

7th Semester BACHELOR OF TECHNOLOGY (TEXTILE TECHNOLOGY) w.e.f. 2018-19

S. No.	Subject Code and Name	Teaching Schedule (hrs)				Examination Schedule (Marks)			Total Marks	Duration of Exam (hrs)
		L	T	P/D	Total	Sessional	Theory	Practical/Viva-voce		
1	TT- 401N: Technical Textiles I	4	1	---	5	25	75	---	100	3
2	TT- 403N: Fundamentals of Management	4	1	---	5	25	75	---	100	3
3	TT- 405N: Advanced Chemical Processing	4	1	---	5	25	75	---	100	3
4	Elective I	3	1	---	4	25	75	---	100	3
5	Elective II	3	1	---	4	25	75	---	100	3
6	TT- 407N: Advanced Chemical Processing Lab	---	---	3	3	40	---	60	100	3
7	TT- 409N: Project I	---	---	6	6	100	---	100	200	3
8	TT- 411N: Seminar	---	---	3	3	100	---	---	100	3
9	TT- 413N: Summer Training Report	---	---	---	---	100	---	---	100	3
Total		18	5	12	35	465	375	160	1000	

Elective I

S. No.	Subject Code and Name	Teaching Schedule (hrs)				Examination Schedule (Marks)			Total Marks	Duration of Exam (hrs)
		L	T	P/D	Total	Sessional	Theory	Practical/Viva-voce		
1	TT-415N: Process Control in Spinning	3	1	---	4	25	75	---	100	3
2	TT- 417N: Process Control in Chemical Processing	3	1	---	4	25	75	---	100	3

Elective II

S. No.	Subject Code and Name	Teaching Schedule (hrs)				Examination Schedule (Marks)			Total Marks	Duration of Exam (hrs)
		L	T	P/D	Total	Sessional	Theory	Practical/Viva-voce		
1	TT- 419N: Process Control in Garment	3	1	---	4	25	75	---	100	3
2	TT- 421N: Process Control in Weaving	3	1	---	4	25	75	---	100	3


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TT-401N
TECHNICAL TEXTILES - I

L T P
4 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

Unit I:

Introduction, definition and growth of technical textiles, Classification of Technical Textiles. Brief idea about technical fibres. Role of yarn construction, fabric construction and composite materials.

Unit II:

Filtration:

Textile and other filter media for dry and wet filtration. Filtration parameters. Theory of dust collection and solid liquid separation. Filtration requirements. Role of fibre, fabric construction and finishing treatments. Concept of pore size and particle size. Mathematical models. Nano filters.

Unit III:

Geotextiles:

Types of geosynthetic and their uses. Functions and application areas of Geotextiles. Essential properties. Fibre and fabric selection criteria for geotextile applications. Mechanics of reinforcement, filtration and drainage by Geotextiles.

Natural fibre Geotextiles.

Methods of long term prediction of geotextile life and survivability in soil. Geotextile testing.

Unit IV:


Textiles in Transportation:

Introduction to automotive textile. Application of textiles in automobiles. Fibre requirements. Textile in passenger cars – tyres, airbags, seat belts, hoses and filters. Textiles in other road vehicles. Railway application. Application in aircraft and marine.

Textile as structural elements in transport vehicles

Reference.

1. "Handbook of Technical Textiles", Ed. A R Horreks and S C Anand, Woodhead Publication Ltd, Cambridge, 2000
2. "Handbook of Industrial Textiles", Ed. Sabit Adanur, Technomic Publishing Co. INC


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FACTORY AREA (S/MALKHA)

TT – 403N
FUNDAMENTALS OF MANAGEMENT

L T P
41 -

Sessional :25 Marks
Exam : 75 Marks
Total : 100 Marks
Time : 3 hours

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

UNIT-I Financial Management

Introduction of Financial Management, Objectives of Financial Decisions, Status and duties of Financial Executives, Financial Planning – Tools of financial planning, Management of working capital, Factors affecting requirements of working capital, Capital structure decisions, Features of appropriate capital structure, Sources of finance.

