Design Lab	Textile / Silk	--	03	03	25	50	75
		Total		**24**	**06**	**24**	**200**	**700**	**900**

Elective – II (Group B)		**Elective – III (Group C)**	
10TX751	Retail Management	10TX761	Fibre Reinforced Textiles
10TX752	Financial Management	10TX762	Erection and Maintenance of Textile Machineries
10TX753	Operation Research Technique	10TX763	Industrial Engineering

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SCHEME OF SYLLABUS- 2010

VIII SEMESTER B.TECH. (TEXTILE TECHNOLOGY)

Sl. No.	Sub. Code	Title	Teaching Dept.	Teaching Hours / Week		Examination			
				Theory	Practicals	Duration	I.A. Max. Marks	Theory/ Practical	Total Marks
1.	10TX81	Apparel Testing & Quality Control	Textile / Silk	04	--	03	25	100	125
2.	10TX82	Technical Textiles	Textile / Silk	04	--	03	25	100	125
3.		**Elective IV (Group D)**	Textile / Silk	04	--	03	25	100	125
4.		**Elective V (Group E)**	Textile / Silk	04	--	03	25	100	125
5.	10TX85	Project Work	Textile / Silk	--	06	03	100	100	200
6.	10TX86	Seminar	Textile / Silk	--	--	--	50	--	50
		Total		**16**	**06**	**15**	**250**	**500**	**750**

Elective – IV (Group D)		**Elective – V (Group E)**	
10TX831	Human Resources Development	10TX841	Elementary Mechanics of Textile Structure
10TX832	Intelligent and Functional Textiles	10TX842	Clothing Culture and Communication
10TX833	Global Trade Practices	10TX843	CAD & CAM in Textiles

III SEMESTER

TEXTILE POLYMER SCIENCE

Sub Code	**:**	**10TX31**	**IA Marks**	**:**	**25**
No. of Lecture Hrs/ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART-A

UNIT 1:

Introduction to monomers and polymers. History of polymer. Classification of polymers. Application of polymers. Concept of configuration and confirmation- aggregation of molecules in polymers. Characteristics of fibre forming polymers. **6 Hours**

UNIT 2:

Study of synthesis of polymers by chain, step and co-ordination polymerization. Study of various types of initiators for Co-polymerization. **7 Hours**

UNIT 3:

Kinetics of polymerization - expression of kinetic chain length, effect of various parameters on Kinetics of polymerization. Functionality in polymers. Carothers equation and extent of polymerization. **7 Hours**

UNIT 4:

Rheology of polymers. Newtonian and non-Newtonian fluids, Basic equations related to fluid flow. Conditions of polymeric solutions for solubility. **6 Hours**

PART-B

UNIT 5:

Tensile behavior. Time dependent behaviour and temperature dependent mechanical behavior for polymers. **6 Hours**

UNIT 6:

Concepts of avg. Molecular weight and molecular weight distribution. Determination of molecular weight of polymers using end group analysis, osmometry, viscometry and gel permeation chromatography. **7 Hours**

UNIT 7:

Chemistry of polymer degradation - various types of degradation - oxidative, mechanical and thermal degradation. Use of Inhibitors and anti-oxidants to control polymer degradation. **6 Hours**

UNIT 8:

Thermal analysis of polymers - glass transition temperature of polymers. Determination of glass transition temperature. Free volume concept. Study of thermal characterization by DSC,DTA and TGA. **6 Hours**

Text Books:

1. **Text book of polymer Science**, Billmeyer.W., Wiley Int.Sc. New York 1984.

2. **Polymer Science,** Gowarikar V.R., Vishwanathan N.V., Jayadev Sridhara, Wiley Eastern Ltd., New Delhi, 1995.

3. **Principles of polymerization,,**Odian G., John Wiley & sons, NY, 1976.

4. **Mechanical properties of polymers,** Ward I.M. John Wiley & sons, NY, 1971.

References:

1. **Properties and structure of polymers,** Tobolski, John Wiley & sons, NY, 1960.

2. **Mechanical Properties of polymers,** Nielson L.E., Marshal Dekkar, NY, 1974.

3. **Polymer characterization**, Cambel and White, Chapmon & Hall, London 1989.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

TEXTILE FIBRES

Sub Code	**:**	**10TX32**	**IA Marks**	**:**	**25**
No. of Lecture Hrs/ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART – A

UNIT 1:

Brief history on origin of textiles. Introduction to textile fibers and basic requirements of textile fibers. India's position of natural and manufactured fibers in global scenario. **6 Hours**

UNIT 2:

Geographical distribution, cultivation & grading of cotton, wool, silk, & jute fibers. **8 Hours**

UNIT 3:

Brief study of physical & chemical properties of cotton, wool, silk & bast fibers **7 Hours**

UNIT 4:

Flow chart in conversion of cotton, wool, silk, spun silk & jute fibre in to fabric. **5 Hours**

PART – B

UNIT 5:

Study of MMF spinning- viz,. melt, dry, wet, dry- jet- wet and gel spinning. **7 Hours**

UNIT 6:

Fundamentals of fluid flow in MMF spinning. Concept of spinnability. Die swell effects. **6 Hours**

UNIT 7 :

Introduction to regenerated fibers, chemistry & physics of viscose rayon production. Spin finish applications. Concept and application micro denier, nano and special shaped fibres. **6 Hours**

UNIT 8:

Production of modified viscose rayon, brief out line on production of acetate & cupramonium rayon. Manufacture of eco-friendly regenerated fibre. **7 Hours**

Text Books:

1. **Hand book of Textile fibre,** Cook J. Vol.1 & II, Marrow Wat Ford, England.
2. **Textile fibres,** Shenai V.A., Sevak Bombay, 1980.
3. **Manufactured fibre technology,** Gupta V.B, Kothari V.K., Chapman Hall, London, 1997.
4. **Introduction to Textile fibres,** Srinivasa Murthy H.V, T.A.I., Mumbai.

References:

1. **Manmade fibre science and Technology,** Mark Atlas, Vol.I & II, Wiley, NT 1967.
2. **Fundamentals of fibre formation,** Ziabicki A. Wiley NY 1976.
3. **Formation of synthetic fibres,** Walczalk.K. Gordon & Sci. London 1977.
4. **High speed fibre spinning,** Ziabicki A. Wiley NY., 1985.
5. **Manmade fibres,** Moncrief R.W. John Wiley and sons, N.Y. 1966.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

YARN MANUFACTURE – I

Sub Code	**:**	**10TX33**	**IA Marks**	**:**	**25**
No. of Lecture Hrs/ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART – A

UNIT 1:

Importance and need of Ginning. Working of different types of gins. Defects, causes and remedies of ginning. Baling process and bale weights of important cotton growing countries. Impurities in the cotton and remedies to minimize impurities in cotton. Important cotton types and trash in those cottons. Grading of cotton. **6 Hours**

UNIT 2:

Definition and objects of mixing and blending. Types of blending and common blends. Influence of fibre parameters namely length, fineness, strength, elongation, chemical deposits and neps on spinning performance. **7 Hours**

UNIT 3:

Objects of Blowroom and components of Blow room. Types of opening action in blow room. Brief study of bale pluckers and bale grabbers. Study of different types of openers and beaters on the present day Blowroom. Modern developments in Blowroom. **6 Hours**

UNIT 4:

Evaluation of Blow room performance - Hank calculation, production and efficiency calculation. Process modification required in blow room to process blends of Polyester/cotton and polyester/viscose. Study of blow room line required for processing different types of blends**.** **7 Hours**

PART – B

UNIT 5:

Definition and objects of flat card. Study of different types of clothing on licker in, cylinder and doffer and their specifications. **7 Hours**

UNIT 6:

Auto leveller on card and comparison of sliver quality on auto leveled and non auto leveled card. Setting of different parts of card and gauges used for setting. Definition of draft in card and study of different types of draft and its calculation. Objects of stripping and grinding and their importance**.** **6 Hours**

UNIT 7:

Developments in card at pre-carding, post-carding segments and in the doffing zone. Specification of the present day cards. Calculation of Hank of sliver, production and efficiency in carding. **7 Hours**

UNIT 8:

Study of various quality control studies such as wrapping procedure, cleaning efficiency, Nep removal efficiency. Standards. **6 Hours**

Text Books:

1. **Manual of Cotton Spinning**, Coulson. A.F.W. (Ed.), Vol. I to IV, Textiles Institute, Manchester,

2. **Series on Textile processing,** Zaloski. S. Tp - Institute of Textiles Technology USA Vol.I (Opening, Cleaning and Picking).

3. **Technology of short-staple spinning,** Klein. W., Vol.I, II, III and IV, Textile Institute Pub., Manchester 1989.

4. **Spun Yarn Technology,** Osteby, Butterworths, London, 1987.

References:

1. **Contemporary Textile Engineering,** Happey. F. (Ed.) Academic Press Inc., 1981.

2. **Hand book of Cotton Spinning,** William Taggart., Universal Publ corp. 1979.

3. **Essential Facts of Practical Cotton Spinning**, Pattabhiraman. T.K., Soumya Pub., Bombay 1979.

4. **Cotton Spinning Calculations**, Pattabhiraman. T.K., Soumya Pub., Bombay 1979.

5. **Cotton Opening & Carding,** Merril G.R., Pub: G.R. Merill, Lowell Mass, 1955.

6. **Blowroom and carding** NCUTE Pilot programme.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

FABRIC MANUFACTURE – I

Sub Code	**:**	**10TX34**	**IA Marks**	**:**	**25**
No. of Lecture Hrs/ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART-A

UNIT 1:

Introduction to warp and weft. Necessity and sequence of operations in warp and weft preparation. Different types of supply and end packages. Objects and principles of winding. Classification of winding machine. Precision and drum winders. **6 Hours**

UNIT 2:

Derivation of expression to find winding speed and surface speed, Cone angle, coil angle and angle of wind Balloon breakers. Yarn clearers and tensioning devices and their setting. **6 Hours**

UNIT 3:

Uster classimat and its usefulness in selecting optimum clearing. Study of modern fully automatic warp winding machines. Winding faults and remedies. Material handling. Production and efficiency calculations. **7 Hours**

UNIT 4:

Objects and systems of warping. Study of different types of modern creels. Study of modern friction driven and spindle driven beam warping machines. Study of different types of sectional warping machines and their salient features. Production calculations. **7 Hours**

PART-B

UNIT 5:

Objects of sizing. Study of Ingredients used for size preparation. Size formulation, Study of mixing vessels viz,. Pressure cookers, Injection cookers. Techniques of sizing, Sizing of Cotton, polyester and P/C blends. Salient features of modern sizing machines. Creels, and sow box and its control. **6 Hours**

UNIT 6:

Drying principles – multi-cylinder drying, hot air drying, radiation drying. Size pickup, size add on. Concept of single end sizing. Head stock - dry splitting, comb, drag roll. Beam pressing, PIV gears. **6 Hours**

UNIT 7:

Controls in sow box - stretch and its control, moisture measurement. Recent developments in sizing viz,. Foam sizing, solvent sizing, hot melt sizing. High pressure squeezing,. Production and efficiency calculations. Sizing defects and remedies. Post sizing operations - Drawing - in, leasing, knotting, automatic drawing in machine. Reaching-in machine. Automatic knotting machine. Gaiting-in technique. **7 Hours**

UNIT 8:

Special requirement of yarn preparation for shuttles weaving. Introduction to weft preparation. Study of different types of weft winding machine. **7 Hours**

Text Books:

1. **Textile Sizing** by B.C.Goswamy.
2. **"An Introduction to Winding and Warping",** Talukdar M K, Talukdar, Bombay Pvt. Circulation.
3. **"Warp sizing mechanisms"**, Ramsbottom Columbia press, Manchester,1965.
4. **Weaving tablets,** Textiles Association of India, Bombay,1985.
5. **Yarn preparation,** Sengupta R. –Vol I & II Mahajan Pub. Ahmedabad, 1970.
6. **Modern Preparation and weaving machinery**, Ormerod A. Butterworth publication Co. 1983.

References:

1. **Cotton weaving**, Gordev V and Volkov P, Mir Pub. Moscow 1987.
2. **Automatic Weaving**, Aitken, Colombia Press, Manchester 1969.
3. **"Sizing Materials, Methods and Machines",** Ajgaonkar D B, Textiles trade press, Bmbay1982.
4. **An Introduction to Automatic weaving**, Bennet G A, Columbia press, Manchester 1958.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

CHEMICAL PROCESSING OF TEXTILES – I

Subject Code	**:**	**10TX35**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

An overview of wet processing operations and sequences Chemicals and auxiliaries used for textile wet processing and their functions. Introduction to shearing and cropping.Objects of shearing and cropping.

6 Hours

UNIT - 2

Objects of singeing, methods of singeing by various singeing machines, precautions to be taken during singeing, latest developments in singeing Objects of desizing, methods of desizing, continuous desizing, desizing of cotton and other blends, latest developments in desizing. **6 Hours**

UNIT - 3

Objects of scouring, mechanism of scouring, methods of scouring, scouring of natural cellulose fabrics, degumming of silk, scouring of wool and jute, scouring of synthetic fibres, modifications required to scour knitted fabrics, latest developments in scouring. **7 Hours**

UNIT - 4

Objects of Bleaching, mechanism of bleaching, methods of bleaching, bleaching of cellulose fibres, bleaching of natural protein fibres, bleaching of common manufactured fibres, bleaching of common fibre blends. **7 Hours**

PART - B

UNIT - 5

Latest developments in bleaching. Objects of optical whitening, optical whitening process for common fibre. Chemistry of optical whitening agents. Faults in scouring and bleaching and their remedies, quality control methods for testing scoured and bleached materials. Methods used for determination of degradation of cotton, during scouring and bleaching. **6 Hours**

UNIT - 6

Machines used for desizing, scouring and Bleaching. Batch processes, semi continuous processes and continuous processes. Objects of mercerization, history and developments of mercerization, physical and chemical changes in cotton due to mercerization, various factors affecting mercerization's. **6 Hours**

UNIT - 7

Methods of mercerization - yarns and fabrics, machines used for mercerization, slack mercerization.

