Registration Number | | | | | | | |

INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY

Varanasi

Post Diploma in Textile Processing

April/ May - 2026 Semester Examination

(Regulation-2021)

Semester : I Time:3 Hours

Course Code &Title : **PDTP101 - FIBRE SCIENCE** Maximum Marks:100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Define a textile fibre
2. What are the types of polymerization?
3. What are the techniques of spinning man-made fibres?
4. What are the types of texturisation process?
5. Give the physical structure of cotton fibre
6. How oxy-cellulose is formed?
7. Name the raw material used for viscose manufacture
8. What is the purpose of heat setting?
9. Name the raw material used for Nylon 6,6 manufacturing
10. Give the physical properties of Acrylonitrile fibre

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Give the classification of textile fibres (6)

    B. Explain the types of polymerization with examples. (10)

(OR)

    C. Give the important characteristics of textile fibres (6)

    D. Explain the concept of Crystallinity,Amorphous region,Glass transition temperature and Melting point. (10)

12. A. What are the applications of spin finish? (6)

    B. Explain the various techniques of spinning man-made fibres (10)

(OR)

	C.	Give the importance of texturising process	(6)
	D.	Explain various types of texturisation process with sketch.	(10)
13.	A.	Give the physical properties of cotton fibre	(6)
	B.	Give the physical and chemical properties of Wool fibre	(10)
		(OR)	
	C.	Explain the formation of hydro cellulose	(6)
	D.	Explain the concept of Zwitter ion and Isoelectric region in protein fibres	(10)
14.	A.	Give the chemical properties of Viscose fibre	(6)
	B.	Explain with flow chart the manufacturing of Lyocell fibre	(10)
		(OR)	
	C.	Give the physical properties of Polyester fibre	(6)
	D.	Explain with flow chart the manufacturing of Polyester filament	(10)
15.	A.	Give the physical properties of Nylon 6,6 fibre	(6)
	B.	Explain with flow chart the manufacturing process of Nylon 6 fibre	(10)
		(OR)	
	C.	Give the chemical properties of PP fibres	(6)
	D.	Explain with flow chart the manufacturing process of Acrylonitrile fibre	(10)

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Post Diploma in Textile Processing
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Semester : **I** Time:3 Hours

Course Code & Title : **PDTP102 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. Why is grey cotton material hydrophobic?
2. What is the object of bleaching cotton textiles?
3. Write down a suitable recipe for the kier boiling of colour woven goods.
4. Compare and contrast the bleaching agent's sodium hypochlorite and hydrogen peroxide.
5. Write short note on J box bleaching.
6. Define souring process.
7. Define the term carbonizing of wool fibre.
8. Define the term antichlore treatment.
9. Write the short note scouring of wool.
10. Define degumming and write the defects of raw silk.

PART-B ((6+10) ×5=80 Marks)

Answer all the questions in detail

11. A. Compare the bleaching method using sodium hypochlorite and sodium chlorite. (6)

    B. What is singeing and explain commercial method of singeing process with neat diagram? (10)

(OR)

    C. What is saponification and emulsification? (6)

    D. Explain the working of a pressure kier in scouring cotton material with a neat diagram. (10)

12. A. Explain milling of woollens. (6)

    B. Explain the types of scouring processes for wool fabric. (10)

(OR)

C. What are the merits and demerits of continuous de-sizing? (6)

D. Explain different methods of degumming of silk fabric. (10)

13. A. Why is it necessary to scour manmade fibres? (6)

B. Explain the mechanism of bleaching of wool with hydrogen peroxide. (10)

(OR)

C. Write suitable recipes and conditions of bleaching for polyester /cotton blended fabric. (6)

D. Explain setting of woollens fabrics as like crabbing, potting and decatising. (10)

14. A. What are the precaution to be taken during kier boiling? (6)

B. Explain the construction and working of hydroextractor machine. (10)

(OR)

C. State the precaution you would take while gas singing a fabrics? (6)

D. Explain the preparatory process sequence for different cotton fabrics to be dyed in medium shade. (10)

15. A. Explain the defects and damage caused in scouring process. (6)

B. Explain the function of auxiliaries used in bleaching process as like surfactant, sequestering agent, wetting agent. (10)

(OR)

C. Explain the defects and damage caused in singeing process. (6)

D. Explain the construction and working of continuous bleaching machine. (10)

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Semester : **I** Time:3 Hours

Course Code & Title : **PDTP103 TECHNOLOGY OF DYEING-I** Maximum Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Distinguish between dye and pigment.
2. State the influence of pre-treatment on dyeing properties.
3. Distinguish between hot brand and cold brand reactive dyes.
4. Why is zeta potential important in Textile processing?
5. State the process parameters influencing vat dyeing of cotton fabrics.
6. Classify Reactive Dyes?
7. Mention the types of acid dyes based on application.
8. List the different types of auxiliaries used in dyeing of protein fibre-fabrics.
9. What are banned dyes?
10. Why are azo dyes banned in textile processing?