UNIT-II Personnel Management

Personnel Management – Meaning, Nature and Importance; Functions of Personnel Management – (a) Managerial Functions and (b) Operative functions, Job Analysis: Meaning and Importance; Process of Job Analysis; Job Description and Job specification, Human Resource Development- Meaning and concept.

UNIT-III Production Management

Production Management : Definition and Objectives
Plant location: Ideal plant location, Factors affecting plant location.
Plant Layout : Ideal plant layout, factors affecting plant layout.
Work Measurement : Meaning, Objectives and Essentials of work measurement.
Production Control : Meaning and importance of production control and steps involved in production control.

UNIT-IV Marketing Management

Modern Nature, scope and importance of marketing management. Marketing concepts. Role of marketing in economic development. Marketing Mix. Marketing Information System. Meaning, nature and scope of International Marketing.

NOTE : The question paper shall have eight questions in all organized into four sections, each section having two questions from each of the four units. The candidates shall have to attempt five questions in all, selecting at least one question from each unit.


Books Recommended

Text Books

1. Principles and Practice of Management - R.S. Gupta, B.D.Sharma, N.S. Bhalla. (Kalyani Publishers)
2. Organisation and Management - R.D. Aggarwal (Tata McGraw Hill)

Reference Books

1. Principles & Practices of Management – L.M. Prasad (Sultan Chand & Sons)
2. Management – Harold, Koontz and CyriloDonell (Mc.Graw Hill).
4. Financial Management - I.M. Pandey (Vikas Publishing House, New Delhi)
5. Management - James A.F. Stoner & R.Edward Freeman, PHI.
6. Marketing Management- Philip Kotler, PHI


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TT-405N
ADVANCED CHEMICAL PROCESSING

L T P
4 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

Unit I:

Continuous open width processing, use of eco-friendly enzymes in wet processing.
Continuous dyeing, Super critical CO₂ dyeing. New direct, reactive and disperse dyes.
Grading and methods to determine fastness relating to washing, light, perspiration, sublimation and hot pressing treatment.

Unit II:

Novel printing techniques like Ink Jet printing or digital printing.
Zero formaldehyde easy-care finishes, polysiloxanes based softener. Breathable water-proof fabrics. Antimicrobial finishing of textiles. Low wet pick up techniques.

Unit III:


Source of natural light, sources of artificial light, CIE illuminants, absorption and scattering of light. Beer-Lambert law, Additive and subtractive mixing. Standard observer color matching function, Tristimulus values, Chromaticity coordinates, Kubelka-Munk equation. Metamerism.

Unit IV:

Spectrophotometric curves and their relationship to perceived colors. Principle of spectrophotometer. Colorimeter, Munsell system of color specification. Relationship of hue, value and chroma. Whiteness and yellowness indices.
Computer aided color matching and recipe prediction

Reference:

1. "Colourage" Journal
2. "Asian Dyers" Journal
3. "Asian Textile Journal" Journal
4. "Man-made Textiles in India" Journal
5. Shah and Gandhi, "Instrumental Color", Mahajan Book Distributors.
6. Shore J. "Computer Aided Colour Matching", SDC U.K 1998 ISBN.
7. AATCC Technical Manual


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TT- 407N


ADVANCED CHEMICAL PROCESSING LAB

L T P
- - 3

Practical/viva: 60 marks
Sessional: 40 marks
Total: 100 marks
Duration of Exam: 3 hours

List of Experiment:

1. Identification of dye on a dyed cotton sample
2. Determination of wash fastness of a dyed sample
3. Determination of Crock fastness of a dyed sample
4. Calibration of a UV-visible transmittance based spectrophotometer
5. Assessment color strength (K/S) of dyed sample
6. Relation between color strength (K/S) and dye uptake
7. Assessment of color difference between samples
8. Determination Lab values and construction of hue and shades based on that.


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TT – 415N
PROCESS CONTROL IN SPINNING

L T P
3 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

Unit I:

Importance of process control. Control of mixing quality and cost using Linear Programming. Bale management. Bale management: The concept, Instrumental evaluation of cotton, The final goal-bale management, the control, Step by step implementation of bale management. Control of cotton contamination. Control of cleaning efficiency and waste in blow room and card. Control of waste in comber.