7 Hours

UNIT - 8

Hot mercerization, Faults in mercerization and their remedies, Test methods for mercerized materials. Latest developments in mercerization. Brief study on eco-friendly preparatory processes. Water and energy management in preparatory processes. **7 Hours**

TEXT BOOKS:

1. **Technology of Textile Processing-** Vol. III, V A Shenai, 1975, Sevak Publications
2. **Technology of Bleaching and Dyeing of textile fibres**-Chakraborthy, 1972, Coxtown publications
3. **Mercerization-** J T Marsh, 1979, B I Publications.
4. **Scouring and Bleaching of Cotton**- J.T. Marsh, 1979, B I Publications.
5. **Dyeing and Chemical Technology of textile Fibres-** E.R.Trotman,

REFERENCE BOOKS:

1. **Chemical Technology of Fibrous Materials-** MIR Publications, 1978.
2. **Textile Auxiliaries and Finishing Chemicals-** ATIRA Publications.1975
3. **Textile Chemistry-**Vo. I, II and III R H Peters, Elsewhere Publishing Co.New York.
4. **Modern techniques of textile Bleaching**- Dyeing, and Finishing, SITRA Publication.
5. **Chemical Processing of Cotton, Polyester Cotton Blends**- J.R.Modi and A.R. Garde, 1980, TAI Publications.
6. **Recent processes of Textile Bleaching, Dyeing and Finishing**- S B Srivastava, 1978, SBP Publications.

YARN MANUFACTURE LAB-I

Subject Code	**10TXL36**	**IA Marks**	**25**
No. of Practical Hrs./ Week	**03**	**Exam Hours**	**03**
Total No. of Practical Hrs.	**42**	**Exam Marks**	**50**

Blow Room:

1. Passage of material through the blow room and different openers and beaters of blow room.

   Selection of beater points.

2. Driving arrangements of all the machineries and calculations of speeds of different parts of each machineries.
3. Calculation of cleaning efficiency at all beaters and openers.
4. Study of piano feed regulating motion and calculation of cone drum speed, feed roller speed and beats/inch.
5. Production and CV% calculation in Blow Room laps (within and between).
6. Settings and selection of Blow Room process for different mixings, impurities and counts.

Carding:

6. Passage of material through revolving flat card.

Speed and draft calculation of different parts of carding with the help of gearing and driving arrangement.

7 Draft constant and its calculation.

8. Draft change pinion calculation and machine operation to get different hank of slivers.

9. Calculation on snap study to analyze neps, sliver variations and efficiency.

10. Settings of different parts and gauges used for the same.

11. Comparison between conventional and modern high speed card with respect to production, efficiency and quality of sliver .

FABRIC MANUFACTURE LAB-I

Subject Code	**10TXL37**	**IA Marks**	**25**
No. of Practical Hrs./ Week	**03**	**Exam Hours**	**03**
Total No. of Practical Hrs.	**42**	**Exam Marks**	**50**

1. Passage of material through double Flanged bobbin winding machine. Working on double flanged bobbin winder. Speed, production and efficiency calculation of double flanged winding machine.

2. Passage of material through non-automatic winding machines. Speed, production and efficiency calculations.

3. Passage of material through automatic winding machines. Speed, production and efficiency calculations.

4. Setting of tensioner and yarn clearer device on winding machine.

5. Passage of material through non auto and automatic pirn winding machine. Speed, production and efficiency calculation.

6. Passage of material through sectional warping machine. Calculation of machine particulars and production.

7. Passage of material through Beam warping machines. Calculation related to speed, production and efficiency.

8. Passage of material through sizing machine. Calculation related to speed, production and efficiency..

9. Preparation of patterns for stripes, checks and their calculations.

10. Knotting, drawing - in and denting of weavers beam.

CHEMICAL PROCESSING OF TEXTILES LAB-I

Subject Code	**:**	**10TXL38**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

1. Desizing of cotton yarn/fabric using acid and enzymes
2. Scouring of cotton using alkali method
3. Degumming of silk using soap-soda and enzymatic methods.
4. Scouring of wool, jute fibres
5. Bleaching of cotton using Hydrogen Peroxide
6. Bleaching of PC blends
7. Bleaching of silk and woolen goods
8. Mercerization of cotton in taught and slack forms
9. Treatment of bleached goods with optical whiteners
10. Determination of scouring / bleaching efficiency using cuprammonium fluidity, methylene blue absorption etc.
11. Determination of efficiency of mercerized goods using BAN and strength measurements

IV SEMESTER
(TEXTILE TECHNOLOGY)

TEXTILE FIBRE PHYSICS

Sub Code	**:**	**10TX41**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART-A

UNIT 1:

Characterization of solid state structure of textile fibres using DGC, X-rays, IRS, NMR, SEM and TEM. **7 Hours**

UNIT 2:

Study of two phase and one phase model of fibre physical structure. Description of physical structure of cotton, wool, silk, PET, Nylon and acrylic fibres. **6 Hours**

UNIT 3:

Moisture relations: Concept of moisture equilibrium, moisture hysterisis, moisture regain, heat of absorption, swelling of textile fibres. Effect of moisture on various properties of fibres. **6 Hours**

UNIT 4:

Mechanical properties: Stress and strain behaviour, factors affecting tensile behaviour, structure and tensile property correlation, Elastic recovery and weaklink effect. **7 Hours**

PART-B

UNIT 5:

Stress relaxation, creep, factor affecting stress relaxation, dynamic mechanical properties and their applications, Flexural and torsional properties. **7 Hours**

UNIT 6:

Frictional properties, Amontons laws of friction, deviation of these laws in fibre friction. Optical properties, measurement of birefringence, lusture. Importance of optical properties. **6 Hours**

UNIT 7:

Electrical properties: Electrical resistance, static electricity, dielectric properties. Measurement of these properties. **6 Hours**

UNIT 8:

Thermal properties: Thermal conductivity, specific heat thermal expansion and thermal setting. **7 Hours**

Text Book:

1. **Physical properties of Textile fibres,** Morton & Hearle, J.W.S., TI, London, 1997.

2. **Manufactured fibre technology,** V.B.Gupta and Kotari V.K., Chapman & Hall, London.

3. **Mechanical properties of polymers,** Ward I.M., John wiley & sons, NY 1971.

References:

1. **Mechanical properties of polymer,** Neilson L.E., VolI,II, III, Marcel dekkar, NY, 1974.

2 **Polymer Characterization,** Cambel and White, Chapman & Hall, London 1989.

3. **Moisture relations in textiles,** Hearle J.W.S., Textile Institute, London.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

MANUFACTURED FIBRE TECHNOLOGY

Sub Code	**:**	**10TX42**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART-A

UNIT 1:

Introduction to synthetic fibres. Raw materials for production of PET. Study of production of PET by DMT & TPA routes- study of side reactions, degradation reactions during PET production**.** **6 Hours**

UNIT 2:

Study of Production of polyamides, nylon-6 effect of various parameters on nylon-6 Production study of semi-continuous & integrated continuous process for Production of nylon-6,Production of nylon-66. . **7 Hours**

UNIT 3:

Study of Production of acrylic and polypropylene fibres. Use of various types of catalysts for Production of PP. Modification of nylon & PET fibres. **6 Hours**

UNIT 4:

Elastomeric fibres. Introduction to high performance fibres. Study of production of carbon, boron, silicon carbide, alumina & glass fibres. **7 Hours**

PART-B

UNIT 5:

Concept of liquid crystal, thermotropic & leotropic polymers fibres. Study of Production of aromatic polyamides viz. Nomex, Kevlar. **6 Hours**

UNIT 6:

Study of Production of LDPE, HDPE, by GEL spinning technique. Production and properties of PBZT and PBZO fibres. Study of drawing & heat setting of fibres. **7 Hours**

UNIT 7:

Study of tow to top conversion. Cut method , stretch – breaking method. Introduction to texturising. Study of different methods of texturising. False twist, draw texturing, Study of various parameters affecting false twist texturing. Airjet texturing, stuffer box crimping. **7 Hours**

UNIT 8:

Knife edge crimping, knit-de-knit crimping. Solvent texturing. Measurement of crimp rigidity. Physical bulk &instability of textured yarns. Modern developments in texturing process. **6 Hours**

Text Books:

1. **High Performance fibres**, J.W.S.Hearle, Wood Head, UK-2005.

2. **Synthetic fibres**-J.E.McIntyre, J.W.S.Hearle, Wood Head, UK-1999.

3. **Manufactured fibre technology,** V.B.Gupta, Kotari V.K., Chapman & Hall, London, 1997.

4. **Production of synthetic fibres,** Vaidya A. Prantice Hall, New Delhi, 1985.

5. **Textile yarns,** Goswamy B.C., Wiley and Sons, NY 1980.

References:

1. **Manmade fibres,** Moncrief R.W., Wiley, NY 1975.

2. **Manmade fibre science and technology,** Mark Atlas, Vol.II and III, Wiley Intr.Sc. NT, 1967.

3. **New fibres,** T.Hongu, Ellis Horwood, Newyork, 1990.

4. **Hand book of fibre Science and Technology**, Levin, E.M.Pearce, J.Preston, Vol-3, Vol-4, Marcel Dekkar, New York, 1989

5. **Carbon fibres,** Donnet J.B., Bansol R.C., Marcel Dekkar, New York, 1990.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

YARN MANUFACTURE – II

Sub Code	**:**	**10TX43**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART – A

UNIT 1:

Objects and principle of draw frame. Study of different drafting systems and types of draft in the drafting zone. Types of loading systems. Roller setting and procedure of roller setting. Auto levelers on draw frame. **7 Hours**

UNIT 2:

Study of long and short creel draw frames and their advantages and limitations. Brief study on bercolisation, scouring, buffing, roller eccentricity, shore hardness, calculations of draw frame such as production and efficiency. **6 Hours**

UNIT 3:

Modern developments in draw frame and specifications of the present day draw frame. Various quality control studies of draw frame such as wrapping procedure, Hank of sliver and coefficient of variation. Hook theory and preparatory processes to comber. **7 Hours**

UNIT 4:

Objects of combing and study of combing cycle with the help of sketches and also index numbers. Detachment setting and its importance. Gauges used for setting the comber. Calculations in comber. **6 Hours**

PART – B

UNIT 5:

Various quality control studies of comber. Neps removal efficiency etc. Modern developments at comber and salient features of the present day comber. Objects of speed frame, study of different drafting systems and importance of apron drafting system. **7 Hours**

UNIT 6:

Principle of twisting and winding in speed frame, study of different types of flyers, study of building mechanism, study of lift, chase length and their importance. **6 Hours**

UNIT 7:

Study of differential gearing mechanism and its importance. Different types of change points at speed frame. Modern developments at speed frame and salient features of the present. **7 Hours**

UNIT 8:

Study of various quality control studies such as hand determination, coefficient of variation. Calculations in speed frame. **6 Hours**

Text Books:

1. **Manual of Cotton Spinning,** Coulson. A.F.W.(Ed.), Vol. I to IV. Textile Institute, Manchester, 1958.

2. **Series on Textile processing,** Zaloski.S., The Institute of Textile Technology, USA, Vol.I. (Opening, Cleaning and picking).

3. **Technology of short-staple spinning**, Klein.W., vol.I, II, III and IV, Textile Institute Pub., Manchester 1989.

4. **Spun Yarn Technology,** Osteby, Butterworths, London. 1987.

References:

1. **Contemporary Textile Engineering,** Happy. F. (Ed.), Academic Press, Inc., 1981.

2. **Hand Book of Cotton Spinning,** Taggart William, Universal Pub. Cor.,1979.

3. **Essential Facts of Practical cotton spinning**, Pattabhiraman. T.K., Soumya Pub., Bombay, 1979.

4. **Cotton Spinning Calculation**, Soumya Pub., Bombay - 1979.

5. **Cotton Opening & Carding,** Merril. G.R., Pub. G.R. Merril, Lowell Mass, 1955.

6. **Draw frame, comber, speed frame** - NCUTE Pilot programme.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

FABRIC MANUFACTURE - II

Sub Code	**:**	**10TX44**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART-A

UNIT 1:

Introduction to Hand looms, power looms, automatic looms and shuttle less looms. Basic motions in weaving. Study of tappet shedding machines. Positive and negative tappet shedding. Heald reversing mechanism. Types of sheds.Staggering of healds. Limitations of tappet shedding. **6 Hours**

UNIT 2:

Picking: Study of Cone over pick mechanism . Different types of under picking mechanisms. Shuttle checking devices. **6 Hours**

UNIT 3:

Beat-Up- Objects of Beat up. Design features and working of beat up mechanism, eccentricity of sley. Factors affecting the slay eccentricity. **7 Hours**

UNIT 4:

Secondary Motions- Take up motion, 5 and 7 wheel take up. Mechanism and dividend calculations. Negative Let-off motion. **7 Hours**

PART-B

UNIT 5:

Auxiliary Motions- Weft stop motions - side weft fork and centre weft fork. Loose reed and fast reed mechanism. Warp easing motion and anti-crack motion. **6 Hours**

UNIT 6:

Study of temples. Fabric defects – causes and remedies. Filament weaving. Speed and production calculation of plain looms. **6 Hours**

UNIT 7:

Multiple Box Motions- 2X1 & 4X4 box motion, circular box motion. **7 Hours**

UNIT 8:

Salient features of Automatic Looms,- Cop changing mechanisms, types of feelers, shuttle eye cutters, temple eye cutters. Warp stop motion. Positive let-off motion. Sensitive back rest. **7 Hours**

Text Books:

1. **Principles of weaving mechanism** by Robinson & Marks

2. **Weaving mechanism**, M.K.Talukdar.

3. **Weaving Mechanism,** Fox .

