SGGS Institute of Engineering & Technology, Nanded

Department Of Textile Technology

Summer Examinations 2020 of Final Year of UG and PG (AY 2019-2020)

Sr. No.	Subject Code	Subject Name	50 % syllabus for the above exam	Signature
Second Year B. Tech (Textile Technology)				
1	MA201	Engineering Mathematics - III	Chapter 1- Basic Concepts & Ideas, Geometric Meaning of y'= f(x, y), direction field , exact equations, Integrating factors, Linear differential equation, Bernoulli's equations, orthogonal trajectories, applications to electrical circuits. Chapter 2- Second Order Differential equations, Homogeneous linear differential equation for real & complex roots, Euler Cauchy equation, existence & uniqueness theorem (Without proof) & Wronskian Chapter 3- Non homogeneous equation, solutions by undetermined coefficients	
Third Year B. Tech (Textile Technology)				
2	TT331/ TT351	Yarn Manufacture - III	**Speedframe (Roving):** 4. Functions of Speedframe, Principle of winding and twisting- flyer leading and bobbin leading, Design of different flyers, Construction and working of speed frame, Drive in speedframe, Draft and production calculation 5. Fundamentals of differential gearing, Differential motions in speed frame and related calculations, Theory and design of cone-drums, Working of building mechanism- adjustments and related calculations, Roving tension, Coil spacing and layers of roving in bobbin, Design features of modern speed frames 6. Importance and influence of various components/parts and parameters on drafting process, Details of construction and working of different spring-loaded and pneumatic drafting systems in speed frame, Stop motions	
3	TT338/ TT352	Yarn Manufacture - IV	**Ring Spinning:** 1. Ring spinning fundamentals, Principle of twisting and winding, Traveller lag and related calculation, Construction and working of ring spinning frame- gearing and drive, Various parts and their functions, Creel design, Structure and construction of spindle and types of spindle drives, Types of bobbin builds, Working of building mechanism 2. Concept of yarn balloon, Importance and details of lappet guide, balloon separator, balloon control rings, Forces acting on yarn element in the balloon during spinning, Causes of yarn tension variation in ring spinning, Forces acting on the traveller, Twist flow in ring spinning 3. Limitations of ring frame productivity, Design and shapes of ring/traveller combinations- relative merits and demerits, Specification of ring and travellers, Doffing and auto doffing mechanism	

			4. Spinning geometry, Spring-loaded and pneumatic drafting systems in ringframe- design concepts, settings, roller pressure, aprons, cots, condensers, spacers, cleaners etc., Roller lapping- causes and remedies, Modern developments in ring spinning, Monitoring devices in ring spinning- ring data system	
4	TT355	C++ & Computer Graphics	1 Overview of C & Introduction to C + + .Structured versus object oriented development, Elements of OOP, objects, classes, Encapsulation, Inheritance, polymorphism, message communication. 2 Classes and Objects: Class specification, class objects, member access, defining member functions, constructors and destructors, passing and returning objects as arguments, friend functions.	
Final Year B. Tech (Textile Technology)				
5	TT403	Production Management	1. Definition and long time, intermediate and short time horizon functions of Production and operations management. 2. Plant layout - Features, basic principles, types of layouts, their merit and demerits, layouts and buildings used in Textile industry. 3. Material handling - The principles, classification of material handling equipment's, automation, material handling equipment's used in ginning, spinning, weaving, processing. 4. PPC- Functions of Production Planning and control, Application of PPC in Textile Industry, forecasting purpose and methods. 5. Quality Management - New quality concepts, Quality Circle, Kaizen, contributions of Quality Management Scientists, TQM, Six Sigma, Five S etc. 6. Mill humidification - Different systems of humidification and their efficiency, temperature, Relative humidity and ventilation requirements for different departments of Textile mill.	
6	TT401	Technical Textiles - I	1. What are Technical textiles? Application areas, Fibres that are used for Technical textiles, Use of Technical textiles globally 3. Finishing of technical textiles: Finishing processes like mechanical processes, Calendering, Raising, Cropping, Compressive shrinkage, Heat setting. 4. Coating of technical textiles: Chemistry of coated textiles, PVC, PVDC, PTFE, Rubber- various type, Polyurethanes, Coating techniques: Knife coating, roller coating, nip coating, dip coating, cast coating, extrusion coating, spray coating, foam coating, U-V Cured coating, powder coating, Rotary screen coating, Hot melt coating, Transfer coating, fusible interlinings 5. Belts: Conveyer belts, Physical and mechanical properties, construction of belts, power transmission belts 6. Hoses: Construction, manufacturing of different hoses and their uses 8. Automotive textiles: Introduction, Major fibres/ fabrics used, textiles used as Seating area, Headliners/ hood fabrics, Side panels, Carpets, Trunks, Door trim, Dash mat. 9. Seat Belt: Introduction, requirements, specifications, manufacturing of seat belt. 10. Airbags: Introduction, requirements of airbag fibres, fabric types, finishing of airbag fabric, garmenting of	