Unit II:

Yarn Irregularity: Concept, Measurement, and Interpretation, Types of Irregularity, Causes of yarn irregularity, Index of Irregularity, Application.

Variance length curves: Fundamental considerations of the variance-length curve, Interpretation of V(l) and B(l) curves, Important characteristics of variance-length curve, Short term and Long term unevenness, Stacked variance length curve.

The spectrogram: Comparison of the diagram and spectrogram, Spectrogram Harmonics, causes of periodic defects, effect of doubling on periodic variation, Control of periodic mass variations.

Drafting wave: Definition, Causes of formation, Quasi-periodic irregularity, causes of drafting waves, Amplitude of drafting wave, Yarn irregularity due to drafting waves.

Yarn hairiness: Importance of Hairiness, Generation of yarn hairiness, Factors effecting hairiness, Effect of Preparatory and Spinning process on hairiness, Measure to reduce Hairiness, Periodic variation in hairiness, Hairiness Testing.

Unit III:

Imperfections: Concept, Measurement, and Interpretation; Importance of thin places, thick places and neps in the textile industry.

Yarn Faults: Importance of Yarn Faults, Determination of Yarn Faults, Various reasons for different types of Yarn Faults. Contribution of Raw material, Blow room and carding, Combing, Draw frame, Speed frame and Ring frame to yarn faults.

Control of yarn count and count CV%, between bobbin lea count variations, Minimizing lea count variation, Effect of count CV on strength CV.

Control of strength, and strength CV%, Mechanism of Strength Generation, Yarn failure mechanism, Influencing Factors, Variables which can affect yarn tensile properties, Influence of humidity of the room on the breaking force, instrument set up affect tensile properties. Control of end breaks: Mechanism of end breakage in ring spinning, Causes of end breaks in spinning.

Unit IV:

Yarn realisation and Process waste control: Control of measure, Method of consolidating waste, Waste losses at various stages like Blow room, Cards, Combers, Yarn waste, Sweepings, Invisible loss. Judging yarn realization of a mill


Measures for improving performance of blow room and card

Evaluation of auto leveler in draw frame

Measuring for improving performance of comber, draw frame and speed frame

Towards better performance of ring frame in terms of quality and productivity


Measurement of productivity of a spinning mill and means to improve it.


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Machinery Audit: Differences with routine Maintenance, Implementation of the system of machinery audit, Tools for machine audit, Machinery Audit in Spinning : Check List, Test Instruments for Machinery Audit
Analysis and interpretation of statistical data, Total quality control.

Reference.

1. Grade, A. R., and Subramaniam T. A., "Process control in cotton spinning" ATIRA, Ahmedabad, 2nd Ed. (1978).
2. Salhotra, K. R., and Ishtiaque, S. M., "Process control in spinning", IIT Delhi, CD cell (2001).
3. Ratlam, T. V., "Quality control in spinning" SITRA, Coimbatore (1994).
4. Chattopadhyay, R., "Advances in Technology of Yarn Production, 1st Ed., NCUTE, IIT Delhi (2002).
5. GAR Foster, "Manual of Cotton Spinning Vol IV"


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TT-417N
PROCESS CONTROL IN CHEMICAL PROCESSING

L T P
3 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

Unit I:

Importance of process and quality control in chemical processing. Quality of grey fabrics, selvedge quality, stains in grey fabric, overall assessment of quality of grey fabrics.
Stitching of grey pieces, common stitching defects and method for assessing stitching quality. Process control in shearing and cropping.

Unit II:

Singeing - Process control in singeing, parameters to control the singeing process
Desizing - Enzyme desizing, parameters to control the enzyme desizing process
Scouring - Parameters to control the pressure boil scouring
Mercerizing - Parameters to control the mercerization process,
Bleaching - Sodium hypochlorite & Hydrogen peroxide, treatment on J-box, pad roll bleaching, washing and drying.
Process control in Heat Setting process.

