B. TEXT. E. **Prospectus No. 11177**
Vth to VIII Semester

संत गाडगे बाबा अमरावती विद्यापीठ

SANT GADGE BABA AMRAVATI UNIVERSITY

(FACULTY OF ENGINEERING & TECHNOLOGY)

PROSPECTUS
OF

FOUR YEAR DEGREE COURSE

BACHELOR OF TEXTILE ENGINEERING

V TO VIII SEMESTER

EXAMINATIONS, 2010-2011

SEMESTER PATTERN

2010

Price Rs.16 /-

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PUBLISHED BY
Dineshkumar Joshi
Registrar
Sant Gadge Baba
Amravati University,
Amravati 444 602

SYLLABUS PRESCRIBED FOR
BACHELOR OF TEXTILE ENGINEERING
SEMESTER PATTERN
FIFIH SEMESTER

5STXI **SPINNING-III**

SECTON-A

Unit I : SPEED FRAME :

Brief history of development, object, construction & working of speed frame

Introduction to Top Arm Drafting, Construction of spindles. flyers, presser for twisting & winding, lay of roving.

Gearing of speed frame, object, working & adjustment in building mechanism and differential motion. faults at roving. Development of speed frame. Draft and production calculations, parameters change places.

Unit II : RING FRAME :

Object, Construction & Working of Conventional frame. Details of Creel, Drafting arrangement B.C.R., Lappets. Travellers, Rings & Spindles, Aprons. Top Rollers Cots & Coverings.

Unit III : Formation of Twist & its effect, Ring & Traveller Combination eftects. Change places in Ring frame.

Gearing & Building Mechanisms. Building of cop. Types of Spindle Drives. Draft & Production Calculations. Developments in Ring frame.

SECTION - B

Unit IV : Drafting - Weighing methods in drafting system. Fators affecting, roller settings, Type of Draft & its significance. Drafting Capacity, Drafting force & Roller slip. Roller slip movement, Fiber control techniques & high speed drafting larger package.

Unit V : Doubling

Object, Doubling Twist & Twist Direction Effects. Tension effects, Balanced & Unbalanced yarn. properties of folded yarn.

Doubling machines & their comparison ring doubler. uptwister. two stage twisting *m/c*. two for one twister. three for one twister,

Uuit VI : Blending:

Object of Blending. Measures & Selection of Blend constitutes, Mechanism of Blending

Practicals : 14 to 16 practicals should be conducted on above syllabus.

References:

1) Short Stape Spinning Series by W.Klein
2) Cotton Spinning. By William Taggart
3) Cotton Spinning by Gilbest R.Merill
4) Manual of Cotton Spinning by Butter Worth series
5) Essential Calculations Practical Cotton Spinning by Tall Pattabhiram
6) Spinning of Nammades and Blends on Cotton System by K.R.Salhotra
7) Practical Spinning by Pattabhiram
8) Spun Yarn Technology by Subramaniam
9) Ring Frame Spinning by A.R.Khare

5STX2 **WEAVING-II**

SECTION-A

Unit I Modern Developments in sizing:

Limitations of Conventional sizing. necessity of modernization & its modern development. their effect on quality & production of sized warp.

Study of types of Creel. Unwinding tension control systems. Sow boxes. Yarn drying methods & its equipments.

Head Stock -Lease rods, Combs. Cut marking motion, Beam pressing motions.

Unit II Driving arrangement of sizing machine.

Orthodox type drive. slow motion drive. friction clutch, & Zell-ATE mechanism. Controls on sizing machines - size level control, temperature control. moisture measurement & its control. stretch control.

Unit III Size Pick-up.

Optimum size percentage, factors affecting size pick-up & its control

Types of Sizing - Heavy, Medium, Light & Pure Sizing.

Size receipe for yarns of polyester, PC, PY blends.

Sizing Calculation - Regarding weight of warp. size mixture size consumption, sizing production & efficiency.

SECTION - B

Unit IV Looming

Working principle of Leasing, including Uster automatic leasing, Drawing in & Reaching in. Warp knotting & Drop pinning.

Introduction to different methods of fabric formation.

Fabric Formation by Weaving - Detail classification of motions & mechanisms of loom, Passage of material through plain loom.

Plain Loom - Crank & bottom shaft of plain loom, shedding motion, types of sheds,

Tappet shedding mechanism, Negative & Positive tappet shedding, movement of healds, geometry of warp shed, heald reversing motion. shedding motion principles, split shedding & asymmetrical shedding.

Unit V Shuttle Picking & Checking Mechanisms.

Overpicking & Underpicking mechanisms. Ruti c shuttle picking mechanism.

Shuttle box & shuttle checking devices - ideal checking.

Movement of shuttle during picking, disadvantages of shuttle picking.

Beat up mechanism - eccentricity of sley. Mechanics of Beat up, Bumping conditions.

Unit VI Take up & Negative let off motion.

Weft Fork motion - Side weft fork, center weft fork,

Warp protector motions, Temple devices. Timings of Plain loom.

Types of healds and reed & their numbering system.

Calculation regarding - average reed space. average pick. efficiency & production. shuttle movement.

References :

1) Sizing - Material, Methods. Machines: Prof.D.B.Ajgaonkar & Dr.M.K. Talukdar
2) Weaving Operations: Allen Armorod
3) Principles of Weaving : R.Marks & A.T.C. Robinson
4) Weaving - Machine. Mechanism. Management: Dr.M.K.Talukdar & Prof.PKSriramula.
5) Plain Weaving Motion: K.T.Aswani
6) Weaving Mechanism (vol.-I) : N.N.Bannarji

Practicals

At least 14 to 16 practicals on above syllabus.

5STX3 TEXTILEFIBER-II

SECTION-A

Unit I Natural Protein Fibres

Definition. Side groups in protein fiber cross links between neighboring protein molecules, structure of protein fiber molecule, protein as a ampholytes.

Wool Fibre - classification & wool quality number, Morphology & Histology, chemical composition & structure of Keratins, physical properties, thermal properties, chemical properties viz. Effect of water, steam & Heat of Sorption, eftect of acid, effect of alkalis, eftect of salts, eftect of reducing agents, effect of oxidizing agent, chemieal modification in wool fiber, effect of age and light, binlogical properties, uses & care of wool fiber.

Unit II Silk Fibre - General concepts, discovery of silk, classification of silk, sericulture,

Fibrion - Fibrion structure, properties & fibrion.