6. **Weaving mechanism**, Banergee N.N.

Reference:

1. **Weaving tablets,** Textiles Association of India, Bombay, 1985.

2. **Cotton weaving**, Gordev. V and Volkov. P., Mir Pub., Moscow 1987.

3. **Automatic weaving,** Aitken, Colombia press, Manchester 1969.

4. **An Introduction to Automatic weaving,** Bennet G.A. - Colombia press, Manchester 1958.

5. **Modern preparation and weaving machinery,** Ormerod. A., Butterworth publication Co. 1993.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

CHEMICAL PROCESSING OF TEXTILES – II

Subject Code	**:**	**10TX45**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Classification of dyes and principles of dyeing Chemicals and auxiliaries used for textile dyeing and their functions. Chemical constitution of dyes. Effect of fibre structure on dyeing behavior. Theories of dyeing, action of electrolytes, effect of dye bath temperature, Effect of material to liquor ratio, Effect of dye bathpH, Mechanism of dyeing, various factors affecting dyeing, selection of dyes for specific end uses. **6 Hours**

UNIT - 2

Evaluation of fastness properties of dyed materials.Properties, Selection and application of various dyes like direct dyes, basic dyes, acid dyes. **6 Hours**

UNIT - 3

Sulphur dyes, Azoic dyes, Vat dyes, Sol-vat dyes, Mordant dyes, Reactive dyes. **7 Hours**

UNIT - 4

Disperse dyes, Modified basic dyes on important natural and manufactured fibres. Various after treatments given to dyed goods. Introduction to natural dyes and their methods of application. **7 Hours**

PART - B

UNIT - 5

Preparatory process for garment dyeing, specialty chemicals and dyes used for garment dyeing. Different types of dyeing practices for various types of garments, precautions to be taken for effective dyeing of garments. **6 Hours**

UNIT - 6

Quality control in garment dyeing. Working principles of dyeing machinery for yarns, fabrics and garments. Latest developments in dyeing machinery. **6 Hours**

UNIT - 7

Brief study on eco-friendly dyeing processes. Dyeing of blends and knitted fabrics. **7 Hours**

UNIT - 8

Introduction to colour measurement and computer colour matching. Developments in dyes, chemicals & dyeing practices. **7 Hours**

TEXT BOOKS:

1. **Dyeing and Chemical Technology- of textile Fibres**, E.R. Trotman,
2. **Technology of Textile Processing-** Vo. III, V A Shenai, 1975, Sevak Publications.
3. **Technology of Bleaching and Dyeing of textile fibres-**Chakrawarthy, 1972, Coxtown publications.
4. **Textile Chemistry**- Vo.I&II, R H Peters, Elsewhere Publishing Co., New York
5. **Technology of Textile Processing** -Vo.II, Chemistry of Dyes and Principles of Dyeing, V.A. Shenai, 1993, Sevak Publications.

REFERENCE BOOKS:

1. **Textile Auxiliaries and Finishing Chemicals-** ATIRA Publications.

1. **Modern techniques of textile Bleaching-** Dyeing, and Finishing, SITRA Pub.
2. **Chemical Processing of Cotton, Polyester Cotton Blends**- J.R.Modi and A.R.
3. **Grade-** 1980, TAI Publications.
4. **Dyeing of Polyester Blends**- M L Gulrajani, 1980, TAI Publications.
5. **Principles and practice of Dyeing-** V A Shenai, 1993 Sevak Publications.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

YARN MANUFACTURE LAB-II

Subject Code	**:**	**10TXL46**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

DRAW FRAME:

1. Passage of material through draw frame.
2. Different types of drafting system and salient features of modern draw frames.
3. Break draft, main draft and total draft calculation.
4. Production, delivery speed, hank of sliver, efficiency calculation of draw frame.
5. Setting of drafting zone and processing of material as per the hank delivery.

COMBER:

1. Study of preparatory machines to comber.
2. Study of one cycle of combing.
3. Detachment setting and its importance.

Setting of comber parts with the help of index numbers.

5. Production, speed, efficiency, draft calculation of comber.
6. Working on comber.

SPEED FRAME:

1. Passage of material through speed frame.
2. Different types of drafting system on speed frame.
3. Break draft, main draft, total draft and draft constant calculations.
4. DCP calculation to get different hank of roving on speed frame.
5. Spindle speed drafting rollers speed calculations.
6. TPI and twist constant calculations.
7. Bobbin speed calculation with the help of differential gear mechanism.
8. Building mechanism
9. Production, delivery speed, hank of roving and efficiency calculations of speed frame.
10. Working on speed frame, setting of drafting rollers.

FABRIC MANUFACTURE LAB-II

Subject Code	**:**	**10TXL47**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

1. Study of passage of material through loom, Calculation of loom speed.
2. Dismantling, assembling, setting and timing of tappet shedding mechanism.
3. Dismantling, assembling, setting and timing of cone over pick.
4. Dismantling, assembling, setting and timing of cone under pick.
5. Dismantling, assembling, setting and timing of Beat-up mechanism.
6. Dismantling , assembling, setting and timing of Take-up mechanism, calculation of dividend, PPI and pick spacing, anti crack motion.
7. Dismantling, assembling, setting and timing of Let-off mechanism.
8. Dismantling, assembling, setting and timing of Looset-reed mechanism.
9. Dismantling, assembling, setting and timing of Fast-reed mechanism.
10. Dismantling, assembling, setting and timing of side weft fork, and centre weft form motion.
11. Study of different types of box motions. Preparation of weft patterns for 4 X 1 box motion.
12. Demonstration, dismantling, assembling, setting, timing of cop changing and weft feeler mechanism in an automatic looms.
13. Demonstration, dismantling, assembling, setting, timing of warp stop motion and positive let-off motion in an automatic looms.
14. Setting of feeler mechanism, shuttle protector motion, transfer hammer, shuttle eye cutter, temple eye cutter on automatic loom.

CHEMICAL PROCESSING OF TEXTILES LAB-II

Subject Code	**:**	**10TXL48**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

1. Dyeing of Cotton yarn / fabric using direct dyes
2. Dyeing of Cotton yarn / fabric using reactive dyes
3. Dyeing of Cotton yarn / fabric using Vat/ soluble vat dyes
4. Dyeing of Cotton yarn / fabric using Azoic colours
5. Dyeing of Cotton yarn / fabric using Sulphur dyes

6. Dyeing of silk with acid and basic dyes

7. Dyeing of silk with metal complex dyes

8. Dyeing of acrylic using basic dyes

9. Dyeing of polyester using disperse dyes with carrier, HTHP and Thermosol dyeing technique

10. Dyeing of garments with various classes of dyes

11. Dyeing of cotton, silk and wool using important natural dyes

12. Determination of K/S and matching of shades using spectrophotometer

13. Analysis of dyes, chemicals and auxiliaries

14. Measurement of washing / rubbing fastness of dyed goods

V SEMESTER

MANAGEMENT AND ENTREPRENEURSHIP

Subject Code	**:**	**10AL51**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

MANAGEMENT: Introduction – Meaning – nature and characteristics of Management, Scope and functional areas of management – Management as a science, art or profession – Management and administration – Roles of management, Levels of management, development of management thought – early management approaches – modern management approaches. **7 Hours**

UNIT - 2

PLANNING: Nature, importance and purpose of planning process – objectives - Types of plans (Meaning only) - Decision making – importance of planning – steps in planning, Planning premises – Hierarchy of plans. **6 Hours**

UNIT - 3

ORGANIZING AND STAFFING: Nature and purpose of organization, principles of Organizations – Types of organisation - Departmentation –Committees Centralization vs. Decentralisation of authority and responsibility, span of Control, MBO, and MBE(Meaning only) Nature and importance of Staffing – process of selection and recruitment (in brief). **6 Hours**

UNIT - 4

DIRECTING & CONTROLLING: Meaning and nature of directing – Leadership styles and motivation theories, communication – Meaning and importance – Coordination, meaning and importance and Techniques of Co – ordination. Meaning and steps in controlling – Essentials of a sound control system – Methods of establishing control (in brief)**.** **7 Hours**

PART – B

UNIT - 5

ENTREPRENEUR: Meaning of Entrepreneur, Evolution of the Concept, Functions of an Entrepreneur, Types of Entrepreneur, Intrapreneur – an emerging Class. Concept of Entrepreneurship – Evolution of Entrepreneurship, development of Entrepreneurship steps in entrepreneurial process, Role of entrepreneurs in Economic Development: Entrepreneurship in India; Entrepreneurship – is Barriers. **6 Hours**

UNIT - 6

SMALL SCALE INDUSTRY: Definition; Characteristics; Need and rationale: Objectives: Scope; role of SSI in Economic Development. Advantages of SSI. Steps to start in SSI – Government policy towards SSI; Different Policies of S.S.I.; Government Support for S.S.I. during 5 year plans. Impact of Liberalization, Privatisation, Globalization on S.S.I., Effect of WTO/GATT Supporting Agencies of Government for S.S.I., Meaning; Nature of Support; Objectives; Functions; Types of Help; Ancillary Industry and Tiny Industry (Definition only) **.** **7 Hours**

UNIT - 7

INSTITUTIONAL SUPPORT: Different Schemes; TECKSOK; KIADB; KSSIDC; KSIMC; DIC Single Window Agency: SISI; NSIC; SIDBI; KSFC. **6 Hours**

UNIT - 8

PREPARATION OF PROJECT: Meaning of Project; Project Identification; Project Selection; Project Report; Need and Significance of Report; Contents; formulation; Guidelines by Planning Commission for Project report; Network Analysis; Errors of Project Report; Project Appraisal. Identification of Business Opportunities. Market Feasibility Study; Technical Feasibility Study; Financial Feasibility Study & Social Feasibility Study. **7 Hours**

TEXT BOOKS:

1. **Principles of Management** – P.C. Tripathi, P.N. Reddy; Tata McGraw Hill, 2nd Edition.
2. **Dynamics of Entrepreneurial Development & Management** – Vasant Desai–Himalaya Publishing House
3. **Entrepreneurship Development** – Small Business Enterprises – Poornima M Charantimath – Pearson Education –2006, 2nd Edition.
4. **Management and Entrepreneurship** – N.V.R. Naidu & T. Kirshna Rao, I.K. International, New Delhi – 2008.

REFERENCE BOOKS:

1. **Management Fundamentals - Concepts, Application, Skill Development** – 1st Edition , Robert Lusier – Thomson ,
2. **Entrepreneurship Development** – S S Khanka – S Chand & Co.
3. **Management – Stephen Robbins** – Pearson Education / PHI -17th Edition, 2003.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

KNITTING TECHNOLOGY

Subject Code	**:**	**10TX52**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Knitting industries position in India , general terms and principals of knitting technology. Knitting Elements, Elements of knitted loops structures. Comparison of warp and weft knitting. **6 Hours**

UNIT - 2

WEFT KNITTING: The four primary weft knitted structures –Plain, Rib, Interlock and purl.Production of above structures on knitting machines. **7 Hours**

UNIT - 3

Types of weft knitting machines –flat machines and circular machine. Knit, Tuck and Float stiches. The effect of Tuck and float stiches on knitted fabrics. **7 Hours**

UNIT - 4

Ornamentation of weft knit structures: Horizontal striping, intarsia, plating. Derivatives of plain and rib structures. Double knits. **6 Hours**

PART - B

UNIT - 5

Needle selection for weft knit designing: Multi cam track, Pattern wheel, Pattern drum and Electronic selection device. **6 Hours**

UNIT - 6

Aspects of knitting science- knitted fabric geometry, tightness factor, robbing back, needle bounce. Different types of positive feeds and their advantage. **7Hours**

UNIT - 7

Different cams used on knitting machine. Properties of hosiery yarns. Defects in weft knitted fabrics. Principles of warp knitting; Swinging and shogging motion. **6 Hours**

UNIT - 8

Five basic overlap, under-lap variations. Study of tricot and raschel warp knitting machines. Single bar structures. Piller stich, single tricot and atlas structures. Two bar fabrics: Lock knit, full tricot and satin.

7 Hours

TEXT BOOKS:

1. **Knitting Technology**-David J Spencer, Pergamon Press 1985, New York

2. **Knitting Technology**-Ajgaonkar, Universal Publishing Company, Bombay 1998

3. **Circular Knitting**,-Mammel Schach

4. **Knitting Fundamentals, Machines, structures and developments** – N.Anbumani, New Age International Pub., 2007.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

YARN MANUFACTURE – III

Subject Code	**:**	**10TX53**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Objects of ring spinning, study of different drafting systems and type of draft. Roller setting draft and its importance. Principles of twisting, factors affecting the twist calculation. Actual and practical TPI, Principal of winding and types of builts. **7 Hours**

UNIT - 2

Rings and Travelers. Different types of rings, selection of rings and manufacture of rings. Types of travelers, traveler numbering both in direct and indirect system. Manufacture of travelers. Functions of lappets and separators. Forces acting on traveler. Faulty packages of Ring frame and remedial measures.