Unit III:


Process control in Dyeing - Fiber and yarn package dyeing,
Fabric dyeing - Satisfying basic needs, selection of dyes, process control in jigger dyeing, high temperature beam or jet dyeing, continuous dyeing.
Process control in Printing: Selection of thickening agent and preparation of printing paste, printing recipe, printing, fixation, after treatments.
Process control in Finishing: Stenter or felt calendar for temporary finishes, durable finishes: resin finishing, calendaring, decatizing, weight reduction, carbonisation

Unit IV:

Evaluation of dyes - Dyestuff performance test, critical temperature test, migration test and build-up tests.
Textile Chemicals & auxiliaries - Wetting agents, Levelling Agents, Cross linking Agents, Thickeners & Binders for printing, OBA, Softners etc.
Evaluation of processed fabric at different stages: desizing, scouring, bleaching mercerization, heat setting, dyed printed and finished fabric.

References

1. ATIRA / BTRA Books of journals.
2. "Process control in processing" by ATIRA.


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TT – 419N
PROCESS CONTROL IN GARMENT

L T P
3 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

UNIT-I

Automation in Garment Industry-Information Technology in Garment Industry, Microprocessor based machinery in design, pattern making, market making, cutting, sewing, embroidery, programmable machines. Production planning in garment manufacturing; Cost structure in garment manufacturing; Production technology – manual and mechanical systems. Quantitative Production analysis, co-ordination of activities, Check list sheet, Time and motion study: need, Improving production efficiency.

UNIT-II

Stitch application for woven and knitted garment: Stitch identification, Application, Advantages and disadvantages, Proper stitch formation.
Common seam quality defect: Seam rupture on stretch knits, Skipped stitches, Stitch Cracking, Seam slippage and Needle cutting, Causes and remedies
Seam puckering: types, major causes and solution to puckering.

UNIT-III


Sewing Thread selection: Right thread to optimize seam quality, fibre type, thread construction, thread size. Advantages of core-spun sewing thread, Quality aspect of industrial sewing thread. Needle size, needle numbering system
Sewability: Quality parameters for assessing sewability, seam strength, seam pucker, seam slippage, needle cutting.

UNIT-IV

Quality control aspects of garment exports
Quality systems for garment (manufacture), the nature of quality costs, the functions of quality assurance and quality control;evaluating care and appearance, evaluating material contribution, Inspection standard for apparel,
Inspection systems – raw material inspection, in process inspection, final inspection, how much to inspect?
Comparability checks; Audit inspection

References:

1. An Introduction to Quality Control for Apparel Industry by PV Mehta
2. Managing Quality for Apparel Industry by PV Mehta & SK Bhardwaj
3. Garment Technology, NCUTE Publication
4. Testing and Quality Management (Vol-1) by V.K. Kothari


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TT – 421N
PROCESS CONTROL IN WEAVING

L T P
3 1 0

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 Hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

UNIT: I

Importance and consideration for evolving a system for process control in winding, warping, sizing and weaving. Key parameters at winding, Quality and productivity in winding. Control of package faults, measuring principle. Process control in pirn winding: minimizing end breaks, improving the build of the pirn, control of productivity, causes of low productivity.

UNIT: II

Process control in warping: minimizing end break in warping, performance assessment of warping, quality of warp beam, control of productivity, causes of low productivity. Common defects & remedies at warping. Process control in sizing: control of yarn stretch, performance assessment in sizing, quality of sized yarn, control of productivity, control of size losses. Common defects at sizing & remedies. Common defects in drawing-in & remedies, Costing calculations in drawing-in. Standard norms for setting speeds and production rates at different stages.

UNIT: III

Control of productivity in loom shed, Analysis of warp breaks. Control of loom efficiency, Control of loom stops, Quality of yarn, Loom performance, Control of loss of efficiency by snap reading, Optimum loom allocation
Types and classification of fabric defects, Measures for fabric defect control, Control and norms of hard waste in various processes, care, selection and consumption norms of accessories. Control of fabric quality at loom state.

UNIT: IV

Operative, Running, Machine Efficiency and Service factor. Importance and types of maintenance, Maintenance schedule in winding, warping, sizing and loom shed. Calculations pertaining production and efficiency. Machine allocation in winding, warping, pirn winding, sizing and loom shed. Machine audit.

References:

1. Control in Weaving” ATIRA Ahmedabad, 2ndEd(1978).
2. Weaving Machines Mechanisms Management, by Talukdar MK, Sriramulu PK, Ajgaonkar DB.