Sericin - Constitution of sericin, Properties of sericin, non protein substances in silk, Microscopic properties, physical properties, thermal properties, effect of age and light. biological properteis, uses & care silk fiber.

Unit III Man Made fibres

classification, Advantages, and disadvantages of MMF. Regenerated fibres

History, Classification, Chemistry & Manufacture of

i) Viscose Rayon,

ii) Cuprammonium Rayon

Microscopic properties, physical properties, thermal properties, chemical properties viz. Effect of salts, effect of reducing agents, effect of oxidizing agent, effect of age and light, biological properties, uses & care of Viscose & Cuprammonium Rayon.

SECTION B

Unit IV Disadvantages of Viscose Rayon.

Chemistry & Manufacture of

i) Polynosic Rayon & High Wet Modulous rayon ii) Acetate Fibre (secondary) & Triacetate Fibre

Microscopic properties, physical properties, thermal properties, chemical properties viz. Effect of salts, effect of reducing agents, effect of oxidizing agent, effect of age and light, biological properties, uses & care of polynosic. HWM & Acetate Rayons.

Unit V Synthetic Fibres - Hetrochain & Carbochain fibres, Theoretic background. condensation, & addition polymerization.

Heterochain Fibres

History, Chemical nature, manufacture of

i) Nylon 6, 6 Fibre ii) Nylon 6 Fibre iii) Polyester Fibre.

Microscopic properties. physical properties, thermal properties, chemical properties viz. Effect of salts, effect of reducing agents, effect of oxidizing agent, effect of age and light, biological properties, advantages & disadvantages modifications, uses & care of Nylon 6,6, Nylon 6 & Polyester Fibre.

Unit VI Carbochain Fibres.

History, Chemical nature, manufacture of following fibres

i) Acrylic & Modacrylic fibre

ii) Polyvinyl Chloride & Polyvinyl Alcohol fibre iii) Polyethelene & Polypropylene Fibre

Microscopic properties, physical properties, thermal properties, chemical properties viz. Effect of salts, effect of reducing agents, effect of oxidizing agent, effect of age and light, biological properties, advantages & disadvantages, modifications, uses & care of Acrylic & Modacrylic. Polyvinyl Chloride, Polyvinyl Alcohol, Polytheylene & Polypropylene Fibres.

References :

1) Physical Properties of Textile Fibre: W.F.Morton & J.W.S.Hearle
2) Chemical Technology of Fibrous Material: F. Sadov, M.Korchagin, A.Matetsky
3) Textile Fibre: H.V.Sreenivasa Murthy
4) Textile: Dr.V.A.Shenai, Vol.-I
5) Introduction to Textile Science: M.Joseph
6) Man Made Fibre : R.W.Moncreef

5STX4 **TEXTILETESTINGI**

SECTION - A

Unit I Introduction: Object of testing. Tested quality schemes like wool mark ISE mark. ASTM Standard, element of statistics. frequency distribution graphical presentation of data, Average & other methods of location like mean, mode, median. measures of dispersion, range, mean deviation, std deviation, CV% variance.

Unit II Comparison of frequency distribution, normal distribution, population value & sample values, sampling distribution. Std.Error, significant test, t-test, F test, Level of confidence. Number of tests to be carried out.

Unit III Quality Control Charts, X chart, R -chart, Binomial & Poission distribution, Correlation.

SECTION - B

Unit IV Selection of sample for testing, Random sample, Biased sample, length & external biased sample. sampling for raw cotton testing, Terms used in sampling. Fibre sampling from combed slivers, roving and yarns, Yarn sampling. fabric 5ampling.

Molstave relations: Introduction, Regain - Moisture content, measurement of atmospheric conduction, regain humidity relations & hysteresys. Absorption & disorption curves. effect of regain on fibre properties, Measurement of regain.

Unit V Fibre length measurement, Methods, Fibre sorter, Shirley Comb sorter, Analysis of Sorter diagrams, Uster staple diagram apparatus, Shirley photoelectric stapler, Fibrograph. Digital fibregraph.

Fibre fineness: Importance - Definition, principles of measurements, Gravimetric methods, optical methods, Microscopic methods, air flow methods, vibration methods, micronaire vlaue. The Sheffield micronnaire.

Unit VI Maturity of Cotton : Introduction, Maturity ratio, Maturity Coefficient, Std.fibre wt. perm., cotton grading. Trash content : Measurement. Shirley analyzer, Cotton Colour, High volume instrument.

Micellaneous fibre properties : Friction & Cohesiveness. Cleanability static electricity compressibility & resilience. AFIS Tester.

Practical: Minimum 14 to 16 practical based on above.syllabus.

References:

1) Principles of Textile Testing: J.E.Booth
2) Textile Testing: Grover & Hawby
3) Physical Testing of Textiles : B.P.Savilie
4) Cotton Testing: R.G.Steadman (Textile progress vol 27 number 1)

5STX5 TEXTILE MATHEMATICS

SECTION-A

Unit I : Fibres:

Introduction, Fibre Dimensions, Tensile strength, work of rupture. Trash and lint content nf cotton, oils, fats, sizes and resins in fibre samples. Qualitative analysis of fibre mixtures.

Unit II: Yarns:

Opening & cleaning, drafting, Calculations on card mechanism, Draw frame, Draft in coming machines.

Unit III: Yarns:

The speed frame, yarn dimensions, twist in yarn, irregularity, Ring frame.

SECTION-B

Unit IV: Yarn preparations:

Introduction, winding rate, wind and traverse ratio, cone winding, yarn tension & tension devices, yarn cleaning & cleaning devices.

Unit V: Warp preparation, sizing & weft preparation.

Unit VI: Fabrics:

Woven fabric structures

Weaving mechanisms.

Note: Only numericals in the examinations will be asked.

Reference :

Textile Mathematics, Vol. 1, Vol. 2 & Vol. 3 by J.E.Booth (T.I.)

SIXTHSEMISTER

6STX1 WEAVING-III

SECTION-A

Unit 1 Automatic Loom

Limitation of plai n loom, Introduction to automatic loom.

Types of automatic loom, characteristics, features of automatic loom.

Pirn changing weft replesining motions - essential attachments, mechanisms, shuttle, shuttle box, rotary magazine, reserve bunch of weft.