PART-B ((6+10) ×5=80 Marks)

Answer all the questions in detail

11. A. Discuss the concepts of theory of dyeing? (6)

    B. Explain the basic dyeing mechanisms and application techniques for textile materials. (10)

(OR)

    C. Explain briefly the criteria for selection of dyes? (6)

    D. Explain in detail the following terms (10)
    i) Percentage of Exhaustion ii) Percentage Expression iii) Percentage of Shade

12. A. Explain the effect of M:L ratio, electrolyte and temperature during the dyeing with direct dyes. (6)

    B. Discuss in detail the principles methods of application and function of chemicals used in direct dyeing. Also explain the effect of process condition on dyeing with direct dyes. (10)

(OR)

    C. Describe the application of Azoic dyes with function of chemicals used and effect of process condition. (6)

    D. Elaborate on the principle application methods, chemical functions and process condition of Sulphur dyeing. (10)

13. A. Explain the principal steps involved in dyeing of cotton fibres using solubilized vat dyes. (6)

B. Explain the principle and methods of application for vat dyes on cotton. (10)

(OR)

C. Describe briefly the concept of mono functional and bi- functional reactive dyes on cotton. (6)

D. Explain the principle and method of application for reactive dyes on cotton. (10)

14. A. Describe the mechanism of dyeing using metal complex dyes on Silk. (6)

B. Explain the principle and methods of dyeing silk with metal complex dyes (10)

(OR)

C. Explain the types of chemical reactions involved in dyeing of wool using acid dyes. (6)

D. Explain the principle and method of dyeing wool with acid dyes. (10)

15. A. Explain the concept of banned dyes and their environmental and health impacts. (6)

B. Explain the working principle of a winch dyeing machine with advantages and disadvantages (10)

(OR)

C. What are the similarities and difference between yarn package dyeing and hank dyeing machines? (6)

D. Describe the construction and working of a padding mangle with a neat diagram. (10)

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Semester : I Time:3 Hours

Course Code & Title : **PDTP104 Introduction to Textile Manufacture** Maximum Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Define textile fibre and give two examples used in textile industries.
2. Differentiate between weaving and knitting.
3. Define cleaning efficiency in the blow room and state how it is determined.
4. What are the objectives of the combing process in yarn manufacturing?
5. Why tex system of yarn numbering is called as universal system? Validate.
6. Formulate the size recipe for cotton and cotton blended yarn.
7. Draw a design, draft and peg plan of 2/1 twill weave.
8. How is flat knitting different from circular knitting?
9. Name any four types of shuttleless looms.
10. Write the formula to calculate the warp weight, weft weight and GSM?

PART-B ((6+10) ×5=80 Marks)

Answer all the questions in detail

11. A. Highlight the essential and desirable properties required for a fibre to be suitable for textile manufacturing. (6)
    B. Illustrate the classification of textile fibres using a tree chart. (10)

(OR)

    C. Differentiate single, folded, and fancy yarns based on their structure, and discuss their applications. (6)
    D. Give a detailed comparison of woven, knitted, and non-woven fabrics based on their construction methods and fabric properties. (10)

12. A. Outline the sequence of machines used in the short staple spinning system for producing carded yarn. (6)
    B. Write the objectives of the following (i) Blow room (ii) Carding (iii) Ring frame (iv) Combing. (10)

(OR)

C. Differentiate between the speed frame and ring frame with respect to their functions and output. (6)

D. With neat diagram, outline the passage of material through ring frame. (10)

13. A. Explain the common yarn defects occurring during spinning and discuss their causes along with suitable remedies. (6)

B. Describe the working principles and features of high-speed warping machine with a neat sketch. (10)

(OR)

C. Discuss the yarn numbering systems used in textiles with suitable examples. (6)

D. Analyze the different ingredients used in the preparation of size paste and explain their functions with suitable examples. (10)

14. A. Differentiate between plain and twill weave structure and properties with suitable examples. (6)

B. Discuss in detail the constructional features and properties of plain, twill, satin, and sateen weaves with suitable weave structure. (10)

(OR)

C. Explain the classification of warp and weft knitting machines. (6)

D. Describe the structure and properties of basic weft knitted fabrics. (10)

15. A. Explain the functions and working mechanism of pit loom with neat diagram. (6)

B. Explain the principle of weft insertion in any two shuttleless looms with diagram. (10)

(OR)

C. With a neat sketch, explain the passage of material through power loom. (6)

D. Illustrate the defects occurring in woven fabrics due to improper functioning of key weaving mechanisms. (10)

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