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8th Semester BACHELOR OF TECHNOLOGY (TEXTILE TECHNOLOGY) w.e.f. 2018-19

S. No.	Subject Code and Name	Teaching Schedule (hrs)				Examination Schedule (Marks)			Total Marks	Duration of Exam (hrs)
		L	T	P/D	Total	Sessional	Theory	Practical/ Viva-voce		
1	TT-402N: Technical Textile II	4	1	---	5	25	75	---	100	3
2	TT-404N: Textile Costing	4	1	---	5	25	75	---	100	3
3	TT-406N: Management of Textile Production	4	1	---	5	25	75	---	100	3
4	Elective III	3	1	---	4	25	75	---	100	3
5	Elective IV	3	1	---	4	25	75	---	100	3
6	TT-408N: Project II	---	---	9	9	100	---	100	200	3
7	TT-410N: Seminar	---	---	3	3	100	---	---	100	3
8	TT- 412N: Comprehensive Viva-voce	---	---	---	---	100	---	---	100	---
9	TT-414N: General Fitness for the Profession	---	---	---	---	---	---	100	100	3
Total		18	5	12	35	425	375	200	1000	



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Elective III

S. No.	Subject Code and Name	Teaching Schedule (hrs)				Examination Schedule (Marks)			Total Marks	Duration of Exam (hrs)
		L	T	P/D	Total	Sessional	Theory	Practical/ Viva-voce		
1	TT-416N: High Performance Fibres	3	1	---	4	25	75	---	100	3
2	TT-418N: Industrial Engineering	3	1	---	4	25	75	---	100	3

Elective IV

S. No.	Subject Code and Name	Teaching Schedule (hrs)				Examination Schedule (Marks)			Total Marks	Duration of Exam (hrs)
		L	T	P/D	Total	Sessional	Theory	Practical/ Viva-voce		
1	TT-420N: Nonwoven Technology	3	1	---	4	25	75	---	100	3
2	TT-422N: Processing of Man Made Fibres and Blended Textiles	3	1	---	4	25	75	---	100	3


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 PATTI KALYANA (S/MALKHA)

TT-402N
TECHNICAL TEXTILE - II

L T P
4 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

Unit I:

Medical Textiles:

Introduction and classification of Medical Textiles. Fibres used for medical applications. Medical Drapes and Linen. Implantables – sutures, soft tissue implants, hard tissue implants, vascular implants. Nonimplantables – surgical dressing, bandages. Extracorporeal devices, Tissue Engineering. Healthcare and Hygiene products. Super absorbent polymers, hydrogels.

Unit II:

Protective Textiles:

Different types of protective clothing. Functional requirements of defense clothing including ballistic protection, parachute, temperature and flame retardant clothing. Chemical and Biological protective clothing. Water proof breathable fabric.

Unit III:

Technical Textiles in Apparel Sector:

Introduction to Smart Technology for textile and clothing. Areas of application of smart textile. Pathogen barrier fabric, fibres used for pathogen barrier application. Clothing for extreme climatic conditions - wearable technology for snow clothing, high altitude clothing. Electromagnetic radiation protective clothing.

Unit IV:

Other Applications:

Sportech – Sport uniforms, sporting equipments, textiles in sport surfaces
Agrotech – General applications and fibres used in agriculture, horticulture, fishing and animal husbandry
Buildtech – Architectural membranes, hoardings and signages, awnings and canopies.
Packtech. Ropes and cordages. Canvas covers and tarpaulins.

References:

3. "Handbook of Industrial Textiles", Ed. Sabit Adanur, Technomic Publishing Co. INC
4. "Handbook of Technical Textiles", Ed. A R Horrecks and S C Anand, Woodhead Publication Ltd, Cambridge, 2000
5. "Textiles for protection, Ed. Richard A. Scott, Woodhead Publication Ltd, Cambridge.
6. "Wearable Electronics and Photonics, Ed. Xiaoming Tao, Woodhead Publication Ltd, Cambridge


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PATTI KALYANA (S/MALKHA)

TT-404N
TEXTILE COSTING

L T P
4 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

Unit I: Fundamentals of Costing

Cost concept. Classification of cost, elements of cost. Methods of costing. Unit and operating costing. preparation of cost sheet. Estimation of cost of production and component of total cost. Profit planning, job order, batch process, conversion cost. Inventory costing.

