Registration Number | | | | | | | | |

INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY

Varanasi

Post Diploma in Textile Processing

April/ May - 2026 Semester Examination

(Regulation-2025)

Semester : I Time:3 Hours

Course Code & Title : **25PDTP101 Textile Fibre and Yarn Manufacturing** Max Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Compare addition and condensation polymerisation.
2. Identify suitable solvent for dissolving cotton and polyester fibre in solubility test.
3. Enlist four important physical properties of wool fibre.
4. Indicate the raw material used for the production of cellulose acetate and lyocell fibre.
5. Classify the various types of polypropylene fibre based on stereoregularity.
6. Compare the characteristics of high stretch and bulk textured yarn.
7. State the objectives of blending fibres.
8. What is comber noil?
9. Compare the difference between rotor and ring spinning based on working principle.
10. Name two yarn properties affecting dyeing and printing.

PART-B ((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Enlist in detail about the desirable characteristics of textile fibres. (6)

(OR)

B. Highlight the importance of orientation, crystalline and amorphous structure of fibre. (6)

C. Classify the textile fibres based on textile institute recommendation. (10)

(OR)

D. Compare and contrast the main characteristics of glass transition and melting point temperature of polymers. (10)

12. A. Explain the harvesting and cultivation of cotton fibres. (6)

(OR)

B. Outline the manufacturing and important chemical properties of silk fibre. (6)

C. Illustrate the flow chart for production of viscose rayon fibre in detail with their important physical properties. (10)

(OR)

D. Compare the working principle of melt, dry and wet spinning with suitable diagram. (10)

13. A. Compare the chemical properties of nylon and polyethylene fibre. (6)

(OR)

B. Describe in detail about the changes incorporated in structure and physical properties of the synthetic fibres by drawing process. (6)

C. Explain about the two routes of production of polyester fiber in detail. (10)

(OR)

D. Demonstrate in detail about the production of aramid fibres with suitable diagram. (10)

14. A. Illustrate the flow chart of combed yarn spinning process. (6)

(OR)

B. Differentiate between woollen and worsted spinning systems. (6)

C. Explain the speed frame process and formation of roving with suitable diagram. (10)

(OR)

D. Demonstrate about the drawing process in cotton spinning line and state its objectives and working principle. (10)

15. A. Classify various types of yarns with examples. (6)

(OR)

B. Differentiate between direct and indirect yarn numbering systems. (6)

C. Explain the principle and working of air-jet spinning with diagram. (10)

(OR)

D. Enlist the different yarn faults, their causes and remedies. (10)

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Semester : I Time:3 Hours

Course Code & Title : **25PDTP102 Fabric and Garment Manufacturing** Max. Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Define the term warping?
2. What is denting in a loom?
3. Classify looms based on weft insertion method.
4. Name the basic elementary weaves.
5. Classify type of knitting machines.
6. Define Nonwoven.
7. Differentiate between garment and apparel.
8. Define trims and accessories.
9. Define seam.
10. List any two parts of a single needle lock stitch machine

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Classify textile fabrics based on structure with suitable examples. (6)

(OR)

B. Explain the processes of drawing-in and denting in loom preparation. (6)

C. Describe the complete weaving preparatory process including winding and warping with diagrams. (10)

(OR)

D. Explain the sizing process in detail — objectives, sizing materials, process steps, and advantages. (10)

12. A. Describe the passage of warp through different parts of a loom. (6)

(OR)

B. Describe plain, twill, and satin weaves. (6)

C. Explain primary, secondary, and auxiliary motions in weaving in detail with examples. (10)

(OR)

D. Discuss various types of fabric defects, their causes, and remedies in detail. (10)

13. A. Describe the main parts of a circular knitting machine. (6)

(OR)

B. Explain in detail about the Nonwoven Manufacturing Process technique. (6)

C. Describe Flatbed knitting machines with parts and functions. (10)

(OR)

D. Discuss the characteristics and applications of knitted and nonwoven fabrics in detail. (10)

14. A. Explain the classification and selection of garments. (6)

(OR)

B. Explain any three garment components. (6)

C. Describe the sequence of garment manufacturing processes in the apparel industry with objectives of each stage. (10)

(OR)

D. Discuss trims and accessories used in garments. Also, highlighting the importance of care labels. (10)

15. A. Explain the Federal classification of stitches with examples. (6)

(OR)

B. Discuss seam types, and their importance in garment construction. (6)

C. Discuss the classification of sewing machines based on bed type, stitch type, and application. (10)

(OR)

D. Explain the parts of Single Needle Lock Stitch (SNLS) machine and their functions in detail. (10)

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Semester : **I** Time:3 Hours