Warp stop motion - Electrical, Mechanical Cimmco vibrading bar & Ruti B & C

castellated type, Knock off Mechanism

Weft feeling - Mechanical (Midget, Cimmco side sweap) Electrical, Photo Electrical type, Automatic pirn changing - Northops pirn changing mechanism, Laxmi Ruti-C Pirn changing mechanism, Shuttle eye thread cutter, Three try motion, Timing & Settings of Pirn hanging loom.

Unit II Shuttle changing loom - Vicker staford, Toyada Northrop shuttle changing mechanism. Bobbin loader, Automatic lown winder.

Automatic let off (Positive Mechanism), Tension control & Positive take up on Ruti-C machine.

Unit III Fancy Weaving

Visual effect of fabrics - Visual effed by wealing such as extra thread effect. colour weaving effect. colour & weave effect.

Multiple box motion - Drop box & circular box, pick & pick & pick at will box motions.

Dobby shedding - Classification of dobbies with reference

to keighley dobby, left hand right hand keighley dobby.

method of pegginf legs, Cross border dobby.

Modern Dobbies - Cam dobby, Paper card dobby, Positive dobby, Rotary dobby & Dobby mounting.

SECTION-B

Unit IV Jacquard shedding - Classification of jacquard, principle parts of jacquard machine. S.L.Sc., D.L.S.C., D.L.D.C. Open shed. cross border, fine pitch (Vencenzi & Verdol), Electronically control Jacquard machines.

Loom Faults - Reed marks, Shuttle tlying out, Loom stopping. Shuttle trapping in the warp, Loom banging off, Weft cutting, Bumping, Cops knockings off.

Fabric Defects & Value loss - grading of fabric. fabric defects such as Warp defect, Weft defects & Common fabric defects, their causes & remedies.

Unit V Knitting

Introduction, woven & knitted fabric comparison.

knitting terms & definitions - courses, wales, stitch density. Stitch length.

Types of knitting - Warp & weft knitting.

Study of basic structures in weft knitting like Plain. Rib. Purl & Interlock.

Weft knitting machines - knitting elements, latch needle, compound needle, braded needle, classification of weft knitting machines, study of knitting single jersey fabric on circular knitting machine.

Unit VI Knitting action of latch needle & sinker machine.

Loop formation of 1 x I Rib structure, Purl structure. Interlock structure.

Warp knitting - Classitication of warp knitting machines. Basic warp knitted fabric structure, overlap, underlap. Study of loop formation on Tricot machine. Raschel machine.

References :

1) Principles of Weaving : R.Marks & A.T.C. Robinson
2) Weaving - Machine, Mechanism, Management: Dr.M.KTalukdar & Prof.P.K.Sriramula.
3) Weaving Operations: Allen Armorod
4) Fancy Weaving: K.T.Aswani
5) Weaving Mechanism, Vol.-II : N.N.Bannar
6) Textile (motivate series) : A.Wynne
7) Knitting Technology: Dr.Ajagaonkar

Practicals -

At least 14 to 16 practicals on above syllabus.

6STX2 MAN MADE FIBRE TECHNOLOGY

SECTION 'A'

Unit 1 General Principles of Spinning - Melt Spinning, Dry Spinning, Wet Spinning, Polyester Fibre - History, Classitication & Study of different Industrial Processes for PET & Copolymers.

Unit II Details of Spinning Processes with special reference to Polyester

PET Staple fibre - Method of Melt Spinning, Parameter near spinneret. tenacity, finish applications.

PET Filament - Parameter near spinneret, Production of POY & FOY.

Quenching Operations & its parameters

Unit III Post Spinning & Texturising

Fibre Drawing its effect on orientation & crystallization. Second order Transition & its significance in drawing.

Difference between stretch & textured yarns, important properties & adantages of stretch & textured yarns.

SECTION 'B'

Unit IV Texturing & its Objectives, Classification of Textured Yarn, different methods of texturising, twist heat set untwist methods, edge Crimping Method, Stuffer box crimping, structural geometry & properties of these types of textured yarns.

Unit V Twisting of continuous filaments draw twisting, up twisting, two for one twisting, false twisting & texturing, mecbanics of friction texturing, different factors affecting stretch, characteristics of false twist textured yarn, post treatment of false twist textured yarn, draw texturing & simultaneous process.

Unit VI Air jet texturising - methods & properties of air jet textured yarn, parameters affecting properties of textured yarns, texturing of non thermoplastic yarns mainly cellulosic, wool, & blends, their cross linking & effects, process variables & properties of textured yarns, texturising with aid of solvents.

References :

1) Textile Yarn Structure & Application: Marnin Bale Goxwami & Sceridino

2) Processing of Man made Fibre: Usenko
3) Texturing Process: Manthra
4) Production Technologies of PET Fibres TAI-1988

6STX3 TEXTILE TESTING II

SECTION-A

Unit I Yarn Dimension: Count, Direct & Indirect system of yarn numbering, Count Conversion, folded yarns, Measurement of Count, different methods, Yarn diameter, Twist: Introduction, Twist angle, Effect of twist on yarn & fabric properties, measurement of twist by different methods.

Unit II Hairiness of yarn measurement. Shirley yarn hairiness tester, Zweigle G 565, Uster tester-3 hairiness meter attachement. yarn bubble. Textured filament yarns : testing of textured yarns. Friction: Coil friction measurement.

Unit II Fabric Dimension: Length, Width, Thickness, their measurement, Fabric weight, ends & picks per inch, crimp of yam in fabric, crimp & fabric properties. measurement of crimp. cloth cover & fabric geometry.

Section : B

Unit IV Tensile Testing: Terminology & definitions load elongation curves. stress strain curve, initial young modulus, yidd point, work of rupture, work factor, elastic recovery. instaltaneous & time dependent effects, creep, factors affecting tensile properties of textiles.

Unit V Types of tensile testing machine, CRL, CRE & CRT principle pendulum lever principle with CRT, Stelometer. The balance principle, The press-ley fibre strnegth tester, loading by springs, inclined plane principle, Ballastic Tester, Electronic dynamometer strain guage transducer, instron.

Unit VI Hydraulic bursting strength tester, tibre strength testing, yarn strength testing, fabric strength testings.

Practical : Minimum 14 to 16 practical based on above syllabus

Reference:

1) Principle of Textile Testing - J.E. Booth
2) Physical Testing of Textiles - B.P. Saville
3) Textile Testing - Grover & Hamby.