			airbag.	
7	TT405	Knitting and Nonwovens	**Knitting** 1. Introduction, history, growth of knitting industry in India, comparison of weaving & knitting, Classification, comparison between warp & weft knitting 2. Weft knitting: types of needles, knitting elements, knitting actions, single and double jersey structures, machine, process and structures of plain, rib, interlock & purl knitting 3. Circular weft knitting machine: creel, drive, tensioners, yarn feeding, stop motion, take up, settings & production calculations **Non-Woven** 1. Introduction, Definition, Basic nonwoven processes, raw material, fibre preparation processes, mixing & blending, Staple fibre web formation processes, carding process 2. Web stacking processes, parallel-laid, cross-laid, perpendicular-laid, Wet-lay Process, fabric defects, Critical material characteristics and process factors, applications 5.Finishing Processes Mechanical finishing Chemical finishing Unconventional finishing	
8	TT408D	Elective: Indian Textile and Clothing Industry	1. The Structure of Textiles and Clothing Industries, mill sector, spinning sector, weaving sector, made-ups, processing activity, knitted and crocheted products, technical textile, embroidery work, manufacture of wearing apparel, textile machine manufacturers, synthetic industry, wool, silk, jute, power loom, handloom 2. Raw material production: natural and synthetic fibres, yarn, fabrics, made ups, varieties, cost, availability, 5. Exports and Import of Textiles and Clothing exports and import of fibre, yarn, fabric, garments, made up, technical textiles from India to the rest of the world, import of all above products by India from world, trends in import & export 8. Industrial relations & labour laws: Definitions & objectives of industrial relation, charge procedure, punishment & appeal, collective bargaining, employee grievances -nature, grievance handling procedure, workers participation in management, Industrial Disputes Act 1947, The Factories Act 1948,The Wages Act 1956, The Minimum Wages Act 1948, Workmen's Compensation Act 1923, The Gratuity Act 1972	
9	TT408B/ TT441	Elective: Technical Textiles - II	1. Heat and flame protection: Introduction, What constitutes flammability? Thermal behavior of fibres, Different high temperature fibres including inorganic fibres like Ceramic, Basalt and Glass fibre. Fire protection, general considerations, LOI, Flame resistance fibres and fabrics in detail, fire retardant finishes for cellulose, polyester, wool and their blends. Fire fighter's protective clothing, Military flame-retardant, heat protective textiles, military flame and heat threat, criteria for protection of individual, toxic fumes and smoke, thermoplastic melt hazard, flame retardant textiles in military use. 2. Chemical protective clothing: Introduction, what is chemical hazards? Different types of protective materials, components of chemical protective garments, levels of protection, chemical protective clothing materials, protection from liquid, toxic fumes and gases, Performance evaluation of chemical protective	

			clothing, chemical, biological and radiation hazards and their prevention. 3. Mechanical protective clothing: Introduction, materials used, gloves, chain saw clothing, Physical requirements for military textiles, underwear materials, thermal insulation, water vapour permeable/waterproof materials, military combat clothing systems, camouflage concealment and deception, ultraviolet wave band, visible waveband, visual decoys, Near infrared camouflage, dyes for NIR camouflage, Far infrared wave band and design of military equipments/vehicle for the same, Bullet proof fabrics principles, mechanics of ballistic impact, textile materials for ballistic protection, design of ballistic vests and helmets, ballistic testing and evaluation. 7. Comfort properties of textiles: What are waterproof breathable fabrics? Types of W.P.B fabrics, coatings, biomimetics, assessment techniques, performance of water proof breathable fabrics.	
10	TT431	Statistical Process Control in Spinning	2. Use of standard deviation, Random variable, Normal distribution- fundamental concepts and applications, Central Limit Theorem 3. Confidence Level and confidence interval, Interval estimation, Hypothesis testing of mean(s), proportion and variances- both small and large samples, Applica ion spinning and textiles 10. Snap study and end-breakage study in ring spinning 11. Control of yam quality, Causes and control of within and between bobbin variations, Methods of routine checking, Controlling count CV% 12. Causes and control of yarn strength variation 13. Causes and control of mass variations and imperfections in yarns, Uster spectrograph and periodic faults and their analysis & Uster diagram-analysis: application in spinning process	
First Year M. Tech (Textile Technology)				
11	MCC-590	Research Methodology and IPR	Unit I: Meaning of research problem, sources of research problem, criteria characteristics of a good research problem, errors in selecting a research problem, scope and objectives of research problem. approaches of investigation of solutions for research problem, data collection, analysis, interpretation, necessary instrumentations. Unit II: Effective literature studies approaches, analysis plagiarism, research ethics. Unit IV: Nature of intellectual property: Patents, designs, trade and copyright. process of patenting and development: technological research, innovation, patenting, development. international scenario: international cooperation on intellectual property. procedure for grants of patents, patenting under PCT.	