7Hours

UNIT - 3

Modern developments of Ring frame and salient features of the present day ring frame. Calculations of Ring frame such as production efficiency and count etc. Various quality control studies at Ring frame such as breakage study, idle spindle study, snap study and yarn parameter such as U%, CV%, Neps etc., **7 Hours**

UNIT - 4

Doubling frame – objects of doubling and conditions to get balanced double yarn. Preparation of doubling, Types of doubling systems. Threading different types of doubling systems. Defects in doubling and remedies. Properties of cabled, voile and poplin yarn. **6 Hours**

PART - B

UNIT - 5

Detailed study of sewing threads such as manufacture properties and applications of sewing threads. Hosiery yarn and its application, Fancy yarns and its production . **6 Hours**

UNIT - 6

Open-end spinning – principle and objects of open-end spinning. Classification of open-end spinning. Comparison of open-end and ring spinning. Technique of rotor spinning and detailed study of rotor spinning such as initial drafting, transport zone, twisting and yarns formation. **7 Hours**

UNIT - 7

Types of opening rollers and rotors and their effect on the performance of OE machine. Calculations of OE machines and comparison of OE and Ring yarn. Modern developments in OE machine. **7 Hours**

UNIT - 8

Quality control in Ring spinning, Doubling & OE Spinning. **6 Hours**

TEXT BOOKS:

1. **Manual of Cotton Spinning**-Vol V, Ed, AFW COULSON 1958, Textile Institute, Manchester
2. **Technology of short staple spinning**- Vol III and IV, W Klein, 1989, Textile Institute Pub. Manchester
3. **Spun Yarn Technology-** Oxteby 1987, Butterworths, London
4. **Cotton Spinning Calculations**- T. K. Pattabhiraman, 1979, Soumaya Pub, Bombay
5. **O. E. Spinning**- R. Rajgopalan, 1981, Textile Association of India, Delhi
6. **Spinning in 70s**-P.R. Lord, 1970, Merrow Pub. Co. Ltd. London

REFERENCE BOOKS:

1. **Contemporary Textile Engineering**-F Happy, 1981, ACADEMIC press Inc.
2. **Hand book of Cotton Spinning**-William Taggart, 1979, Universal Pub. Corp.
3. **Essential facts of Practical Cotton Spinnning**-T. K. Pattabhiraman, 1979, Soumaya Pub, Bombay.
4. NCUTE Publications on spinning.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

FABRIC MANUFACTURE – III

Subject Code	**:**	**10TX54**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

DOBBY LOOMS- Working principles of different types of dobbie's such as negative, positive, cam, paper, cross border, dobbies. **6 Hours**

UNIT - 2

Pattern preparation for dobbie's.

JACQUARD- Working principles of single lift single cylinder. Double lift single cylinder. Double lift Double cylinder and cross border jacquard. **6 Hours**

UNIT - 3

Methods to increase the figuring capacity of jaquards. Piano card cutting machine. Card punching. Card lacing, casting out in jacquard. London and Norwich harness mounting systems. **7 Hours**

UNIT - 4

TYPES OF HARNESS TIE-ups. Modern developments in dobbies and jacquards. **7 Hours**

PART - B

UNIT - 5

Classification of shuttles looms. Comparative study of Weft Insertion rate of different shuttles looms. Study of various types of Rapier looms: Raper drives, Devas and Gabler systems. **6 Hours**

UNIT – 6

Study of Projectile looms: Stages of weft insertion, torsion bar picking mechanisms, Conjugate cam beat-up.

6 Hours

UNIT - 7

Study of air and Water jet looms. Consolidation of picking force in air jet picking systems. Types of selvedges, weft accumulators. **7 Hours**

UNIT - 8

Circular looms, Multiphase flat looms. **7 Hours**

TEXT BOOKS:

1. **Principles of Weaving-**By ATC Robinson, R. Marks, 1976, Textile Institute, Manchester, London
2. **Shuttleless Weaving Machine**-Oldrich Talavasek and Uladimin, Svary, Elsevlin, 1981 Scientific Pub. Co., New YORK
3. **Modern Weaving Theory and Practice**-,ISHIDA
4. **Weaving, Machines, Mechanisms & Management**- D.B.Ajgaonkar, Talukdar

REFERENCE BOOKS:

1. **Modern Preparation and weaving Machinery**-A Ormerod, 1983, Butterworths London.
2. **Cotton Weaving by** -V. Gordev, P Volkov, L Blinov 1987. Mir PUB.
3. **Weaving Mechanism-** Vol I & II, Prof. N N. Banerjee 1982, Textile Book House, WEST BENGAL.
4. NCUTE Course material-Woven Cloth Production-IIT, New Delhi, 2000

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

CHEMICAL PROCESSING OF TEXTILES – III

Subject Code	**:**	**10TX55**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

INTRODUCTION TO TEXTILE PRINTING - An overview of the printing process. Selection of dyes/pigments/auxiliaries and textile substrate to suit the end use of the printed textile materials. **6 Hours**

UNIT - 2

The constituents and characteristic of printing paste. Brief study of different binders, thickeners, solvents, discharging agents and other ingredients of printing paste. **6 Hours**

UNIT - 3

STYLES OF PRINTING – Direct, discharge, resist and special styles- chemical and mechanisms used for the above styles. **7 Hours**

UNIT - 4

METHODS OF PRINTING – Printing by Hand block, Roller, hand screen, semi-automatic screen, flat bed and rotary screen printing methods. Developments in printing machinery. **7 Hours**

PART - B

UNIT - 5

TRANSFER PRINTING – Principle, mechanisms and continuous transfer printing – Transfer printing machinery The print paste preparation and preservation. Printing of natural and synthetic fibre fabrics with various classes of dyes/pigments. **6 Hours**

UNIT - 6

METHODS OF PRINT FIXATION – Drying, curing by dry heat, steam fixation etc. Finishing process an overview - objects and methods of finishing. Classification of various finishes – Various finishing chemicals used and their properties. **6 Hours**

UNIT - 7

CALENDERING AND VARIOUS CALENDERING MACHINES USED. SANFORIZATION – principle and the process. Resin and anti-crease finish on cotton and protein fibre fabrics. Water repellent finishes, fire retardant and fire proof finishes. **7 Hours**

UNIT - 8

Finishing of woolen materials, silk fabrics and blended products. Finishing of synthetic fibre fabrics - heat setting, de-lustering, anti-static, soil release, etc.Finishing of knitted fabrics. Fundamentals of computerized colour matching – K/S evaluation and principle of spectrophotometers. **7 Hours**

TEXT BOOKS:

1. **Textile printing -** V.A.Shenai, Sevak publications, Mumbai,1996
2. **Textile printing –** L.W.C. Miles, Butterwoths publications
3. **An Introduction to Textile Finishing -** J T Marsh, B Publications, 1979

REFERENCE BOOKS:

1. **Rendering with Pen and Ink-**Thames and Hudson Publication
2. **Printed Textiles-** A Guide To Creative Design Fundamentals, Terry and Gentelle
3. **Chemical Processing** NCUTE Publications 2000 & 2001

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

YARN MANUFACTURE LAB- III

Subject Code	**:**	**10TXL56**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

1. Study of passage of material through Ring Frame and demonstration of its working and functions of each parts.
2. Calculation of spindle speed, front roller speed TPI through gearing diagram and also by changing the pulleys and concerned change wheels

3. Calculation of Twist constant through gearing and also TPI calculation for different TCP

4. Break Draft, Main Draft and Total draft calculation through gearing diagram.

5. Calculation of Draft constant and break draft constant, calculation of DCP for different counts of yarn

6. Study of building mechanism and different types of builds.

7. Working of Ring Frame and calculation of count of yarns for the roving fed by changing the wheels

8. Maintenance schedule of Ring Frame

9. Passage of material through Ring Doubler and demonstration of its working

10. Calculation of Spindle Speed, TPI through gearing on doubling frame

11. Calculation of twist constant, TPI & TPM for different TCP.

12. Demonstration and calculation on O.E. Spinning machine.

13. Practicing and piecing on Ring Frame and study of end breaks

FABRIC MANUFACTURE LAB- III

Subject Code	**:**	**10TXL57**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

1. Study of dobbies.
2. Pattern preparation for dobby loom.
3. Study of different types of jaquards.
4. Study of harness and its tie-ups.
5. Preparation of squared paper design for 100 hooks jacquard and cord punching.
6. Study of single jersey knitting machine: drive, knitting elements, yarn feed mechanisms, take down mechanisms and practice of knitting.
7. Study of Rib knitting machine: drive, knitting elements, yarn feed mechanisms, take down mechanisms and practice of knitting.
8. Study of Interlock knitting machine: drive, knitting elements, yarn feed mechanisms, take down mechanisms and practice of knitting.
9. Analysis of knitted fabrics for WPI, CPI, Stitch density, Stitch length, loop shape factor, GSM, Kc, Kw, Ks, tightness factors for single jersey and rib structures as per standard.
10. Analysis of knitted fabrics for design: loop diagram, feeder diagram and graphical motions.
11. Analysis of modified single jersey design: loop diagram, feeder diagram and graphical motions.
12. Study of spirality of single jersey fabrics.
13. General study of shuttles looms.

CHEMICAL PROCESSING OF TEXTILES LAB-III

Subject Code	**:**	**10TXL58**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

1. Preparation of colour charts by light, pigment, chromatic circle and Brewster's theory.
2. Preparation of printing paste using pigment colours
3. Printing practice using Hand blocks and screens with various classes of dyes
4. Preparation of screens for screen-printing.
5. Resist style (batik) of printing on fabrics
6. Discharge style of printing on cotton, PET and silk
7. Tie and dye printing
8. Anti-crease finishing of cotton using formaldehyde and non-formaldehyde based chemicals
9. Softening of cotton and wool
10. Water proof finishing on cotton
11. Experiments on fastness properties of dyed and printed fabrics
12. Evaluation of dye uptake- K/S using spectrophotometer
13. Experiments on Finishing of garments.

VI SEMESTER

STATISTICAL APPLICATIONS TO TEXTILES

Subject Code	**:**	**10TX61**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

The concept of individual population and samples-Frequency distribution and its representation-Construction of frequency diagrams with applications. **6 Hours**

UNIT - 2

Statistical measures and their practical applications. Measures of central tendency. Measures of dispersion.

7 Hours

UNIT - 3

Random sampling errors, relations between samples and populations, confidence interval. **6 Hours**

UNIT - 4

The normal distribution- counts of proportions and counts of random events, binomial and Poisson distributions. **7 Hours**

PART - B

UNIT - 5

Control charts, their uses and limitations in control of quality. **7 Hours**

UNIT - 6

Test of significance. For means and dispersions, chi- square test. **7 Hours**

UNIT - 7

Analysis of variance-One way & two way. **6 Hours**

UNIT - 8

Correlation and Correlation co- efficient. Regression Analysis. Time series. **6 Hours**

TEXT BOOKS:

1. **Textile Testing,**-J.E. Booth, CBS Publishers, New Delhi, 1996
2. **Statistics For Textile Technologists**- L.H. C. Tippet, Textile Institute, Manchester 1973
3. **Handbook of Textile Testing and Quality control**- Hamby Grower, Wiley Eastern Pvt. Ltd. Delhi 1969.
4. **Practical Statistics for Textile Industry**-Part-1 & 2, Gave-Leaf, Textile Institute, 1984

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

TEXTILE TESTING – 1

Subject Code	**:**	**10TX62**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART –A

UNIT 1:

Introduction to textile testing & quality control. Sampling techniques. Conditioning of Testing lab and textile materials. Moisture regain and its measurement by various techniques. **6 Hours**

UNIT 2:

Fiber dimensions Viz., length, fineness, maturity and strength- technological importance & determination by various conventional methods. Nep counting. **7 Hours**

UNIT 3:

Study of High Volume Instruments (HVI) and AFIS. FQI & its importance. **7 Hours**

UNIT 4:

Study of various systems of yarn count & its measurements by various methods & instruments**. 6 Hours**

PART –B

UNIT 5:

Yarn twist & its effects on yarn & fabric properties. Importance of twist multiplier. Study of yarn density. **6 Hours**

UNIT 6:

Principles & measurements of single yarn and double yarn twist. Yarn friction and its measurement.

7 Hours

UNIT 7:

Yarn strength & its importance. Methods and principles of yarn strength testing. **6 Hours**

UNIT 8:

Study of norms and standards pertaining to above fibre and yarn properties. **7 Hours**

Text Books:

1. **Physical testing of textiles** – B.P. Soville, Wood Head – 1999.
2. **Principles of Textile Testing,** Booth J. E., Butterworth, Wendon III Edition.
3. **Handbook of Textile Testing and Quality Control,** Grover and Hamby, Wiley Easster Pvt. Lt., New Delhi 1969.
4. **Physical Properties of textile fibres,** Morton and Hearle, The Textile Institute, London.

5. **Textile Testing,** Sinkle –T. B. Taraurwal sons and co. Pvt Ltd., Bombay.

6. **Characteristics of raw cotton**- Textile Institute.

References:

1. **Textile Testing,** James Lomak, Longmans, Green and Co. London.

2. **B.I.S. Handbook,** BIS publivcations, 1985.

3. **B.S.Handbook**, B S Publications 1985.

4. **ASTM standard** ASTM publication 1985.

5. **Handbook of Methods of tests for cotton fibres, yarn and Fabrics,** CTRL, Bombay

6. **Kock, Chemical Testing of Textiles**, Chapman and Hall, London.

7. **Cotton assessment and appreciation**, SITRA, Coimbatore.

8. **Keshavan and other, Physical Testing –I and II,** SSMITT, Tamilnadu 1987.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

FASHION DESIGN AND GARMENT MANUFACTURE

Subject Code	**:**	**10TX63**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Terms and definitions used in fashion and Garment Industries. The art and techniques of Body easurements and standard sizes. Psychological and sociological influences of dress, fashion design as applied to clothing and appearance. Elements of design. Selection of fabrics for suitable end uses. **6 Hours**

UNIT - 2

Principles and practices of pattern making, Grading, Computer applied pattern making and grading. Initiation of pre-production operation, Marker planning, Marker making, spreading, cutting, Numbering & bundling. **8 Hours**

UNIT - 3

Study of stitches and seams. Seam appearance & performance. Study of sewing threads, sewing machine fundamentals, work aids. **7 Hours**

UNIT - 4

Pressing equipments. Fusing, Advantages of fusing, Requirements of fusing, Fusing process, Fusing Equipment and materials used for fusing, Methods of fusing. Methods of fusing. **6 Hours**

PART - B

UNIT - 5

Support material – purpose of support material, interlining, zippers, buttons and button holes. **6 Hours**

UNIT - 6

Closures- snaps, hooks and loop tape, elastic. Trims – types and sources of trims. Garment quality control – inspection of garments under different AQL standards like 2.5, 3.0 and 4.0. Methods of metal detecting in garments. **7 Hours**

UNIT - 7

Sourcing of materials & production - Role of sourcing, sourcing materials, Inspection of fabrics under 4 point & 10 point systems. **6 Hours**

UNIT - 8

Concept of Production planning, productivity, resource management. Apparel Engineering- Basic concepts, work flow, apparel production systems. Work study. Objects and concept of Costing. **7 Hours**

TEXT BOOKS:

1. **The Technology Of Clothing Manufacture**- Carr H. & Latham B., 1988, Blackwell Scientific Publication, Oxford England
2. **Metric Pattern Cutting**- Aldrich W 1992, blackwell Scientific Publication, Oxford England
3. **Apparel Manufacturing-** Ruth E. Glock, Grace I. KunzPHI Publication, UK

REFERENCE BOOKS:

1. **Pattern Cutting for Womens Outwear-** Gerry Cooklin, 1994, Blackwell Scientific Publications, Oxford England.