6STX4 FABRIC STRUCTURE

SECTION-A

Unit I General principle of fabric structure. analysis of fabric, use of

design paper, study of plain. twilt, sateen & satin weaves and their derivatives.

Unit I Study of diamond, honeycomb, bedford cord and pique.

Unit III Study of terry pile structure and mechanism of weaving. Light theory of colour, mixtures of coloured lights, Pigment theory of colour and its comparison with light theory. Mixtures of co loured pigments: primary, secondary, tertiary and quartery colours. Attributes of colour - Hue value and chroma.

SECTION-B

Unit IV Study of colour & weave effect: Check, stripes and figured design.

Unit V Study of backed cloths. Study of doubled cloth.

Unit VI Study of tapestry fabrics. scoth carpet. Warp pile fabrics produced with the aid of wires. Principle of leno structure.

REFERENCES:

1) Watson's Textile Design & Colour: Z.J.Grosicki
2) Watson's Advanced Textile Design: Z.J.Grosicki .
3) Grammer of Textile Design: H.Nisbet

6STX5 TEXTILE COSTING AND ECONOMICS

SECTION-A

Unit 1 Costing: Meaning and various methods of costing. Elements of cost, prime cost, factory over heads, Factory cost, selling & distribution overheads. Total cost. Concept of BEP. Fixed cost, Variable cost.

Unit II Raw materials: Purchase Procedure, Issue of raw materials, bin cards, stores ledger materials requisition slip, material transfer and return slip, different basis of pricing of issue of raw materials (FIFO, LIFO & Average)

Uuit III Inventory: Importance and meaning, Considerations for fixing maximum and minimum stock to be maintained. Annual stock taking and perpetual inventory ABC system of inventory control. EOQ.

SECTION-B

Unit IV Economics- Definition of scope. characteristics & classification of wants. Meaning of Demand, supply, law of demand, law of supply, price elasticity of demand, factors affecting elasticity of demand. Demand supply interaction.

Unit V Type of Markets - Perfect Market, Imperfe'ct market

(Monopoly, Oligopoly. etc.) Money functions, price level, inflation.

Unit VI Banking: commercial, central,

National income - Define, measurement

Difficulties in measurement of NI. International Trade & Taxation.

Assignments : 1) Determination of Cost of yarn/kg.
2) Moisture Content in relation to cost.
3) Cost calculation for standard fabrics.

6 SULIMETX 6 COMMUNICATION SKILLS

Unit I : **Comprehension over an unseen passage :-**

Comprehension - A - word study :-

Synonym, antonym, meanings, matching words, adjectives, adverbs, prefix and suffix, correct forms of commonly misspelled words, understanding of the given passage.

Comprehension - B - Structure study :-

Simple and compound sentences, types of conjunctions, singular and plural, tenses and their effect on verb forms. Use of - not only - but also, if clause, since, may, can, could, would, too etc.

Active and passive forms, negative and interrogative, punctuation and capitalization. (10 Hours)

Unit II : **Principles of Communication :-**

Theoretical background - importance of communication, its process, model of communication its components & barriers.

Verbal communication, its significance, types of written communication and its style, organization of a text (Titles, summaries, headings, sequencing, signaling, cueing etc.), Important text factors (length of paragraph, sentences, words, clarification and text difficulty). Evaluation of written communication for its effectivity and subject content.

Verbal and non-verbal objectives in interpersonal skills.

(10 Hours)

Unit III : **Aspects in professional communication :-**

Specific formats for written communication like - business correspondence, formal reports, technical proposals, research papers and articles, advertising and graphics. Format for day-to-day written communication like applications, notices, minutes, quotations, orders, enquiries etc.

Types of graphics and pictorial devices

Oral communications - face to face communications, group

discussion and personal interviews.

Methodology of conduction of meetings, seminars, symposia, conference and workshop. (10 Hours)

BOOKS RECOMMENDED :

1) Krishna Mohan, Meera Banerjee : Developing Communication Skills, MacMillan India Limited.
2) Chrissie Wright (Editor) : Handbook of Practical Communication Skills, Jaico Publishing House.
3) Curriculum Development Centre, TTTI WR, Bhopal : A Course in Technical English, Somaiya Publication Pvt. Ltd.
4) F.Frank Candlin : General English for Technical Students, University of London Press Ltd.

COMMUNICATION SKILLS LABORATORY

Objective :

On completion of this laboratory the candidate should be able to demonstrate adequate skills in oral and written communication for technical English language, actively participate in group discussions and interviews and exhibit the evidence of vocabulary building. Candidates should be assessed through continuous monitoring and evaluation.

The sample list of experiments is given below. This list can be used as guideline for problem statements but the scope of the laboratory should not be limited to the same. Aim of the list is to inform about minimum expected outcomes.

1. Assignments and tests for vocabulary building
2. Technical report writing
3. Group discussions
4. Interview techniques
5. Projects and tasks such as class news letter
6. Writing daily diaries and letters
7. Interactive language laboratory experiments.

TEXT BOOK: Norman Lewis : Word Power Made Easy

http://www.teachingenglish.org.uk

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SEVENTH SEMESTER

7STX1 TEXTILE TESTING III

SECTION.A

Unit I Serviceability : Introduction, Snagging, Pilling, Factors affecting pilling of fabric, Pilling test, Abrasion resistance. factors affecting abrasion resistance, Abrasion tests. wear, Wear of Trials.

Comfort: Introduction. Thermal Comfort, Heat balance, Heat loss, Air Permeability, Measurement, Effect on fabric properties, Moisture transport, sensorial comfort. water absorption, water repellency.

Unit II Objective evaluation of fabric handle: Bending Length. stiffness, Handle, Drape, Crease recovery, shear, Bias extension, formability, fabric friction, Kawabata system. Fabric assurance by simple testing.

Flammability, terms used relating to flammability, factors affecting flame resistance. flammability testing. recent progress in tlammability testing. flame proofing & flame resistance finishes.

Unit III Dimensional stability: Introduction. Hygrol expansion Relaxation shrinbge, swelling shrinkage. felting shrinkage. methods of measuring dirilensional stability. .

Colour fastness testing: Introduction. sample preparation outline of colour fastness tests, colour fastness to light, colour fast to washing, colour fastness to rubbing, colour fastness to heat (sublimation) colour fastness to other, agents.