Unit II:

Cost-Profit-Volume analysis, break even point, contribution margin, margin of safety, angle of incidence. Capital budgeting.

Unit III: Cost Structure in Textile Industry


Cost structure, cost of raw material/labour/utilities. Cost control, standard costs, determination of cost per kg of yarn, per metre of fabric, cost of dyeing/printing per metre of fabric, yarn realization, measures of cost reduction, selling price decision for yarn/fabric. Concept of depreciation.

Unit IV: Labour Allocation and Rationalization of Labour

Labour allocation in different department of textile mill. Work-load standards for card tenters, speed frame and ring frame tenters, doffers and winders, weavers, etc. Costing of large package spinning and optimum package size. Costing of Open end spun and Air-jet spun yarns. Waste and its control at spinning and weaving. Costing of shuttle-less looms like Sulzer, air-jet. Economics of shuttle loom,

References:

1. Textile Costing by SITRA.
2. Khan and Jain, "Management Accounting", Tata McGraw-Hill Publication.
3. Oowler, L. W. J., Brown, J. L., "Wheldon's Cost Accounting and Cost Methods", ELVS Publication.


REGISTRAR
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PATTI KALYANA (S/MALKHA)

TT-406N
MANAGEMENT OF TEXTILE PRODUCTION

L T P
4 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

UNIT-I: Indian Textile Industry

Structure of Indian Textile Industry, Organized and Decentralized Sector, Handloom sector, Production and export, Sickness in Textile Industry.

Location and Layout : Plant location and site selection , Factors affecting location , plant lay- out, Different type of layouts, Layout plan for spinning, weaving and process house.

UNIT-II: Production, Planning and Control

Product mix decision, linear programming concept, Supply chain management, Concept of zero defects, Management information system.

Inventory Management: Inventory concepts, techniques to reduce inventory, ABC analysis, EOQ, P and Q systems.

Enterprise Resource Planning: ERP concept, Applications of ERP, Ways to use ERP.

UNIT-III:

Air Conditioning and humidification: Humidification systems used in textile mills, Development in humidification systems.

Power Consumption: Energy consumption in textile machines, Measure to reduce power consumption.

Maintenance Management: Maintenance systems, Maintenance schedules.

Work Management: Basics of work load and work assignment, effect of end breaks on work assignment.

UNIT-IV:

Working Environment: Measures of good working environment, Measures to minimize noise, terms related to lighting, illumination level required for different departments, Material handling equipments, Accidents and safety engineering, Fire prevention and protection.

Suggested Text Books and References:

1. Dudeja V D , “*Management of textile Industry*” Textile Trade Press Ahmedabad (1981)
2. Ormerod A, “*Textile Project Management*” The Textile Institute , ManchesterUK(1992)
3. Talukdar M K ,Srirammulu P K and Ajgaokar D B , “*Weaving – Machine , Mechanism and Management .*” Mahajan Publisher Private Ltd., Ahmedabad , India (1998)
4. Grade A R and Subramanian T A , “*Process Control in Spinning,*” 3rd Edition., ATIRA Ahmedabad, (1987)
5. Higgins, “*Handbook of Maintenance Management,*” Prentice Hall New York (1999).


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TT-416N

HIGH PERFORMANCE FIBRES

L T P
3 1 -

Sessional: 25 Marks

Exam: 75 Marks

Total: 100 Marks

Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

Unit I:

Fully aromatic polyamide or aramid fibers: Nomex and Kevlar - Polymerization, spinning properties and applications

Ordered Polymeric Fibers: High molecular weight polyester, rigid rod and ladder polymers such as PBL, PBZT, PBO, PBI.

Unit II:

Carbon Fibers: Manufacturing of carbon fibres from PAN precursors, viscose and pitch fibres. Pre-oxidation, carbonization and graphitization. Chemical and structural changes in structure during these fibers. Structure and Properties of these fibres.