2. **The NIFT Book of Grading and sizing-** Vol I and II, Published by NIFT, New Delhi

3. **Fashion Source Book**- by Kathryn Mikelvey, 1996, Blackwell Scientific Publication, Oxford England

4. **Fusing Technology**- Cooklin G, 1990, The Textile Institute, Manchester, England

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

FABRIC STRUCTUR AND DESIGN

Subject Code	**:**	**10TX64**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Classification of woven fabrics. Elements of woven fabric structure. Construction and analysis of thread interlacing diagrams and cross-sectional diagrams. Methods of weave representation. Conditions and requirements of various drawing in drafts (DID) **6 Hours**

UNIT - 2

Characteristics of fundamental weaves and fabrics. Ornamentation of plain fabrics. Modification of plain weaves. Special Rib & Cord structures. Twill weaves and fabrics, Twist & twist interactions. Derivatives of twill weaves. **6 Hours**

UNIT - 3

Diamond and diaper designs. Satin & Sateen weaves. Simple fancy weaves such as honeycomb, brighten honeycomb, Huck a back, sponge-weaves, Mock leno, crepe & corkscrew weaves. **7Hours**

UNIT - 4

Distorted tread effects. Combined weaves to construct longitudinal stripes, cross stripes, check effects. Bed ford cord weaves and fabrics. **7 Hours**

PART - B

UNIT - 5

BIS standards for the important commercial fabrics. Application of different design and their utility in textile fabrics. Colour and weave effects. Classification of colour and weave effects and their application in textile fabrics. **6 Hours**

UNIT - 6

Various bases of textile design for figured arrangements. Light and pigment colour theory. Classification of colours. Attributes of colours. **6 Hours**

UNIT - 7

Modifications of colours. Color harmony and color contrast. Mixed colored effects with the aid of fibre mixtured yarns, twist yarn mixtures and combined colored threads in the fabrics. **7 Hours**

UNIT - 8

Application of special weaves and special yarns in special colour and weave effects. Brief study of history of textile design. Brief study of various historical designs with respect to their main features. **7 Hours**

TEXT BOOKS:

1. **Woven Cloth Construction, ATC Robinson and Marks-**extile Institute Pub, Manchester, 1973
2. **Watson Design and Colour**- Z. J. Grosicki, Universal Pub Corp, 1988

REFERENCE BOOKS:

1. **Grammar of Textile Design**-H. Nisbet pub, D. B. Taraporewala and sons, 1985
2. **Design of Woven Fabrics**-Blinov, Shibabaw Balay, MIR Pub 1989
3. **Fundamentals of woven Structure**-Edward I Golec, ITT Pub Lowell Mass 1958
4. **Modern Textile Design and Production**- R. H. Wright, National Trade Press, London 1970

5. **History of Textile Design**- V. A. Shenai, Sevak Pub Ltd, 1974.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

ELECTIVE-I (Group A)

NONWOVEN TECHNOLOGY

Subject Code	**:**	**10TX651**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Introduction to non-woven fabric, comparison with other fabric forming methods, Classification of non-woven (various approaches). **6 Hours**

UNIT - 2

Fibres used in non-woven and their testing, Characteristic features and properties of non-woven fabrics, Identification of non-woven. **6 Hours**

UNIT - 3

MANUFACTURE OF NON-WOVEN: Dry methods- various methods of web preparation (opening, blending and cleaning machines used)technology used in production of parallel, cross-laid and random laid webs, web laying, machines. **7 Hours**

UNIT - 4

WET METHODS: principles and raw materials, web laying, concept of drift deposition. Adhesive bonding: bonding agents and their application, bonding mechanisms, factors influencing the process, conditions for providing necessary adhesions, various method of adhesive bonding. Mechanical bonding: introduction to needle punching, passage of material though needle loom, pre-needling, specification of a needle, various constructional details of needles. **7 Hours**

PART - B

UNIT - 5

various types of needle arrangements, technical particular like needling density, web weight, depth of needle penetration and their relation, needling speed and its effects, fabric structure and properties, patterning major uses of needled fabrics. Research studies on needle punching. **6 Hours**

UNIT - 6

Brief outline of thermal and cohesive methods of non-woven production, Details of spun bonding and spun lacing methods, Melt blown technology in non-woven production.

FINISHING OF NON-WOVEN: methods, dyeing and, printing, coating, lamination and special finishing techniques. **6 Hours**

UNIT - 7

STRUCTURE AND PROPERTY RELATION IN NON-WOVEN: Structure of non woven, effect of fibre, web and processing parameters on the non- woven fabric properties, theory of mechanics of non-woven, testing of non-woven. **7 Hours**

UNIT - 8

APPLICATION OF NON-WOVEN: A detailed study of application on non woven in medical field, home applications, shoes and leather industries" electrical industry, Applications as technical textile in automobiles etc. **7 Hours**

TEXT BOOKS:

1. **Non woven** -Radko croma, Textile Trade Press, Manchester, 1971.
2. **Non woven bonded fabrics**- J.Lunenscoloss, Et aI, Ellis Hotwood, London, 1985.
3. **Needle Punching** - Purdy, The Textile Institute, Manchester, 1980.
4. **Research Study on Needle Punched Fabrics**- Subramanyam and Madhusudhanan, International Conference, 1.1. T Delhi, 1993.
5. **Needle punching** - Mrstina and Tejqi, Elsevier,New-York,1990.
6. International Seminar on Non-Woven Book of Papers Published by BITRA, 1990.
7. Non-Woven in 71-John and Willey Eastern publications, 1980.
8. **Non -Woven Materials and Recent Developments**- Gilies Noyes by Dara Corporation, New-Jersey, USA, 1979.
9. **Melt Blown Technique of Non Woven**, Sanjeev Malkan, 1987.
10. **Non-Woven Manufacture** -Prof.N.N. Banerjee.
11. **Non-Woven Manufacture** -Encyclopedia of Textiles, Textile Institute, London.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

ENVIRONMENTAL MANAGEMNT IN TEXTILE INDUSTRY

Subject Code	**:**	**10TX652**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Quality of Water. Water quality requirements for textile processing. **7 Hours**

UNIT - 2

SEWAGE- DEFINITION- characteristics of sewage, general methods of treatment of sewage, disposal of sewage. **6 Hours**

UNIT - 3

INDUSTRIAL EFFLUENTS: The disposal of industrial effluents in to streams. Characteristics of textile mill effluents, disposal and effect on the receiving streams. **7 Hours**

UNIT - 4

Noise pollution, causes of noise pollution, effects of noise pollution, remedial measures. Methods of noise control in textile mills. **6 Hours**

PART - B

UNIT - 5

Brief discussion about different instruments used in analysis of effluents. **7 Hours**

UNIT - 6

Pollution and its impact on ecology, environment and society. **6 Hours**

UNIT - 7

Sources of pollution and its control. Various methods of industrial waste water treatment. Treatment of effluents received from textile wet processing industries. **7 Hours**

UNIT - 8

Role of filter fabrics in pollution control. Indian pollution acts, their role and effectiveness. Recent developments in pollution control in various processes in textile mills and manufacturing plants. **6 Hours**

TEXT BOOKS:

1. **Water Supply and sewage**-Mc Graw Hill Publication
2. **Waste Water Treatment**- International Publication, M. N. Rao and A. K. Dutta
3. **Waste Water Engg Treatment Disposal Sewage**- Tata Mc Graw Hill Publication
4. **Pollution and its Control**-Chand Publication

REFERENCE BOOKS:

1. **Efficient use of Fuel-** H. M. S. D. Publication London 1958.

2. **Energy Resources**- Demand and Conservation with Special Reference to India, C. Kashjan

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

TEXTILE MECHANICS AND CALCULATIONS

Subject Code	**:**	**10TX653**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Equations of Motion- Motion in a circle- Transmission of motion by wheel gearing. V-Belt Drives - Comparison of flat and V-belts, Belt slippage, Effect of belt thickness, effect of initial tension on the belt. Effect of centrifugal force, horse power transmitted. Belt materials. Factors affecting the selection of V-belts, Joints in belting. **6 Hours**

UNIT - 2

Brief explanation of fast and loose Pulleys, guides, jockey or rider and grooved pulleys. Rope and Chain Drives: Driving by gears, determination of speed ratios in simple and compound gear train. **6 Hours**

UNIT - 3

Draft factor, rack and pinion and screw traversing mechanisms, determination of speed ratio in epicyclic gear train. Sun and Planet gears as transmission gear- application in spinning and weaving machinery. Stepped pulleys. **7 Hours**

UNIT - 4

Construction of heart shaped 3- leaved and combined build cams for spinning machinery. Different between Tappets and cam construction for 1/1,2/1,1/2 and 1/3 weaves. **7 Hours**

PART - B

UNIT - 5

Study of eccentricity and its effects, construction of displacement, velocity and acceleration diagrams. **6 Hours**

UNIT - 6

Brief study of clutches and brakes - Application in Textile machineries, kinetics and dynamics of shedding, picking beating - up ,take up and let-off mechanism Derivation showing frictional force F is directly proportional to the distance of weight from the fulcrum in friction let off mechanisms. **6 Hours**

UNIT - 7

Essential weaving calculations like winding rate in double flanged bobbins, cheese, cone, precision winders. Production related to winding, warping, sizing, reed calculations. Problems related to loom production and efficiency. **7 Hours**

UNIT - 8

Yam calculations, yarn count, systems, conversion from one count to other, within the system and between the system. Details about average count and resultant count. Cloth calculations, Calculation of fabric weight, average count, warp and weft calculations. **7 Hours**

TEXT BOOKS:

1. **Textiles Mathematics**- Vol .1,2,3" J .E.Booth, f Butterworths Pub London., 1950. .
2. **Textile Mechanics** -Vol 1&2,K.Slater, Textile Institute I Pub., 1979'
3. **Weaving Calculation-**Sen Gupta ,D.B. Tarparwala & Sons .,1956

REFERENCE BOOK:

1. **Mechanics of Textile Machinery**- W .A. Hanton, Longmans, Green and Co., London, 1950.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

TEXTILE TESTING LAB –1

Subject Code	**:**	**10TXL66**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

Fibre Tests:

1. Identification of textile fibres by physical methods.

2. Determination of fibre maturity.

3. Determination of Nep count by Shirley Nep count template

4. Determination of Ginning percentage

5. Determination of fibre length parameters.

6. Determination of fibre fineness.

7. Determination of fibre strength.

8. Blend analysis by chemical methods.

9. Determination of moisture content and regain of textile materials.

Yarn Tests:

1. Determination of yarn count

2. Determination of single and ply yarn twist.

3. Determination of lea strength and CSP.

4. Determination of single yarn strength and elongation.

5. Determination of yarn friction.

FASHION DESIGN AND GARMENT MANUFACTURE LAB

Subject Code	**:**	**10TXL67**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

1. Method of tacking body measurements.
2. Pattern making practice.
3. Collection and study of woven and knitted fabric characteristics. .
4. Study of different types of sewing machines.
5. Study of fusible interlinings and coated interlinings for their characteristics and applications.
6. Study of various buttons, labels and decorative materials for their characteristics and applications.
7. Study of sewing and embroidery threads.
8. Practice of stitching methods - types of stitched seams, stitching of garments, different varieties like woven, knitted and silk fabrics
9. Computer aided marker preparation for Men's, Women's and Children's Wear.
10. Calculation of marker efficiency using manual and CAD method.
11. Grading of garment for Men's and Women's wear.
12. Digitization of garment components using readymade garment and grading the same.