SECTION.B

Unit IV Evenness Testing: Introduction, nature of irregularity. Index of irregularity, variance length curves. methods of measurement & assessment of irregularity of sli ver, roving & yarn. Use of probability paper.

Unit V Electronic capacitance tester, photoelectric testers, The cause and effect of irregularity, interpretation of results of irregularity tests, determination of periodic variation. Spectrograph, Location of sources of periodic faults. Clasimat yarn fault test.

Unit VI Roller eccentricity tester. ATIRA (TOP arm roller pressure gauge) shore hardness tester for roller cots. Tension meters. stroboscope, tachometer, Nep counting.

Quality:

Definition of quality. Types of Quality, Quality Control, Quality assurance, ISO 9000, Textile Product labeling.

Practical

Minimum 14 to 16 practicals based on above syllabus.

References:-

1) Principles of Textile Testing - J .E.Booth
2) Physical Testing of Textiles - B.P.Saville
3) Textile Testing - Grovers & Hamby
4) Pilling, Textile Progress Vol. 28.

7ST X2 CHEMICAL PROCESSING -I

SECTION A

Unit I Singeing and Desizing : Sequence of wet processing in Cotton Textile Mill, Object of sineing. Different singeing process and their comparison. Object of desizing, classifications of desizing methods and their description. Chemistry of desizing (Rot-steep, Acid Steep, enzyme desizing) Continuous desizing and New desizing process.

Unit III Scouring:

A) Introduction: Saponification, Emulsification, Detergency. Surface tension.

B) Some details of Scouring process

a) lime-acid-soda ash sequence

b) Caustic boiling

c) Soap, Soda ash treatment for coloured goods.

C) Efficiency of Kier boi ling operation

1) Copper number method

2) Methylene Blue absorption method

D) Type of Kiers. Circulation of Kiers liquor modification of Kier.

Unit III Bleaching: Introduction and object of bleaching.

A) Hypochlorite - Bleaching: Introduction, Chemistry of hypo-bleaching, Factors affecting hypochlorite bleaching process for cotton.

B) Peroxide Bleaching: Introduction, Chemistry of peroxide bleaching, continuous peroxide bleaching. stabilizer, Factors of peroxide bleaching and advantages of peroxide bleaching.

SECTION -B

Unit IV Brief introduction of Dyeing Machines for fibre. yarn & fabric, Meaning of Dye, Colour etc.

Unit V Properties & Application of Direct dye, Basic dye, Acid dye, Mordant dye, Reactive dye.

Unit VI Properties & application of Vat dye. Sulphur dye Disperse dye, Azo dye.

Practical Minimum 14 to 16 practicals based on above syllabus.

References:-

1) Technology of Bleaching and Mercerizing. Vol.-III
2) Technology of Dyeing, Vol.
2) Textile Science. E.P.G. Gohl, L.D. Vilenskay

7STX3 PROCESS CONTROL IN SPINNING.

SECTION-A

Unit I Introduction, scope of process control in Spinning, Key variables, Establishing norms, Collection and interpretation of data for process control. control of maximizing quality and cost evaluation of fibre quality, Linear programming for cotton mixing.

Yarn realisation, Estimation and control of yarn realisation and waste and their norms.

Unit II Control of waste in blow room, carding and comber control of cleaning, efficiency in blow room and carding. Factor affecting cleaning efficiency. Fractionating efficiency of comber.

Unit III Productivity -definition of indices of productivity. Measurement and analysis of productivity.

Means to improve productivity, Maximising m/c efficiency, controlling and breakage rate.

SECTION-B

Unit V Control of yarn quality-control of count, strength, and their variability, within and between bobbin, variation control of variability in blow room and draframe, Factors affecting yarn strength, Measurement and assessment of unevenness of silver, rowing and yarn. Types of yarn irregularity, Measurement and assessment of imperfections, Causes of yarn imperfections, Control of yarn unevenness and imperfections.

Unit V Yarn Faults and package defects, Slubs Crackness Spinners Doubles, Bad poecing and double gaiting. Slough off, Hairiness.

Different types of defects in the spinning preparatory processes, their causes and control.

Unit V Machinery Audit-definition, implementation and test instruments for machinery audit. .

Implementation of process control in spinning-Programine, Experimentation, Role of process Ccmtrol.

REFERENCE

Process Control in Spinning by ATIRA.

PRACTICALS

6-8 Practical should be conducted on above syllabus.

7STX4 PROCESS CONTROL IN WEAVING

SECTION A

Unit I A System of process control for weaving :-
a) Scope for process control - Loom productivity and contributil1g factors,
b) Approach and methodology of control.
c) Setting norms and schedule of checks,
d) Machinery audit.
Control of quality and productivity in winding.
Introduction, optimizing quality of preparation, Control of productivity.

Unit II Process control in a) Warping and b) sizing
a) Warping: Introduction, control of end brakages, Quality of beams control of productivity-causes of low productivity.
b) Sizing - Introduction choice of size recipe and size pick up, Control of size beam, Devices for improving weavahility of size yarn, control of productivity. Control of size loss.

Unit III Process control in Pirn winding :- Introduction minimizing end breakages., improve built of pirn, Control of productivity, Drawing in end warp Tying - Introduction. Use and selection of heald and reed. Drop pins case in dressing of beams. Case indrawing in warp tying.

SECTION- B

Unit IV Loom shed control (Productivity) - Introduction. Control of speed, efficiency and loom stoppages. Loom performance. Control of loss of efficiency by snap reading. Calculation of expected loom efficiency for non automatic and automatic loom.

Unit V Control Qf Fabric Quality :- Control of specific and common fabric defects. Gray fabric inspection.
Hard waste control: Introduction. Setting standard: Control of waste at different m/c.

Unit VI Control on consumption of accessories : Introduction. Selection of accessories.
Implementation of process control programme - introduction. Programme for process control in weaving, Mill

experimentation, Planning mill experiment.

Practical 6 to 8 practicals should be carried out on entire syllabus.

REFERENCE Process Control in Weaving by ATIRA

EIGHTH SEMESfER

8STXl CHEMICAL PROCESSING-II

SECTION-A

Unit I Printing - Introduction. Difference between Dyeing and Printing. Printing Process and Preparatory. Different Styles of Printing and their comparison. Different methods of Printing, Block Printing, Roller Printing, Screen Printing, Transfer Printing.

Unit II Detailed Study of the ingredients used for different Printing Process and auxiliaries used there in, standard recipes for printing with various types of dyes commonly used in industry.