Course Code &Title : **25PDTP103 Technology of Preparatory Processing of Textiles** Max. Marks:100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Write the composition of raw cotton.
2. Distinguish between shearing and cropping.
3. Define degumming of silk**.**
4. State the object of milling.
5. Mention the chemical changes occur in wool bleaching with Hydrogen Peroxide.
6. Why heat setting is essential for polyester?
7. What is the working principle of a hydro extractor?
8. Why is preparatory treatment required before dyeing cotton?
9. What is the function of a detergent in scouring?
10. State the role of stabilizer in peroxide bleaching.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Discuss the effect of pH, temperature and time during peroxide bleaching. (6)

(OR)

B. Compare the performance of hydrogen peroxide with sodium hypochlorite bleaching. (6)

C. Discuss the importance of mending and stitching in preparatory processes? Discuss in detail about the scouring of cotton fabric with suitable recipe. (10)

(OR)

D. Describe an eco-friendly method of desizing of cotton along with merits and demerits. (10)

12. A. Discuss the morphological structure and important chemical properties of raw silk. (6)

(OR)

B. Explain the freezing method of wool scouring and mention its advantages. (6)

C. List the various impurities present in raw wool. Describe the Emulsion and Suint scouring processes of wool with a neat diagram. (10)

(OR)

D. Describe the enzymatic degumming process of silk and mention its merits and demerits. Why is it considered superior to conventional methods? (10)

13. A. Explain the principle of potting and its effect on dimensional stability of wool fabrics. (6)

(OR)

B. Discuss the influence of residual sericin on peroxide bleaching efficiency in silk. (6)

C. State the objects of setting process of woolen fabrics. Describe the Crabbing and Decatising processes of setting of woolen fabrics. (10)

(OR)

D. Discuss the need for preparatory treatment of synthetic fibres. Explain the scouring and bleaching procedures for Polyester and Acrylic. (10)

14. A. What are the precautions to be taken during singeing process? (6)

(OR)

B. Discuss the advantages of continuous preparatory processing over batch processing. (6)

C. Discuss in detail about the continuous scouring and bleaching process of 100% cotton using J-Box with suitable recipe. (10)

(OR)

D. Describe the principle and working of Kier machine with a neat diagram along with advantages and disadvantages. (10)

15. A. Classify the surfactants with suitable examples. (6)

(OR)

B. Discuss the effect of water hardness in scouring and bleaching. (6)

C. Describe the function of sequestering agents and optical brighteners used in wet processing of textiles with suitable examples. (10)

(OR)

D. Mention the defects and damages caused in Desizing, Scouring and Bleaching of cotton. (10)

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Semester : **I** Time:3 Hours

Course Code & Title : **25PDTP104 Technology of Dyeing – I** Maximum Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Define dyes and pigments.
2. What is meant by auxochrome in dye chemistry?
3. State the principle of dyeing with direct dyes.
4. What is the role of reducing agents in sulphur dyeing?
5. Classify vat dyes based on chemical composition.
6. What are mono-functional and bi-functional reactive dyes?
7. What is meant by the iso-electric point of wool?
8. List any two dyes used for silk dyeing.
9. What is the function of a Jigger dyeing machine?
10. Define padding mangle and mention its application.

PART-B ((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Explain the classification of dyes based on their application to textile fibres. (6)

(OR)

B. Explain the criteria for selection of dyes for textile materials. (6)

C. Brief the dyeing terminology of substantivity, solubility, affinity and the role of zeta potential in cotton dyeing. (10)

(OR)

D. Define the terms as percentage shade, percentage exhaustion, percentage expression and material to liquor ratio (MLR). (10)

12. A. Explain the principle and method of application of direct dyes on cotton. (6)

(OR)

B. Describe the after-treatments of cotton dyed with direct dyes. (6)

C. Explain the principle and method of application of azoic dyes with the functions of chemicals used. (10)

(OR)

D. Explain the principle and method of application of sulphur dyes and discuss the effect of process conditions. (10)

13. A. Explain the principle of vat dyeing on cotton. (6)

(OR)

B. Describe the application of solubilized vat dyes on cotton. (6)

C. Explain the classification and application method of reactive dyes on cotton. (10)

(OR)

D. Discuss the concept of mono-functional and bi-functional reactive dyes and their dyeing mechanism. (10)

14. A. Explain the structural concept of wool in relation to dyeing behaviour. (6)

(OR)

B. Explain the structural concept of silk and its dyeing characteristics. (6)

C. Explain in detail the dyeing of silk with metal complex dyes and mention the functions of chemicals used and merits & demerits. (10)

(OR)

D. Describe the dyeing process of wool with acid dyes including mechanism and function of chemicals used. (10)

15. A. Explain the working principle of a winch dyeing machine. (6)

(OR)

B. Describe the cabinet hank dyeing machine and its applications. (6)

C. Explain the construction and working principle of a yarn package dyeing machine with advantages and disadvantages. (10)

(OR)

D. Describe the construction and working principle of a padding mangle used in wet processing. (10)

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