FABRIC STRUCTUR AND DESIGN LAB

Subject Code	**:**	**10TXL68**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

1. Analysis of Plain wave fabrics
2. Analysis of Twill weave fabrics
3. Analysis of Honey comb weave fabrics
4. Analysis of Huck back weave fabrics
5. Analysis of Mock leno weave and other toweling fabrics
6. Analysis of Satin weave fabrics
7. Analysis of Sateen weave fabrics

8. Creation of stripes and checks effect on paper using suitable colours

9. Creation of floral design on paper by suitable colours

10. Creation of animation patterns and other designs on paper by suitable colours

11. Creation of suitable designs on dobby looms

13. Creation of suitable designs on jacquard

VII SEMESTER

APPAREL MARKETING AND MERCHANDIZING

Subject Code	**:**	**10TX71**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

ORGANIZATION OF THE APPAREL BUSINESS- Nature of Apparel, Organization of the Apparel Industry- Business Concepts Applied to the Apparel Industry- International Issues- Cooperation in Manufacturing and Distribution. **6 Hours**

UNIT - 2

MARKETING OBJECTIVES AND STRATEGIES-Functional organization of an apparel firm, responsibilities of marketing division strategic plan, marketing objectives & strategies, Retail and Wholesale Strategies of Merchandise Distribution-Labeling and Licensing. **7 Hours**

UNIT - 3

MERCHANDISING STRATEGIES & PROCESS- Concepts apparel production lines, dimensions of product change, nature & timing of merchandising responsibilities, business & marketing plans, line planning, line development line presentation, sourcing. **7 Hours**

UNIT - 4

ANALYSIS OF GARMENT DEVELOPMENT- Role of garment analysis, process of garment analysis, professional perspectives on garment analysis. **6 Hours**

PART - B

UNIT - 5

PRODUCT STANDARDS AND SPECIFICATIONS: Sources of Product and Quality Standards- Standards for Quality, Fit, and Performance- Use of Specifications- Writing Specifications for Apparel Manufacturing. **6 Hours**

UNIT - 6

APPAREL DESIGN: Product Development and the Design Function- Role of Product Change in the Design Process- Post adoption Style. Development- Apparel Design Technology. **6 Hours**

UNIT - 7

EXPORT MARKETING: Outlook for export marketing, International agreement & agencies for promoting exports. Export import policy. Export assistance. Current pattern of India's foreign & world trade, Export barriers-tariff & non tariff, Export Assistance. **7 Hours**

UNIT - 8

Export marketing channels, physical distribution- transportation, packaging & marine insurance for exports. Management of risk & export financing, Quality control & pre-shipment inspection, documents for exports. An Introduction to retail marketing. Consumer behavior & retail operation. The retail marketing mix. Management of a retail brand. Application of IT in retail marketing. **7 Hours**

TEXT BOOKS:

1. **Apparel Manufacturing-**Ruth E. Glock, Grace I. Kunz-**,** PHI Publication, UK

2. **Export Marketing-** B.S.Rathore & J.S.Rathore, Himalaya Publishing house, Bombay, 1997

REFERENCE BOOKS:

1. **The Technology of Clothing manufacture**-Herold Carr and Barbara Latham
2. **Individuality**-Mary Kefgan, Phylliss Touchies Specht
3. **Apparel Manufacturing and Sewn Product Analysis**-Ruth E Clock
4. **Quality Control in Apparel Industry**-By Pradip V. Mehta
5. **Fabulous fit**-By Judith Rashand
6. **Marketing Management-**Phillip Kotler
7. **Retail marketing management –** David Gilbert

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

TEXTILE TESTING – II

Subject Code	**:**	**10TX72**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART –A

UNIT 1:

Principles of various evenness testers & measurement of evenness for sliver, roving & yarns. **6 Hours**

UNIT 2:

Causes & effects of irregularity in sliver, roving & yarns. On-line quality control systems. Yarn hairiness and its measurements. **6 Hours**

UNIT 3:

Determination of fabric length, width, thickness, weight, thread density, and crimp. Determination of fabric tensile, tearing and bursting strength. **7 Hours**

UNIT 4:

Determination of stiffness, crease, drape, serviceability, wear, abrasion resistance and Pilling resistance. **7 Hours**

PART –B

UNIT 5:

Determination of flammability, air permeability, and Thermal conductivity. **6 Hours**

UNIT 6:

Water & fabric relationship. Study of water penetration, shrinkage test, wetting of apparels & industrial fabrics. Penetration of fabrics by water under pressure. **7 Hours**

UNIT 7:

Assessment of fabric quality for garment industry- Testing & Inspection. **6 Hours**

UNIT 8:

Study of fabric cyclic properties like bending, shear, fatigue. Estimation of color fastness of dyed fabrics. **7 Hours**

Text Books:

1. **Principles of Textile Testing,** Booth J. E., Butterworth, Wendon III Edition.
2. **Physical Textile testing of Textiles**-B.P.Soville, Wood Head-1999.
3. **Handbook of Textile Testing and quality Control,** Grover and Hamby, Wiley Eastern Pvt Ltd, New Delhi 1969
4. **Physical properties of Textile Fibre,** Morton and Hearle, The Textile Institute, London.
5. **Skinkle, Textile Testing,** T.B. Tarapurwala Sons and Co. Pvt Ltd Bombay.
6. **BIS Handbook,** B I S Publication 1985.

References:

1. **Characteristics of raw cotton**, Textile Institute.
2. **Textile Testing Longmans,** James Lomax, Green and Co. London.
3. **B.S. Handbook**, B. S. Publication 1985.
4. **ASTM Standards**, ASTM Publication 1985.

5. **Handbook of Methods of Tests for cotton Fibres, Yarn and Fabrics**, CTRL, Bombay.

6. **Chemical Testing of Textiles,** Koch P., Chapman and Hall London.

7. **Cotton Assessment and appreciation,** SITRA, Coimbatore

8. **Physical Testing I and II,** Keshavan and others, SSMITT, Tamilnadu 1987.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

TOTAL QUALITY MANAGEMENT

Subject Code	**:**	**10TX73**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Introduction TQM. Quality movement in Japan, US & India. Definition of quality. Small q & Big Q, Quality characteristics- weaves, Dimensions, determinants. Quality & profitability. **6 Hours**

UNIT - 2

QUALITY & MANAGEMENT PHILOSOPHIES-Deming Philosophy- Chain reaction, 14 points for management, triangle theory of variance, deadly diseases & sins, Demings wheel. Juran Philosophy- 10 steps for quality improvement, quality trilogy, universal breakthrough sequence.Crosby Philosophy- Crosby's 6 C's, Absolutes of quality, Crosby's 14 points for quality, Crosby triangle. Comparison of 3 major quality philosophies. **7 Hours**

UNIT - 3

MANAGING QUALITY- traditional Vs Modern quality management, the quality planning, road map, the quality cycle. Cost of quality- Methods to reduce cost of quality, Sampling plans, O.C. curve. **6 Hours**

UNIT - 4

QUALITY CONTROL - Objectives of quality control, Strategy & policy. Company wise quality control. Quality Assurance- Definition, concepts & objectives. Economic models for quality assurance. Statistical methodology in quality assurance. Process capability ratio, 6 sigma in quality assurance. **7 Hours**

PART - B

UNIT - 5

QUALITY IMPROVEMENT, PRINCIPLES OF TOTAL QUALITY, EVOLUTION OF TOTAL QUALITY CONTROL & PRINCIPLES.TQM- Basic concepts & overview. Necessity of TQM. Elements of TQM, benefits of TQM, TQM in services, ISO 9000 & ISO 14000 in quality management system. **7 Hours**

UNIT - 6

FOCUSSING ON CUSTOMER- Importance of customer satisfaction, Kano's model of customers satisfaction, customers driven quality cycle, understanding customers needs & wants, customers retention.

6 Hours

UNIT - 7

LEADERSHIP- Introduction, characteristics of quality leaders, role of TQM in leadership.Tools & Techniques of TQM, Just in time system-Concepts, objectives, overview, characteristics, benefits. Benchmarking- Introduction, process of bench marking, benefits, advantages & limitations.

7 Hours

UNIT - 8

SUPPLY CHAIN MANAGEMENT- Objectives, process tools, supply chain management for manufacturing organization & service organization world class manufacturing- becoming world class, relevance of TQM in world class manufacturing. World class supplier, world class customer, present global business conditions, world class companies in 21st century. Future of TQM. **6 Hours**

TEXT BOOK:

1. **Total Quality Management-** K. Shridhara Bhat Himalaya Publishing House

REFERENCE BOOKS:

1. **Norms For Spinning-**Weaving and Processing, ATIRA Publication, Ahmedabad 1990
2. **Handbooks manuals** – BIS, ASTM, ISO-9000
3. **Total Quality Management**- N.V.R. Naidu, K.M. Babu, G. Rajendra, New age international publishers

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

ADVANCED FABRIC STRUCTURE AND DESIGN

Subject Code	**:**	**10TX74**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1
Welts & pique fabrics, figured pique Fabrics.

6 Hours

UNIT - 2
Extra warp and extra weft fabrics. Backed weaves and fabrics.

6 Hours

UNIT - 3
Double cloths- Classification, selection criteria for threads, weaves etc., self stitched double cloths & Interchangeable double cloths

7 Hours

UNIT - 4
Center stitched double cloths. Principle of designing simple damask and brocades.

7 Hours

PART - B

UNIT - 5
Gauze and leno structures, principles of leno structure, basic sheds in leno structure, leno weaving with flat steel doupes with an eye, Russian cords design, simple net leno, Easing action shaker device.

6 Hours

UNIT - 6
Weft pile fabrics- allover or plain velveteen, corded velveteen.

6 Hours

UNIT - 7
Terry pile structures- formation of pile, terry weaves, figured terry pile fabrics.

7 Hours

UNIT - 8
Warp pile fabrics produced with the aid of wires and by face to face principle. Narrow fabrics. Uncommon woven structures- Lappet & Swivel fabrics.

7 Hours

TEXT BOOK:

1. **Watsons Advanced Textile Design**- Z.J Grosicki, Universal Publishing Corporation, Bombay 1988

REFERENCE BOOKS:

1. **Grammar of Textile Design**-H. Nisbet, Tareporewala and Sons, 1985

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

ELECTIVE-II (Group B)

RETAIL MANAGEMENT

Subject Code	**:**	**10TX751**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Marketing: Retailing, Role, Relevance & Trends. Retail Customer, Retail market segmentation & franchising,Relationship marketing in Retailing., Social Marketing in Retail management. **6 Hours**

UNIT - 2

Strategic management: Retail in India, Services marketing and management,Brand Management,International / Strategies, Pricing , Advertising & sales promotion. **6 Hours**

UNIT - 3

Operations: Retail location strategy, Product and Merchandise management, Logistics & SCM,Security measures, Footfalls / computerized methods & non computerized methods, Visual / display methods, Fashion designing. **8 Hours**

UNIT - 4

Finance: Accounting Methods, Capex planning, Risks Capex planning, Accounting Processes, Accounting methods, WIP, Strategic cost management, Management of Obsolete goods. **6 Hours**

PART – B

UNIT - 5

Human Resources: Retail organization, Laws involved in HR, Motivation, Customer psychology, aining needs for employee. **6 Hours**

UNIT - 6

Legal & compliances: License, Contracts & Recovery, Legal Process, PF/ESIC & Exemptions, PPF IR – Law, Shops & establishments, IPR (International patents & Trademarks). **6 Hours**

UNIT – 7

Mall Management: Types of Various retail formats, Concepts in mall design, Factors influencing Malls establishments, Aspects in Quality management, Statistical methods used in measuring mall performance. **8 Hours**

UNIT – 8

Retail Life Cycle – Innovation / Acceleration / Maturity / Decline, Multi-Channel Retailing, **6 Hours**

Text Books:

1. **Retai Management- A strategic Approach**, Alibris, Prentice Hall, Mar., 2006

2. **First Steps In A Retail Career,** Wrice Mark, Macmillan Publishers Australia P/L
3. **Communicating with Customers,** Euson, B, Jacaranda Wiley
4. **Retail Management**, Levy and Weitz, McGraw Hill

References:

1. **Marketing Management,** R. Saxena

2. **Retailing Management,** Swapna Pradhan**,** Tata Mc Graw Hill Publishing Company, New Delhi

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

FINANCIAL MANAGEMENT

Subject Code	**:**	**10TX752**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Finance function, goals of finance management, Financial planning, Major financial decision areas.

6 Hours

UNIT - 2

CAPITAL STRUCTURE: measure of leverage, effects of lever- I, traditional approaches, MM theory of financial leverage and value of the forms. Designing of capital structure- EBIT- EPS analysis, risk-return trade-off. **6 Hours**

UNIT - 3

INVESTMENT DECISION: Method of capital budgeting- traditional and time adjusted methods, risk and un-certanity in capital ties, creditor-ship securities. Convertible and tradable warrant. **7 Hours**

UNIT - 4

DIVIDEND POLICY: Factors affecting dividend policy relevance of the dividend policy- Walters model, Gordon's model- M.M. theory, types of dividend policies- Bonus shares - corporate dividend policy in practice. **7 Hours**

PART - B

UNIT - 5

Market for corporate securities, trading procedures in stock exchange, financial services, leasing, mutual funds, SEBI and market regulation. Working capital management, receivables, inventories and cash management, Merger and take-overs. **6 Hours**

UNIT - 6

OBJECTS OF COSTING-elements of costs-types of overheads, Allocation of factory over heads by different methods- determination of selling price. Definition and objects of depreciation-break-even analysis. **6 Hours**

UNIT - 7

Definition and Advantages of Cost Accounting. Elements of cost. Introduction, classification, elements and allocation of Material cost. Labour cost and over head cost. **7 Hours**

UNIT - 8

PROCESS COST CALCULATION- introduction, special features of Textile processing and its cost calculation. Introduction to standard costing and Budgetary control. Statutory guidelineson the maintenance of cost records. **7 Hours**

TEXT BOOKS:

1. **Financial Management-** M.Y. Khan and Jain
2. **Financial Management and Policy-**James Varn Horny
3. **Financial Management-**Keown Scott

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

OPERATION RESEARCH TECHNIQUE

Subject Code	**:**	**10TX753**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT – 1

LINEAR MODEL: The phases of OR study – formation of an L.P model- graphical solution – simplex algorithm – artificial variables technique– Big M method, two phase method. **7 Hours**

UNIT -2

TRANSPORTATION PROBLEM: Optimal solution by north west corner method- least cost method –

Vogel's approximation method – optimality test – MOBI method. **6 Hours**

UNIT -3

ASSIGNMENT PROBLEM – formulation – Hungarian method - unbalanced assignment problem.

6 Hours

UNIT -4

NETWORK MODELS: Shortest route – minimal spanning tree - maximum flow models – project network- CPM and PERT network-critical path scheduling. **7 Hours**

PART - B

UNIT -5

REPLACEMENT MODELS: Replacement of items that deteriorate with time – value of money changing with time –not charging with time – optimum replacement policy – individual and group replacement. Sequencing problem: models with n jobs with 2 machines – problem with n jobs with 3 machines.