Liquid crystal fibres, Gel spinning

Unit III:

Flexible Chain based high performance fibers: High and ultramolecular weight polyethylene. Structure and properties of these fibres.

Optical Fibers: Definition, working principle of optical fibers, different materials used for manufacturing of optical fibers, different types of optical fibers. Manufacturing process of optical fibers and their applications. Hollow and profile fibres, design of spinnerette for such fibres.


Unit IV:

Glass fibres, PEEK fibres, Soyabean fibres etc. Membrane technology. Blended and bicomponent fibres. Medical textiles (fibres used in Medical textiles). Superabsorbent fibres.

Plasma modification. Radiation processing. Industrial tapes. Biaxially oriented films and film fibres. Barrier films and coatings.

Suggested Text Books and References:

1. P. Bajaj & A.K. Sengupta, "High performance fibers"
2. M. Lewin & J. Preston, "High Technology Fibers (Part A, B, C, D)"
3. Lewin & Pearce, "Handbook of Fiber Chemistry". CRC Press LLC; 2 edition (Feb 26 998)


REGISTRAR
PANIPAT INSTITUTE OF ENGINEERING TECHNOLOGY
PATTI KALYANA (S. MALKHA)

TT – 418N
Industrial Engineering

L T P
3 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

UNIT I

Introduction to work study, Method study, Basic procedure, Recording techniques (charts and diagrams), Elemental breakdown, Micro-motion studies, Therbligs, SIMO-chart, Principles of motion –economy.

Introduction, Objectives, technique, (time) information recording, methods of timings, Time study allowances, Work sampling technique, Performance rating and its determination PMTS, M. T. M., Work factor.

UNIT II

Principles of organization, Importance and characteristics of organization, Organization theories, Classical Organization theory, Neo-Classical organization theory, Modern organization theory, Types of organization, Military or line organization, Functional organization, Line and staff organization, Committees.

Objectives of PPC, Functions of PPC, Preplanning and planning, Routing, Estimating, scheduling-master schedule, and Daily schedule, Gantt chart, Dispatching – centralized vs. decentralized, Control, Follow up and progress reporting.

Introduction, Product development, Product characteristics, Role of product development, 3Ss – Standardization, Simplification and Specialization.

UNIT III

Introduction, Objectives and importance of sales forecasting, Types of forecasting, Methods of sales forecasting-Collective opinion method, Delphi technique, economic indicator method, Regression analysis, Moving average method, Time series analysis.

Introduction, Functions of inventory, Types of inventory, Control importance and functions, Inventory costs, Factors affecting inventory control, Various inventory control models, A, B, C analysis, Lead-time calculations.

UNIT IV

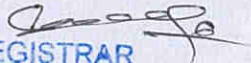
Introduction, Objectives, Concept and life cycle of a product and V.E., Steps in VE, Methodology and techniques, Fast diagram, Matrix method.

Various concepts in industrial engineering

- a) WAGES AND INCENTIVES, -Concept, Types, Plans, Desirable characteristics.
- b) ERGONOMICS, - its importance, Man-machine work place system, Human factors considerations in system design.
- c) SUPPLY CHAIN MANAGEMENT, - its definition, Concept, Objectives, Applications, benefits, Some successful cases in Indian Industries.
- d) JIT, - Its definition, Concept, Importance, Misconception, Relevance, Applications, Elements of JIT (brief description).
- e) MRP-Introduction, Objectives, factors, Guide lines, Techniques Elements of MRP system, Mechanics of MRP, MRP-II
- f) TIME MANAGEMENT,-Introduction, Steps of time management, Ways for saving time, Key for time saves.

Reference and Textbooks:

- ❖ Production planning and control by S.Elion
- ❖ Modern production Management by S.S Buffa
- ❖ Industrial engg. and management manufacturing system by Surenderkumar, Satyaprakashan
- ❖ Essence of Supply Chain Management by R.P mohanty and S.G Deshmukh
- ❖ Industrial engg. and management by S Sharma and Savitasharama


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PATTI KALYANA (S/MALKHA)

TT- 420N
NONWOVEN TECHNOLOGY

L T P
3 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

UNIT-1: Web Formation Technique

Definition of nonwoven, manufacturing steps of nonwoven fabrics, major fibres which are used for manufacturing of nonwovens, classification of nonwoven.

