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Syllabus for Polytechnic (Diploma Sector)
Post:- Lecturer Textile Engineering
Paper-I

1. **Textile Fibres-I:** Textiles fibres & their classification, general properties of fibres, cultivation/production, structure & properties of cotton, jute, linen, wool, silk, & other natural fibres, identification of fibres by different methods, molecular weight & its determination, concept of orientation & crystallinity, concept of Tg & Tm & its determination., High performance fibres, high strength high modulus fibre, aramid fibres, carbon fibres, thermal & chemical resistant fibres, elastomeric fibres, biodegradable fibres,, their manufacture, properties & application.
2. **Yarn manufacture-I:** Spinning: sequence of cotton & its blends, ginning of cotton, objects of opening & cleaning, role of blow room machines & their principle of operation, carding: objects, functions, working principle & process parameters, cotton card, woolen & worsted cards, Objects, principles & process parameters of draw frame for cotton & its blends, process sequence of combing, principle of combing, Objectives, functions & working of gill boxes, calculations pertaining to blow room, card, draw frame comber & gill box. Role & function of autoleveller in card & draw frame, types of defects & remedies during blow room, carding & draw frame.
3. **Fabric Manufacture-I**: Objects of preparatory process, different types of winding machines & their working principles, objects of warping, different types of warping machines & their principles of operation, objects of sizing, sizing ingredient, different types of sizing machines & their working, defects in winding, warping & sizing & their remedies, calculations pertaining to winding, warping, sizing & beaming.
4. **Knitting:** Weft knitting machines, different types of weft knitted structures & machines, basic warp knitted structure, underlap & overlap, principles of tricot, Rachel & crochet machines, calculation pertaining to weft & warp knitting, process control in knitting.
5. **Chemical processing-I**: Objective, singeing techniques, their merits and demerits, Desizing: objectives & mechanism of desizing, desizing evaluation, scouring of natural, manmade and blended textiles, evaluation of scouring efficiency, carbonisation of wool. Degumming of silk, bleaching of cotton, silk, wool, man-made fibres and blended textiles, estimation of bleaching, objectives, concepts of mercerization, Concept of color, additive, application of direct, reactive, vat, solubilized vat and sulphur dyes on cellulose fibres. Application of acid, Basic and metal complex dyes on wool and silk. Auxiliaries used in dyeing.
6. **Textile Testing-I**: Objective of testing & sample size, methods & principles involved in testing of fibre properties, like moisture, length, fineness, tensile strength, maturity, yarn testing : count, strength, tenacity, unevenness, hairiness, principle involved in testing of various fibre &yarn properties.
7. **Design of spinning machines**: design of drums for scutcher & speed frame, principle of designing blow room & card, definition of cam, follower & their classification, function of flywheel, design aspects in draw frame & comber, mechanism of combing, building mechanism in roving frame & ring frame, design concept of ring frame machine parts, forces acting on ring & traveler, concept of rotor spinning.

Syllabus for Polytechnic (Diploma Sector)
Post:- Lecturer Textile Engineering
Paper-II

1. **Textile Fibre-II:** Regenerated & synthetic fibres, concept of polymerization & manufacturing process of regenerated & synthetic fibres by melt, dry, wet & dry-jet wet spinning methods, structure & properties of regenerated & synthetic fibres & their uses concept of as spun, POY & FOY, objectives & principles of different methods of texturing & process parameters involved in texturing., concept of drawing & heat setting.
2. **Yarn Manufacture-II:** Principles & process parameters of speed frame & rubbing frame, Objectives & working of ring frame, & mechanism involved in drafting, twisting & winding at speed frame & ring frame, spinning of long staple fibres like jute, wool, & silk etc, objects of doubling, types of doubling systems, calculations pertaining to blow room, card, draw frame , combing, speed frame, ring frame & doubling & TFO. Principle involved in Rotor spinning, Principle of operation of DREF-II & DREF-III machines, Principle & mechanism of air-jet, air vortex, ply-fil, wrap, electrostatic spinning, textured yarn manufacture. idealized helical geometry, packing of fibres in a yarn, fibre migration,
3. **Woven Fabric Manufacture**: Different methods of fabric manufacturing- woven, knitted & non-woven, types of shuttle loom & their mechanism, role & working of tappet, dobby & jacquard & their developments, picking, beat-up, let off & take up mechanism in loom, role & working of various stop motions, features of automatic shuttle looms, different types of shulleless loom viz; air-jet, water-jet, rapier, projectile & their principle & mechanism, elements of fabric geometry,
4. **Non-Woven**: Classification of non-woven fabrics, principles of web formation, web characteristics and their influence on properties, bonding techniques, needle punching, spun bonding techniques, application of different types of non woven structures,
5. **Fabric Structure & design**: Basic elements of fabric design, plain, twill, sateen, huck-a-back, weaves their derivatives construction, objectives of extra warp & weft design, warp backed & weft backed design, different types of double cloth construction, geometrical & floral design, damask & brocade design, tapestry structure, basis of carpet & textile design, Indian motif, historical, aesthetical, traditional textile, Jamdani, Bandhani, Batik prints, digital printing, screen Printing, block printing, colour forecasting of carpet & textile design, computer aided design & its importance, fabric geometry, square & jammed structure, fabric deformation under stress.
6. **Chemical processing-II**: Dyeing of polyester with disperse dye, nylon with acid dye, acrylic with cationic dyes, methods of dyeing blends, Characteristics of printing paste ingredients, classification and mechanism of thickeners, printing methods, styles of printing, printing after treatments, Objects & types of finishing, mechanical finishing, chemical & functional finish, mechanism, flame retardant finishes, water repellent finishes etc.
7. **Textile Testing-II**: Fabric testing: gsm, thickness, cover, air permeability, moisture & water transmission, wetting & wicking properties, compressibility, tensile, tear & bursting strength, abrasion & pilling resistance, FAST & KESF properties etc,
8. **Designing of Weaving m/cs**: Designing concept of drum winding machine, concept of warping, transmission of motion in warping, designing of sizing machine, kinetics of sley, sley eccentricity, designing concept of tappet, different pick insertion systems, working of various stop motion.