7 Hours

UNIT -6

QUEUING THEORY: Queuing models – queuing systems and structures – notation –parameter – single server and multiserver models – Poisson input – exponential service – constant rate service – infinite population **7 Hours**

UNIT -7

INTEGER LINEAR PROGRAMMING AND GAME THEORY: Solution to pure and mixed integer programming problem by Branch and Bound and cutting plane algorithms. **6 Hours**

UNIT -8

Game Theory:Two person Zero sum games-Saddle point, Dominance Rule, Convex Linear Combination (Averages), methods of matrices, graphical and LP solutions. **6 Hours**

TEXT BOOK

1. Taha H.A, "Operation Research", Pearson Education sixth edition, 2003

REFERENCES

1. Hira and Gupta "Introduction to Operations Research", S.Chand and Co.2002
2. Hira and Gupta " Problems in Operations Research", S.Chand and Co, 2002.
3. Panneerselvam, "Operations Research" Prentice Hall of India, 2003.
4. Wagner, "Operations Research", Prentice Hall Of India, 2000.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

ELECTIVE-III (Group C)

FIBRE REINFORCED TEXTILES

Subject Code	**:**	**10TX761**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

INTRODUCTION TO COMPOSITES. BASIC NOMENCLATURES – reinforcing phase, continuous phase, matrix, interface etc. Classification of composites with respect to fibre used, matrix used, limitations of engineering metals. **7 Hours**

UNIT - 2

Study of mechanical & thermal properties various fibres Viz. Carbon, glass, silicon carbide, boron, kevlar, polyethylene, thisozole etc. used in the production of fibre reinforced composites. **6 Hours**

UNIT - 3

Study of major natural fibres (coir, jute) which are used in the production of fibre reinforced composites. Classification of resins, thermoset, thermoplastic metal matrix. There production properties, advantages, disadvantages (phenolic, epoxy, polyester, vinyl easters). **7 Hours**

UNIT - 4

COMPOSITES MANUFACTURING TECHNIQUES-Introduction-Hand lay-up-spray-up-prepreg technology-centrifugal casting-filament winding. **6 Hours**

PART - B

UNIT - 5

COMPRESSION MOULDING-INJECTION MOULDING-continuous manufacturing techniques. Study of mechanical and thermal properties of various composites viz. Glass, boron, carbon, aramid. **6 Hours**

UNIT - 6

Study of various applications of composites mainly in the field like aerospa, medical, sports, ship building automobiles. **7 Hours**

UNIT - 7

Brief outline on testing of composites. **6 Hours**

UNIT - 8

Composite mechanics derivations of various equations related to composite structures viz. Axial modulus, transverse modulus, breaking strength of both continuous filament, reinforced and staple fibre reinforced composites, effect of volume of fibres on mechanical properties of fibre reinforced composites. Fotigue process in fibre reinforced composites. **7 Hours**

TEXT BOOKS:

1. **Fibre Reinforced Material Technology-**N.J.Parratt Van Nostrand Reinhold Co, Inc 1972

2. **High Performance Fibre Composites-** J.H.Morely,Academic Press

REFERENCE BOOKS:

1. **DST-polymers and composites-Recent trends-Proceedings of National Seminar**1989, Oxford IBH Pub Co Pvt. Ltd.

2. **Composites Engineering hand boos** -Ed. Mallik P.K., Marcell Dekker, N.Y., 1997.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

ERECTION AND MAINTENANCE OF TEXTILE MACHINERY

Subject Code	**:**	**10TX762**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Basic definitions related to mechanical design, vibration resistance, heat resistance, reliability, longevity, maintainability .Brief outline of engineering material. **6 Hours**

UNIT - 2

Different kinds of tools and the devices employed for erection and maintenance. Erection of machines, hoisting - equipment, over head cranes, machine installation conditions. Functions, prerequisite of maintenance and its classification. **7 Hours**

UNIT - 3

Function and classification of power transmission equipment and transmission members. Methods and kinds of repairs of textile equipment used in different departments. **6 Hours**

UNIT - 4

Cleaning and washing of parts. Various kinds of wears. Main factors influencing the wear of machine parts and methods increasing their wear resistance. Failure prediction of parts, units and mechanisms.

7 Hours

PART - B

UNIT - 5

Basic concepts of maintenance, Study of different maintenance programme, routine and preventive predictive remedial restorative maintenance. **6 Hours**

UNIT - 6

Maintenance of spinning, weaving, processing equipment as per the schedule. **7 Hours**

UNIT - 7

Function of prerequisite of lubricants, different lubricants used in the textile industry, method of lubrication.

6 Hours

UNIT - 8

maintenance of ledgers spare parts etc. machinery maintenance audit and its advantages. House keeping, overhauling. **7 Hours**

TEXT BOOKS:

1. **Spinning Textile machinery maintenance**- Pub, SITRA Coimbatore 1980

2. **Weaving Textile Machinery maintenance Pub**- BITRA, Bombay 1980

3. **Spinning, Weaving- & processing machinery maintenance in textile mills**- B.B.Joshi, et al, Textile & Allied industry research organization, Baroda, 1970

REFERENCE BOOK:

1. **Repairs and maintenance**- Pub, MIR

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

INDUSTRIAL ENGINEERING

Subject Code	**:**	**10TX763**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Introduction: Definition, purpose, available techniques, Aspects, physical facilities & operating facilities ,scientific management, resources productivity, etc. **6 Hours**

UNIT – 2

Work Study: Definition ,objectives, Techniques, method study, work measurement,

Purpose of work study, steps, different phases. **6 Hours**

UNIT – 3

Method Study : Definition , Steps, Selection of problems, Collection of facts and consideration about objectives, Recording techniques ,Elements of a process analysis , Operation process chart, Different process charts, Critical examination. **6 Hours**

UNIT – 4

Work Measurement : Definition ,Uses, Techniques, Time Study, Measuring Instruments, Elements in time study, factors, alignment chart, Performance rating methods, observed time & normal time, allowances, Standard time, Work sampling Predetermined Motion Time study, Motion time data for assembly operations, Work factor system, method time measurement. **8 Hours**

PART – B

UNIT – 5

Plant Maintenance : Introduction, Systems of maintenance, break down, Planned, Corrective and Preventive maintenance, maintenance schedule. **6 Hours**

UNIT – 6

FACILITY : Facility Location Decisions (FLcD) – Selections of country, region and site. Facility Layout Decision (FlyD) – Types (Fixed Position, and Production, Process, Flexible), Methodologies (Distance Minimising, Computer software systems (CRAFT, CORELAP, ALDEP), Line Balancing and performance ratios. **6Hours**

UNIT – 7

MATERIAL AND INVENTORY MANAGEMENT: Material Management (MM) – Handling Technology (Robots, Automated storage and retrieval systems (ASRS) and methods (JIT, / Kanban, ABC Systems) Independent Demand Inventory Models – Fixed order system, Basic EOQ, EBQ Models, Quantity discount models. **6 Hours**

UNIT – 8

PLANNING AND FORECASTING: Introduction to Strategic, Tactical, Operational, Aggregate and Capacity Planning. Planning Product design and development – Applications of CAD, Expert systems, Standardisation, Group Technology (GT) and Research and Development**.** Forecasting – Types, Methods (Qualitative and Quantitative), Types of variation in data, Minimising forecasting errors and selection of forecasting methods. **8 Hours**

TEXT BOOKS:

1. R.Paneer Selvam, Production and Operations Management, Prentice Hall of India, 2002.
2. Sang M Lee and Marc J Schniederjans, Operation Management, All India Publishers and Distributors, First Indian edition 1997.
3. Robert H. Lowson, Strategic operations Management (The new competitive advantage), Vikas Publishing House, First Indian reprint 2003.

REFERENCES:

1. Thomas E Morton, Production and operations management, Vikas Publishing House, First Indian reprint 2003.
2. Mahapatra P B, Computer Aided Production Management, Prentice Hall of India, 2001.
3. Martand T Telsang, Production Management, S Chand and Company, First edition 2005.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

TEXTILE TESTING LAB – II

Subject Code	**:**	**10TXL77**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

1. Determination of yarn evenness by visual examination.
2. Determination of evenness of sliver, roving and yarn.
3. Determination of geometrical properties of fabrics.
4. Determination of Air Permeability of fabrics.
5. Determination of crease recovery property of fabrics.
6. Determination of drape co-efficient of fabrics.
7. Determination of fabric stiffness and its parameters.
8. Determination of fabric strength and elongation.
9. Determination of fabric tearing strength.
10. Determination of fabric bursting strength.
11. Determination of abrasion resistance of fabrics.
12. Determination of pilling tendency of fabrics.
13. Determination of colour fastness of dyed and printed fabrics for washing
14. Determination of colour fastness of dyed and printed fabrics for perspiration.
15. Determination of dimensional stability of fabrics.
16. Determination of fastness properties of dyed fabric for artificial light and sun light.
17. Determination of Fastness Properties of printed and dyed fabric for rubbing.

ADVANCED FABRIC STRUCTURE AND DESIGN LAB

Subject Code	**:**	**10TXL78**	**IA Marks**	**:**	**25**
No. of Practical Hrs./ Week	**:**	**03**	**Exam Hours**	**:**	**03**
Total No. of Practical Hrs.	**:**	**42**	**Exam Marks**	**:**	**50**

1. Analysis of dobby design fabrics.
2. Analysis of fancy woven design fabrics.
3. Analysis of jacquard design fabrics.
4. Analysis of printing design fabrics.
5. Generating of geometric, abstract, floral, animation and combined designs.
6. Application of paint brush and other related software in colour mixing.
7. Utilization in design software for creating textile designs intended for dobby.

8. Utilization in design software for creating textile designs intended for jacquard.

9. Utilization in design software for creating textile designs intended for printing.

10. Simulation of fabric appearance of woven designs by varying fabric set and yarn count.

11. Analysis of colour and weave fabrics and simulating the appearance using computer.

12. Scanning of fabric and simulating the appearance of the same.

13. Scanning of yarn and imitating the appearance of a yarn in woven fabric form.

14. Transformation of design to production particulars.

VIII SEMESTER

APPAREL TESTING AND QUALITY CONTROL

Subject Code	**:**	**10TX81**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART – A

UNIT - 1

COMFORT: Thermal properties, moisture-vapour transmission, liquid-moisture transmission, air-permeability, aesthetic comfort, static electricity. **6 Hours**

UNIT – 2

DURABILITY: Abrasion resistance, tensile and tearing strength, launder ability, seam - slippage and strength. **6 Hours**

UNIT – 3

HANDLE AND EASY CARE: Low - stress mechanical properties, formability, crease resistance, anti - shrink, pilling resistance behaviour – role of fibre properties and chemical treatments. **6 Hours**

UNIT – 3

THE MAIN RAW MATERIAL – FABRIC: Fabric and garment dimensions - fabric stability and finished width, Fabric inspection - examination of fabric on receipt. **6 Hours**

UNIT – 4

BASIC SEAMING TECHNOLOGY: Laying-up and cutting, basic technology of seams, Stitch forming action, Quality checks on seams. **8 Hours**

PART – B

UNIT – 5

Technology if Inspection: Garment examination, Seeing colour and the effect of type of illuminant on the apparent shade of a sample, Effects of intensity, angle of illumination and type on the apparent shade of a sample, Effects on shade of other colours in adjacent areas. **6 Hours**

UNIT – 6

FINAL PRODUCT SPECIFICATIONS: Quality control in the sampling/development department, From sample to full production, Example garment specification, Seam specification examples, Performance specification examples. **6 Hours**

UNIT – 7

OVERALL FUNCTION OF QUALITY CONTROL: The cost of quality, Functions of Quality Assurance, Commercial advantages form effective control systems,Economic aspects of quality assurance, The role of quality control. **6 Hours**

UNIT – 8

Dynamic Inspection - Inline, Production & Final Quality Inspection, Product Safety Evaluation, Sampling & Quality Control, Testing & Evaluation - Fast Durability Evaluation ,Production & Delivery Monitoring, Platform Quality Inspection Services. **8 Hours**

TEXT BOOKS:

1. **"Principles of Textiles testing",** J.E. Booth.
2. **"Hand book of textile testing and quality control",** B. Glover, D.S. Hambi-Pu Wiley Estern.Ltd., Bangalore.
3. **"The measurement of Appearance",** Richard S. Hunter and Richard W. Harold, Wiley.Interscience.
4. **"An introduction to quality control for the apparel industry",** Pradip. V. Mehta.

REFERENCE BOOKS:

5. **"International Apparel Quality manuals",** KES- F and FAST manuals.
6. **"Progress in Textile science and technology",** Vol-1, Ed. V.K. Kothari, IAFL, India 2000.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

TECHNICAL TEXTILES

Subject Code	**:**	**10TX82**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

INTRODUCTION TO TECHNICAL TEXTILES. Requirements of fibres, yarns and fabrics for technical textiles. Classification of technical textiles. Study of properties of various fibres used for technical textiles. Agrotech: Textiles used for agriculture, Horticulture and animal husbandry. **6 Hours**

UNIT - 2

MOBIL TECH - AUTOMOTIVE TEXTILES - Use of textiles in tires, top covers, upholstery, safety devices of automobiles. Requirements of fibres used for tires, various fibres used for tire cords, tire building, different types of tires, textiles used in Aerospace industry. **6 Hours**

UNIT - 3

MEDICAL TEXTILES: Medical application of Textiles, requirements, classification, detailed study of application of textiles in implantable, non-implantable, extra corporal devices and health care hygienic products. **7 Hours**

UNIT - 4

GEO TEXTILES: Textiles for civil engineering - Road Railway, bridge, dam construction, functions of geo textiles. Fibre reinforced composites : Introduction, classification of composites, types of fibres, matrix used, applications of composites. **7 Hours**

PART - B

UNIT - 5

FILTER FIBRES: Introduction, types of filtration requirements, filtration mechanism, cleaning mechanism, Effect of yarns and fabric construction on filtration. Coated fabrics: Introduction, chemistry of coated textiles, coating techniques, fusible interlining. **6 Hours**

UNIT - 6

HEAT AND FLAME AND CHEMICAL PROPERTIES**:** Introduction to flammability, thermal behavior of fibres, fire retardant finishes, thermal resistant fibres. Chemical resistant fibres. **7 Hours**

UNIT - 7

TEXTILES IN DEFENSE: Introduction, historical back ground, criteria for modern military textiles, textiles for environmental protection, Ballistic protective materials, water proof materials, application of textiles in camouflage. Application of Textiles in Packing, Power transmission, fish nets, sports, electrical industry. **7 Hours**

UNIT - 8

SMART TEXTILES: Introduction, concept of smart textiles, various application of smart textiles. Introduction to nanotechnology in textiles. Application of nanotextiles in various field. Production and properties of nanofibres. Prospects of technical textiles in India. **6 Hours**

TEXT BOOKS:

1. **Hand book of Technical Textiles**- Ed. A.R.Horrocks, S.C, Anand. Wood Head Pub., England, 2000.