Parallellaying and Cross laying techniques, Aerodynamic laying, wet laying technique, spun-bond technique and melt-blown technique.

UNIT-2: Mechanical Bonding

Needle punching machine, needle board parameters, needle design, needle parameter, needle modification. Factors affecting fabric structure and fabric mechanical properties. Stitch bonding technique- Maliwat & Malivlies Stitch Bonding Technique. Calculation of machine production.

UNIT-3: Chemical and Thermal Bonding

Bonding agents, forms and classes of adhesives or binders, characteristics required, factors affecting adhesion, various bonding technique: spraying bonding, print bonding, saturation bonding.

Advantages of thermal bonding over chemical bonding, different types of binders. Bonding methods: hot calendaring, belt calendaring. Factors that affect the properties of calendar bonded products. Fusion bonding, bonding types: through perforated drums and perforated belts.

UNIT-4

Dry finishing of nonwoven- Shrinkage, Wrenching, Creeping, and Glazing. Wet finishing of nonwoven: Washing, Dyeing, Printing. Chemical finishing: Antistatic, Antimicrobial, Water repellent, Flame retardant, Water absorbency.

Defects of nonwoven fabrics. Test methods for nonwovens. Application of nonwoven materials.

Suggested Text Books and References:

1. Madhavamoorthy, P., Shetty, G.S., NONWOVEN, Mahajan Publishers Pvt. Ltd., 2005
2. Lunenschloss J and Albrecht W, "Non-woven Bonded Fabric", Ellis and Horwood Ltd., UK(1985)
3. CremaRadco, "Manual of nonwovens", Textile trade Press, UK(1971)
4. Albrecht W, Fuchs H and Kittelmann, "Nonwoven Fabrics", Wiley-VCH Weinheim(2003)


REGISTRAR
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PATTI KALYANA (S/MALKHA)

TT-422N

PROCESSING OF MAN MADE FIBRES AND BLENDED TEXTILES

L T P
3 1 -

Sessional: 25 Marks
Exam: 75 Marks
Total: 100 Marks
Time: 3 hrs

Note- Nine questions will be set in the question paper i.e. two from each unit. The students will be required to attempt one question from each unit. Question no. 1 is compulsory. It is objective type 10 questions of multiple choices covering the entire four units.

UNIT -I

Pretreatment of man made and blends : Pretreatment of polyester , nylon , acrylic, and their blends . viz. singeing ,desizing , scouring , bleaching ,mercerizing and heat setting. Pretreatments machineries.

UNIT -II

Dyeing of man made : Role of fibre structure in dyeing of man made .Dyeing of polyester & its blend. HTHP, Thermofixation and carrier dyeing. Dyeing of nylon and its blend. Dyeing of acrylic with disperse, acid and cationic dyes. Dyeing of differentially dyeable man made.

UNIT - III


Printing of man made and blends: Direct, resist and discharge styles of printing of polyester, nylon, acrylic and their blends, pigment printing and carbonised prints of polyester. Transfer printing of polyester , nylon, acrylic and their blends.

UNIT -IV

Finishing of Manmade and Blends: Mechanical finishing: calendaring, raising, emerising, decatizing. Optical whitening , anti-pilling and durable press finishes . Soil release, water repellent and flame retardant finishes on manmade and blends. Anti static finish.

Suggested Text Books and References:

1. Nunn D M, "The dyeing of syntetic polymer and acetate fibres," Dyers company publication trust London (1979)
2. Shore J, "Colorants and auxiliaries ," Vol-I and II , Society of dyers and colorists , Bradford , England (1990)
3. Gulrajani M L , "Polyester Textiles ," Book of paper : 37th National Textile Conference ,The Textile Association (India) Mumbai (1980).
4. Gulrajani M L , "Blended Textiles ," Book of paper : 38th National Textile Conference .The Textile Association (India) Mumbai (1981).
5. Datye K V and Vaidye - A A, " Chemical Processing of Synthetic Fibres and blends," John Wiley and Sons,New York (1984).


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