Unit III Finishing - Introduction, objects, classification, different types of finishes commonly applied. Detailed study of mercerization. Detailed study of calendaring and various types of calendars, study of weighting, staffing and softening finishes.

SECTION-B

Unit IV Chemical finishes coating finish - Mackintosh, focking, anti-shrink tinish, anti-crease & wash-n-wear tinish. Durable press, Flame proof, & retarding finish, waterproof & repellent finish, soil release finish.

Unit V Testing of chemical process textiles - Testing of mercerized material i.e. Yarn, & cloth. tests for bleached cloth. introduction to gray scales, comparison of fastness properties of different classes of dyes. Testing of following finishes anti-crease, anti-shrink, fireproof & retardant; warerproof. repellent.

Unit VI Computer aided colour matching for textiles
Introduction -
Technique of computer colour matching, Flow chart for computer colour matching, Limitations and drawhacks CCM technique.

Practicals Minimum 14 to 16 practicals based on above syllabus.

Reference:

1) Technology of Finishing by Dr.Shenoi
2) Technology of Bleaching and Mercerising by Dr. Shenoi
3) Technology of Printing by Shenoi

8STX2 **MAINTENANCE OF TEXTILE MACHINERY**

SECTION A

Unit I Importance & objectives of machine maintenance in Textile Mill, Basic Concepts of Maintenance.

Systems & Procedures - Planning, scheduling, controlling,

Machine Audit, maintenance organization for spinning & weaving mill.

Unit II Spinning maintenance - Routine maintenance, importance & objectives, divergences in existing mill practices, recommended programme of routine maintenance by research institutes.

Preventive Maintenance - Importance & objectives. developments of check lists, frequency of inspections, operation of programme, subjective assessment. handling of check lists, tools & gauges used in spinning maintenance.

Blow Room

Routine maintenance activities - general cleaning, setting of Lap rack motion, Break drum, Lip spindle, Piano feed regulating unit. Flock feeder, preventive check list.

Carding:

Routine maintenance activities - general cleaning & half setting. different types of stripping & grinding. wire mounting & perimicroscope. preventive check list.

Unit III Combing

Routine & preventive maintenance of combing preparatory machine

Comber :

Routine maintenance activities - general cleaning, resetting, detaching roll & top comb maintenance, re-needling top combs, parts replacement, Preventive maintenance check list.

Draw Frame:

Routine maintenance - general cleaning, top roll buffing & acid treatments. top roll pressure setting with Nilometer. replacements of parts, preventive maintenance check list.

Speed Frame:

Routine maintenance - general cleaning, top arm pressure checking, cots bufting & drafting setting, bottom roller truing. replacement of parts, Preventi ve check list,

Ring Frame:

Routine maintanance - general cleaning. building motion setting, spindle & lappet gauging. top arm pressure setting, bottom roll truing, cots buffing. & replacement of parts,

preventive check list. use of Shirley vibration detector. Roller eccentricity tester. ATIRA trap gauge. ATIRA section pressure indicator.

Maintenance of High techs pinning machining - selective maintenance programme (SMP) implementation & evaluation of SMP.

SECTION B

Unit IV Winding:

Routine maintenance activities - general cleaning, slub catcher setting, Bobbin alignment setting, testing level setting, tension bracket alignment, winding spindle alignment with winding drum, preventive check list.

Warping:

Routine maintenance activities - general cleaning, package alignment at creel, tension level setting, stop motion & brake setting, preventive check list.

Sizing:

Routine maintenance activities - general cleaning, alignment of beam with respect to size box, setting level of immersion roll & sizing roll, dynamic balancing of drying cylinder, preventive maintenance checklist

Loom Shed:

Routine maintenance activities - general cleaning, setting of loom setting, use of Shirley loom timing gauge, setting of race board with box bottom plate, shuttle up out seting, setting of safety mechanism.

Preventive check list

Unit V Tribology :

Importance & objectives, types of lubricants for different types of jobs & machine parts, properties of lubricants, selection of lubricants, precaution in storing & handling of lubricants.

House Keeping:

Importance & objectives, orderlines & deanliness,

Storage & material handling - importance & objectives,

different aids for handling material.

Unit VI Synchronization of SQC with, maintenance - importance & objectives~ method of checking the quality of material. quality & spedfication of spare parts, reponing to maintenance.

Practicals - 14 to 16 practicals based on above syllabus.

References -

1)	Maintenance Management in Spinning	SITRA
2)	Process Control in Spinning	ATIRA
3)	Process Control in Weaving	ATIRA
4)	Cotton Spinning	Pattabhiram

8STX3 ADVANCE SPINNING TECHNOLOGY

SECTION-A

Unit I Construction and working of different modern .mixer and openers.

a) Automatic Mixing pan b) Hergeth mixer c) Hergeth Tensold mixer d) Trutzchler Multimix e) Feeder blender f) Tufta Blender g) ERM cleaner h) Striker Cleaner i) Aero Feed j) Flock Feeder and other modern M/c

Unit II a) Aerodynamic Card, b) Suction cleaning in Card c) Chute feed or continuous feed, Introduction, Advantages, Disadvantages, Material preparation and quality control for chute feed d) Auto leveling introduction, type and their description, choice, e) Other development of Card.

a) Card Mastertops b) Maxi-clean Card

Unit III Development in L-in opening region-introduction different improvement setting of Deflector plate. Fiber - Retriever, Moditication or development of Carding Zone, Back Zone, Card master, Front Zone, Trash Master, Dust Waste, extraction system a) Shirily pressure point b) Improved waste suction c) internal suction system.

Brief description of modern cards: a) Trutzschler Exacta card DK - 740 & 760. H.P.Card b) Crosrol Mark - 4 c) Marzoli c-300 d) S AC M HP- 800 e) Reiters C-4, & C5I f) LC-300 card

SECTION - B

Unit IV Open-end spg Introduction, Limition of R/F, diff. of *RIF* with O.E., Rotor spg. passage and working, Different stages i) Initial Draft ii) Fiber Transfer iii) Fiber condensation iv) Twist insertion v) winding of yarn all in details. Drum Spinning (Friction spg.) : Introduction, Drafting, Transfer of Fiber, Condensation, Removal of Fiber assembly, Twisring & Winding (Dref-2, Masters Spinner)

Unit V Introduction and Passage through following spinning systems

i) Electrostatic spg. ii) Air vortex spg. iii) Wrap spg. iv) Air jet spg. v) Dref - 3 spg. vi) Plv fil spg process vii) Twist spg. (Siro System) .