2. **Hand book of Industrial Textiles-** Ed S.Adanur, Technomic Pub., Lancaster-Basel, 1995.

3. **Smart Fibres- Fabris, & Clothig**-Ed. Xiaoming Toa, Wood Head, England, 2001.

4. **Design of Textiles For Industrial**- Applications, ED P.W. Harrison, Pub Textile Institute 1977 Manchester

REFERENCE BOOKS:

1. **Handbook of Industrial Textiles**-e. R. Kaswell, Pub Willington, New York 1963
2. **Industrial Textiles-** P.K.Badami.
3. **International Seminar on Technical Textiles** -by SASMIRA, 2000.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

ELECTIVE –IV (Group D)

HUMAN RESOURCE DEVELOPMENT

Subject Code	**:**	**10TX831**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Human resource management, importance and impact on Textile Industry. **6 Hours**

UNIT - 2

Understanding and Management of Human behavior at work, individual and group behavior, attitudes. motivation, communication and factors affecting behavioral changes to achieve higher production and profitability. **10 Hours**

UNIT - 3

Importance of job analysis and job specifications. **4 Hours**

UNIT - 4

Different types of evaluation, basis of promotion, demotion, transfers, methods of training personnel for higher performance and productivity. Advantages and disadvantages of line and group performance in garment Industries. **6 Hours**

PART - B

UNIT - 5

Modern methods of recruitment, labour management relation, employ grievances and handling methods. **10 Hours**

UNIT - 6

Welfare measures and implementation. **4 Hours**

UNIT - 7

Latest amendments in Factories Act, wage and salary administration, incentive scheme. case studies on the above topic. **8 Hours**

UNIT - 8

Analysis and suggestions. Problem solving and remedies. **4 Hours**

TEXT BOOKS:

1. **Personal Management**- Edvin B. Flippe
2. **Personal Management**- Subratha Ghosh.
3. **Personal Management**- Duck Torington.

REFERENCE BOOK:

1. **Management of personnel in India** – N.N Chattargee.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

INTELLIGENT AND FUNCTIONAL TEXTILES

Subject Code	**:**	**10TX832**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

New generation fibers: Introduction, Background, Transition to new fibers. **4 Hours**

UNIT – 2

The super-fiber with new performance: Introduction, basic classes of super-fiber, the need for a strong fiber, concept of "gel-spinning, The aramid fiber race , Polyacetal fiber, Strong Vinylon RM, New liquid crystalline polymers: engineering plastics, Vectran: a fully aromatic polyester fibre, Developing polyallylate fiber, Final stage of pitch-based.Carbon fiber development, use of super fibres, The future of super-fibers. **8 Hours**

UNIT – 3

High-tech fibers: A silk-like fiber that surpasses natural silk, ultra-fine fibers, skin-like fabrics, Chameleonic fabrics, Photochroism-controlled clothing material, Perfumed fibers, Power fibers that store solar energy, Iridescent textiles, Protein plastics with the feel of human skin.

8 Hours

UNIT – 4

Biomimetic chemistry and fibres: Application of Morphology / structure, Hybridisation technology.
6 Hours

PART - B

UNIT -5

Bio-polymer frontiers: Mimicking the functions of enzymes and co-enzymes, Polysaccharides in semiconductors and medicine, fibres from biomass of crab and shrimp shells, New applications of silk, Fibers produced by bacteria, New functions for cellulose**.** **6 Hours**

UNIT -6

Progression of high-tech fibers: Introduction, Biotechnology and fibers ,Electronics and fibers , Cars and fibers, Fibers in space, Fibers and nuclear power, Fibers in sport, Fibers for geotextiles, Fibers in the ocean.
6 Hours

UNIT -7

New high-tech fibers: Various categories of high-tech fibers, Development of Shingosen, Design of specialist fibers, Fabrics for relaxation using 1/ f fluctuations, new arrivals.
6 Hours

UNIT -8

Fibers for the next generation: High-tenacity and high-modulus fibers, microdenier (ultra-fine) fibers and biomimetics, the next stage: technological improvements, new frontier fibers (super-function fiber materials, etc.), super-biomimetic fiber materials, super-natural materials, resources recycling, fibers for health.
6 Hours

TEXT BOOKS:

1. New Fibres by Hongu and Phillips,

2 .Polymers for Engineering Applications by R. B.Seymour,

3. High technology Fibres: Handbook of Fibre Science and Technology, Vol.III, Ed. by Lewin and Preston.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

GLOBAL TRADE PRACTICES

Subject Code	**:**	**10TX833**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT I

INTRODUCTION: Definition – trade and investment flow – economic theories – forms of international business – Trade Policy – Export promotion – Export procedures and documents – FOREX management – exchange rate determination – Exchange risk – Managing exchange rate. **6 Hours**

UNIT 2

INTERNATIONAL BUSINESS ENVIRONMENT: Globalization of business – economic, political and cultural environment of international business – WTO and trade liberalization – emerging issues – implications for India –regional trade blocks – inter – regional trade among regional groups. **6 Hours**

UNIT 3

GLOBAL STRATEGIC MANAGEMENT : Structural design of MNEs – strategic planning – strategic considerations – national Vs global competitiveness. **6 Hours**

UNIT 4

CONTROL AND EVALUATION OF INTERNATIONAL BUSINESS: Control of MNEs – approaches to control – the role of information systems – performance measurement – mechanics of measurement – various performance indicators – evaluation and evaluation systems. **8 Hours**

PART - B

UNIT 5

CONFLICT IN INTERNATIONAL BUSINESS & NEGOTIATIONS: Factors causing conflict – conflict resolution actions – the role of negotiations in international business – the role of international agencies in conflict resolution. **8 Hours**

UNIT 6

COMMUNICATION IN BUSINESS: Systems approach, forms of business communication, management and communication, factors facilitating communication. **6 Hours**

UNIT 7

COMMUNICATION PROCESS : Interpersonal perception, selective attention, feedback, variables, listening barriers to listening, persuasion, attending and conducting interviews, participating in discussions, debates and conferences, presentation skills, paralinguistic features, oral fluency development. **6 Hours**

UNIT 8

BUSINESS CORRESPONDENCE: Business letter. Memos, minutes, agendas, enquiries, orders, sales letters, notice, tenders, letters of application, letter of complaints. **6 Hours**

TEXT BOOKS:

1. John. D.Daniels and Lee H.Radebaugh, 'International Business', Pearson Education Asia, New Delhi, 2000.
2. Richard M.Hodgetts and Fred Luthans, International Management', Tata McGraw Hill, New Delhi, 2003.
3. Charles W.L.Hills, 'International Business', Tata McGraw Hill, New Delhi, 2005.
4. Francis Cherunilam, International business, wheeler publication.

REFERENCES:

1. Anand K.Sundaram and I. Stewart Black, 'The International Business Environment', Prentice Hall of India, New Delhi, 2001.
2. Michael R.Czinkota, IIkka A.Ronkainen and Michael M.Moffett, 'International Business', Thompson, Asia, Bangalore, 2003.
3. Don Ball and Wendell McCulloch, 'International Business', Irwin McGraw Hill, New York, 1999.
4. Roger Bennett, 'International Business', Pitman publishing, New Delhi, 2000.
5. Vyuptakeshgaram, 'International business' , pearson Education, New Delhi, 2006.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

ELECTIVE –V (Group E)

ELEMENTARY MECHANICS OF TEXTILE STRUCTURE

Subject Code	**:**	**10TX841**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Elements of yarn geometry - and their application. Geometry of folded yarns. **7 Hours**

UNIT - 2

Yarn diameter and density. Theories of yarn strength. **6 Hours**

UNIT - 3

Characteristics of spun and continuous filament yarn. **7 Hours**

UNIT - 4

Concept of blend irregularity, and elongation balance. **6 Hours**

PART - B

UNIT - 5

Determination of cover factor and its application. Geometry of plain weave fabrics and their applications. Crimp interchange in woven fabrics. **7 Hours**

UNIT - 6

Introduction to fabric deformation in tension, bending and shear. **6 Hours**

UNIT - 7

Simple geometry of knit structures. **7 Hours**

UNIT - 8

Simple mechanics of non woven structures. **6 Hours**

TEXT BOOKS:

1. **Textile Yarns**- B. C. Goswami, J. G. Martindale, Pub: Wiley Inter Science
2. **Structural Mechanics of Fibres-** Yarns, Fabrics, Vol-1, J. N. S. Hearle, P Grobey, S. Becker, Pub Wiley InterScience
3. **Textile Mathematics-**Vol I, II & III, J E. Booth, Pub: Textile Institute

REFERENCE BOOKS:

1. **Spun Yarn Technology,-**Oxtoby, Pub: Butterworth
2. **Fibres, yarns, Fabrics-** Kaswell Pub: Textile Institute

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

CLOTHING CULTURE AND COMMUNICATION

Subject Code	**:**	**10TX842**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Introduction to Fashion and Culture, Fashion, Communication, and Culture. **6 Hours**

UNIT – 2

Fashion, Language, and Culture, Fashion and Image. **6 Hours**

UNIT – 3

Fashion and Society: Tensions and Revolutions. **6 Hours**

UNIT – 4

History of costume, collection of costume. **8 Hours**

PART – B

UNIT – 5

Fashion and clothing systems, Fashion and principle of reading the world. **6 Hours**

UNIT – 6

Indian culture and costume. **6 Hours**

UNIT – 7

What is Communication Theory, What is Culture? Psychological Model, Social Constructionist Model, Pragmatic Model, Cultural Studies, and Ethnography **6 Hours**

UNIT – 8

Non-Verbal Communication, Proxemics—Space as Communication, Chronemics-- Time as Communication, Interpersonal Communication and Self Presentation. **8 Hours**

TEXT BOOKS:

1 .Arnold, Rebecca. *Fashion, Desire and Anxiety: Image and Morality in the 20th Century.*

2. New Brunswick: Rutgers University Press 2001.

3. Barnard, Malcom. *Fashion as Communication.* London: Routledge Press 2004

4. A Cultural Approach to Communication, Carey

REFERENCE BOOKS:

1. Barthes, Roland. *The Language of Fashion.* New York: Berg Publihers 2006.

2. Weisberger, Lauren. *The Devil Wears Prada.* New York: Anchor Books 2006.

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

CAD AND CAM IN TEXTILES

Subject Code	**:**	**10TX843**	**IA Marks**	**:**	**25**
No. of Lecture Hrs./ Week	**:**	**04**	**Exam Hours**	**:**	**03**
Total No. of Lecture Hrs.	**:**	**52**	**Exam Marks**	**:**	**100**

PART - A

UNIT - 1

Introduction to computer - concepts of CAD / CAM. CAM in Garment Manufacturing. Complete pattern design system in preparation for grading, marker making and pattern manipulation. **6 Hours**

UNIT – 2

Computerized production pattern making - Hardware, software and system programming to produce a sample production pattern. Computer aided manipulation of pattern pieces to create individual styles.
6 Hours

UNIT – 3

Operation of garment CAD software. Computer used for purchase, inventory control and sales, computerization in quality control and production control.. **6 Hours**

UNIT – 4

Introduction to finite scheduling concept and fast react software. Creating product and order planning, updating. Eliminate late deliveries - General set up, allowances and matrices - Analyzing lian balancing in different departments - control mechanisms - critical path and time tables. **8 Hours**

PART – B

UNIT – 5

Computer controlled machinery for garment manufacturing - automated layout planning by various techniques**.** **6 Hours**

UNIT – 6

Algorithm for computer production garment parts - intelligent systems - 3D scanning technology. Use of microcomputers for production control in garment industry. Imaging techniques for various designs.
6 Hours

UNIT – 7
Development of robotics for CAM. **6 Hours**

UNIT – 8

EDI in garment technology. Concept of Enterprise Resource Planning (ERP) and computerization in exports /documentation. **8 Hours**

TEXT BOOKS:

1. Stephen Gray " CAD / CAM in clothing and Textiles ", Gower Publishing Limited, 1998,
2. Compilation of papers presented at the Annual world conference Sep 26 -29, 1984 Hongkong,
" Computers in the world of textiles ", The textile Institute
3. W.Aldrich, " CAD in clothing and Textiles ", Blackwell Science 2nd edition, 1992,

REFERENCE BOOKS:

1. Jacob Solinger, " Apparel Manufacturing Handbooks ", Van no strand and Reinhold Company, 1980,

Question Paper Pattern:

Answer any five full questions selecting at least two questions from Part-A and Part-B.

PROJECT WORK

Subject Code	**:**	**10TX85**	**IA Marks**	**:**	**100**
Project Hrs/ Week	**:**	**6**	**Exam Hrs**	**:**	**03**
			Exam Marks	**:**	**100**

The Project has to be assigned at the beginning of the Seventh semester. The Project Group should complete preliminary literature survey and plan of project at the end of Seventh Semester. The Project work should be carried out and completed in Eighth Semester.

SEMINAR

Subject Code	**:**	**10TX86**	**IA Marks**	**:**	**50**
Seminar Hrs/ Week	**:**	**03**			

The Students are required to give the comprehensive presentation in the forms of seminar carried out in the VIII Semester. The Seminar should be evaluated as Internal Assessment.