

Syllabus for Govt. Polytechnic (Diploma Sector)

Post:-Lecturer Carpet Technology

Paper-I

- 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.
- Yarn Manufacture-I:** Different methods of short & long staple fibre spinning, process sequence for cotton & short staple fibre. Object of opening & cleaning, processing of cotton & short staple on blow-room, **Carding:** Objects, functions & working principle of cotton card, woolen & worsted cards, Autoleveler in card, Objectives of principle of drafting, different drafting systems, objects & function of gill box, Objects & working of combers, combing mechanism, Objectives & of speed frame & rubbing frame.
- 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 and their remedies, calculations pertaining to winding, warping, sizing & beaming. **Knitting:** Weft knitting machines, different types of weft knitted structures & machines, basic warp knitted structure, underlap & overlap, principles of tricot & Rachel machines.
- Chemical processing-I:** Objects of singeing, scouring, desizing & bleaching, different processes involved in singeing, scouring, bleaching & desizing, scouring of wool, Objects of mercerization, testing of efficiency of scouring, bleaching & mercerization.
- Textile Testing-I:** Objective of testing & sample size, methods & principles involved in testing of fibre properties, like moisture, length, fineness, tensile strength, maturity, neps etc. yarn testing : count, strength, tenacity, unevenness, hairiness etc.
- Carpet manufacture:** Classification of carpets, requirement yarns in handmade carpets, preparatory process for hand made carpets, Persian, Turkish & other types of knot structures, process control in hand made carpet, **handloom carpets**, pile carpet making, tufted carpets, structure & quality parameters, finishing of carpets, machine made carpet manufacture & quality control., testing of functional properties of carpet.
- Fabric Structure & design-I:** 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.

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Paper-II

- 1. Fibres-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, Process parameters for drawing & heat setting.
- 2. Yarn manufacture-II:** Objectives & working of ring frame, Principle & 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. Elements of yarn geometry, concept of fibre migration in yarn.
- 3. Woven Fabric Manufacture-II:** 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 shuttleless loom viz; air-jet, water-jet, rapier, projectile & their principle & mechanism, elements of fabric geometry, Non woven: Classification of non-woven fabrics, principles of web formation, bonding techniques, needle punching, spun bonding techniques.
- 4. Chemical processing-II:** Principle & application of Direct, Azoic, sulphur, Vat dyes, reactive dyes, disperse dyes, acid dyes, chrome dyes, metal complex dyes, Objects & types of finishing, mechanical finishing, chemical finishing, flame retardant finishes, water repellent finishes etc, Different styles & methods of printing, auxiliaries used in printing, Theory of colour,
- 5. 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,
- 6. 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.
- 7. Home textiles & garment:** Area of application, drawing & reproduction of marker, marker planning, spreading methods, cutting & shearing, sewing machines, sewing threads, Embroidery, patch work, various styles of quilting, curtains, bedspreads & pillows.