Unit VI Preparmion process. Properties and use of following modern Yarns

i) Twistless Yarns ii) Sdf Twist Yarns iii) Network Yarns in iv) core spun Yarns.

Brief study of worsted spg.

References :

1)	New Spinning system	W.Klein
2)	Spinning in 70s	Lord
3)	Open End Spinning	Nield
4)	Spun Yarn Technology Vol I	A. Venkata Subramani
5)	Spun Yarn Technolgoy Vol II	A. Venkata Subramani

8STX-4 ADVANCE WEAVING TECHNOLOGY

SECTION 'A'

Unit I Introduction to unconventional weaving machincs, limitation of shull looms.

Selvedges on unconventional looms.

Sulzer Weaving - Features of sulzer weaving machine. Transfer of Weft from feeder to projectile & griping. different phases of weft insertion & luck in selvedge. Projectile picking mechanism. beatup mechanism, sulzer let off motion. Weft patterning system, limitation & scope of sulzer weaving.

Rapier weaving : Detail classification of rapier weaving machines, rigid & flexible rapiers, methods of weft insertion (Gabbler, Dewas system), rapier driving for rigid, flexible rapiers, rapier heads, Speed of rapier with respect to loom position, interference of rapier with warp threads. Hunts let off on Draper loom.

Unit II Air jet loom. Working Principle of Maxbo loom, different phases of weft insertion, passage of warp, weft measuring system, air requirements, air jet main nozzle, buckling of weft & traverse aids for maintaining air flow (Confuser system, Profile read & rely nozzles), methods of air jet control, timings of air jet loom.

Water jet loom- Weft supply system. requirements of water, phases of weft insertion. weft insertion system (pump, nozzler, timing of water jet loom, quick style changing water jet loom. Warp & weft preparation of shuttle less weaving machines. Brief idea of multiphase weaving.

Unit III Elements of principles of Fashion Designing. The sequence of operation in garment making : types of stitches, needle, interlinings, Brief descriprion of Fusing & Pressing equipments used in garment manufactures. Garment

manufacturing techniques viz.fashioning, neck finishes, steeve insertion, hemlines, waste lines, contour of garments. Production planning in garment manufacturers, quality control in garment manufacturing.

SECTION 'B'

Unit IV Weaving of certain commercial fabrics - Geotextile. High Tech fabrics. Poplin. Denim. Tire cord fabrics. Techno economics unconventional weaving systems.

Definition & quality particulars of standard woven fabrics Bagging & slaking, Belting, Blankes, Blazer Cloth, chiffon, Corduroy, cotton Suiting & trousering, Crepe fahrics, Denim, Dhotis, Drills, Felts, Flannel, Gabardine, Jean, Khaki, Lawn, Long Cloth, Moire, Muslin, Pile, Plain cloth, Poplin, Quilts, Sari, Sateen, Satin, Sheeting, Shirting, Velvet, Woolen cloth, Worsted cloth.

Unit I Nonwoverns- History, definition, charactaristics features & properties of nonwoven fabrics, deformation mechanism of woven & nonwoven fabrics, difference in geometrical arrangement of fabrics in web, binding element, bonding structure.

Classification of nonwoven fabrics by Albrecht, by Krema & Meyer, by DIN standards, by their structure.

Adhesion & Bonding - Bonding mechanism, factor influencing bonding process.

Unit V Raw material for nonwoven production, function of fibre in nonwoven fabrics, effect of fibre properties on properties of nonwoven fabrics, application of Industrial fibre in production of nonwoven fabrics for specific end use, special fibres for nonwoven production, technology of production of nonwoven fabrics, production of a basic fibre layers, principles of production based on adhesive bonding, discontinuous bonding, thermal bonding, needle punching , hydro entanglement, stitch bonding, bonding of spun laid web.

References:

1) Weaving, Machine, Mechanism, : Prof. D. B. Ajgaonkar &
   Management : Dr. M. K. Talukdar
2) Weaving Operations : Allen Armorod
3) Priniciples of Weaving : R. Marks & A.T.C.Robinson
4) Weaving Mechanism (vol II) : Prof. N. N. Bannerjee
5) Shuttless Loom : J. J. Vincent
6) Mannual of Nonwovens : Dr. Radko Krema
7) Nonwoven Manufacture : Prof. N. N. Bannerjee

8STX5 TEXTILE MILL PLANNING AND ORGANIZATION

SECTION-A

Unit I Factors governing selection of site textile mill plant layout:- objectives, kind of layout their advantages and disadvantages, effect of automation on plant layout, advantages of a good layout, sysmptoms of a bad layout.

Unit II Introduction-Managemnt, management function, principles scientific management. Personnel Management-Concept. personnel functions manpower planning. need for training, methods of traning. objects of remuneration, fringed benefits. Motivation. Promotion. Transfer.

Unit III Marketing Management Concept. Marketing functions, pricing practice, need of advertising & sales promotion. market research.

Sources of funds for textile Industry. Introduction to working capital. Balance Sheet, Profit and Loss Account. Budget, Budgeting, auditing.

SECTION- B

Unit IV Preparation of organization with respect to manpower machinery for spinning mill for spinning of cotton carded combed as well as manmade fibres and blended yarns and organization of quality control and their check and their standard norms at various levels in spinning.

Unit V Preparation of organization of weaving department with respect of manpower and machinery with conventional modern preparation and weaving machines for weaving cotton and blended fabrics. Overall process control schemes for weaving their norms at various levels.

Unit VI Brief outline of factory act 1948 and labour law in textile industry. (Trade union collective bargaining. Workers participation industrial disputes.) Architectural and structural aspects of textile mill building, morphology-general principles of building construction and building foundation. material for construction with special reference to wall, roof, floors and fire resistance, noise in textile mills, its measurements and control, colour scheme for building interior and machinery in textile mills.

Reference :

1) Management of Textile Industry - Dudeja
2) Practical Cotton Mill Management - Benjamin
3) Ind. Engg. and Management - O. P. Khanna

8STX-6 PROJECT & SEMINAR

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L : Theory Lecture
T : Tutorial
P : Practical
D : Drawing/Design work

APPENDIX-'C'

FOUR YEAR DEGREE COURSE

BACHELOR OF TEXTILE ENGINEERING (B.TEXT.E.)

SEMESTER PATTERN

ABBREVIATIONS
S - SEMESTER PATTERN
TX- TEXTILE ENGINEERING

SEMESTER : FIFTH

Sr. No.	Sub. Code No.	SUBJECT	: TEACHING SCHEME: L:	T:	P/D	Total Hours/ week	EXAMINATION SCHEME Theory Duration of papers (Hrs.)	Max. Marks Theory papers	Max. Marks College Assess-ment	TOTAL	Min pass Marks	Practical Max Marks	Max. Marks College Assess-ment.	TOTAL	Min pass Marks	Grand Total
1.	5STX1	SPINNING-III*	3	1	4	8	3	80	20	100	40	25	25	50	25	
2.	5STX2	WEAVING-II*	3	1	4	8	3	80	20	100	40	-	-	-	-	
3.	5STX3	TEXTILE FIBRE-II	4	0	0	4	3	80	20	100	40	25	25	50	25	
4.	5STX4	TEXTILE TESTING-I*	3	1	4	8	3	80	20	100	40	25	25	50	25	
5.	5STX5	TEXTILE MATHEMATICS	3	1	0	4	3	80	20	100	40	-	-	-	-	
6.	5STX6	INPLANT TRAINING **	-	-	-	-	-	-	-	-	-	-	50	50	25	
		TOTAL	16	4	12	32				500				200		700

SEMESTER : SIXTH

1.	6STX1	WEAVING-III*	3	1	4	8	3	80	20	100	40	25	25	50	25	
2.	6STX2	MANMADE FIBRE TECHNOLOGY	3	1	0	4	3	80	20	100	40	-	-	-	-	
3.	6STX3	TEXTILE TESTING-II*	3	1	4	8	3	80	20	100	40	25	25	50	25	
4.	6STX4	FABRIC STRUCTURE	4	0	4	8	3	80	20	100	40	25	25	50	25	
5.	6STX5	TEXTILE COSTING & ECONOMICS	3	1	0	4	3	80	20	100	40	-	-	-	-	
6.	*6SULIMETX6	COMMUNICATION SKILLS	2	1	-	3	2	40	10	50	20	15	10	25	12	
		TOTAL	18	5	12	35				550				175		725

* 6STX1, 5STX2, 5STX4, 6STX1, 6STX3, 6STX4 there will be two practicals per week of two hours duration each.

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L : Theory Lecture
T : Tutorial
P : Practical
D : Drawing/Design work

APPENDIX-'D'

FOUR YEAR DEGREE COURSE

BACHELOR OF TEXTILE ENGINEERING (B.TEXT.E.)

SEMESTER PATTERN

ABBREVIATIONS
S - SEMESTER PATTERN
TX- TEXTILE ENGINEERING

SEMESTER : SEVENTH

Sr. No.	Sub. Code No.	SUBJECT	: TEACHING SCHEME: L:	T:	P/D	Total Hours/ week	EXAMINATION SCHEME Theory Duration of papers (Hrs.)	Max. Marks Theory papers	Max. Marks College Assess-ment	TOTAL	Min pass Marks	Practical Max Marks	Max. Marks College Assess-ment.	TOTAL	Min pass Marks	Grand Total
1.	7STX1	TEXTILE TESTING-III*	3	1	4	8	3	80	20	100	40	25	25	50	25	
2.	7STX2	CHEMICAL PROCESSING-I*	4	0	4	8	3	80	20	100	40	25	25	50	25	
3.	7STX3	PROCESS CONTROL IN SPINNING	3	1	2	6	3	80	20	100	40	25	25	50	25	
4.	7STX4	PROCESS CONTROL IN WEAVING	3	1	2	6	3	80	20	100	40	25	25	50	25	
5.	7STX5	PROJECT & SEMINAR	0	0	4	4	-	-	-	-	-	-	-	-	-	
		TOTAL	13	3	16	32				400				200		600

SEMESTER : SIXTH

1.	8STX1	CHEMICAL PROCESSING-II*	4	0	4	8	3	80	20	100	40	25	25	50	25	
2.	8STX2	MAINTENANCE OF TEXTILE MACHINERY *	3	1	4	8	3	80	20	100	40	25	25	50	25	
3.	8STX3	ADVANCE SPINNING TECHNOLOGY	3	1	0	4	3	80	20	100	40	-	-	-	-	
4.	8STX4	ADVANCE WEAVING TECHNOLOGY	3	1	0	4	3	80	20	100	40	-	-	-	-	
5.	8STX5	TEXTILE MILL PLANNING & ORGANISATION	3	1	0	4	3	80	20	100	40	-	-	-	-	
6.	8 STX6	PROJECT & SEMINAR	0	0	4	4	-	-	-	-	-	75	75	150	75	
		TOTAL	16	4	12	32				500				250		750

* 7STX1, 7STX2 & 8STX1, 8STX2 there will be two practicals per week of two hours duration each.

1. College Assessment- 2. University Viva-Voce 75

A. Project - 50 B. Seminar - 25 Total 150

* REGULATION NO. 18 OF 2002

Examinations leading to the Degree of Bachelor of Textile Engineering (Four Year Degree Course.... Semester Pattern) Regulation, 2002.

Whereas it is expedient to frame the Regulation in respect of Examinations leading to the Degree of Bachelor of Textile Engineering (Four Year Degree Course.....Semester Pattern) for the purposes hereinafter appearing the Management Council is hereby pleased to make a following Regulation.

1. This regulation may be called "Examinations leading to the Degree of Bachelor of Textile Engineering (Four Year Degree Course....Semester Pattern) Regulation, 2002.

2. This Regulation shall come into force w.e.f. the Academic session-

   i) 2001-02 for Ist & IInd Semester B.Text.E.,

   ii) 2001-02 for IIIrd & IVth Semester B.Text.E.,

   iii) 2002-03 for Vth & VIth Semester B.Text.E., and

   iv) 2003-04 for VIIth & VIIIth Semester B.Text.E.

3. The Schemes of Teachings and Examinations for Ist & IInd, IIIrd & IVth, Vth & VIth, and VIIth & VIIIth Semester in respect of Bachelor of Textile Engineering (Four Year Degree Course.... Semester Pattern) shall be as per Appendices A, B, C, and D appended with this Regulation respectively.

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*As amended by Regulation Nos. 21 of 2007 & 46 of 2007.

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