Registration Number | | | | | | | |

INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY

Varanasi

Post Diploma in Textile Processing

April/ May - 2026 Semester Examination

(Regulation-2021)

Semester : **III** Time:3 Hours

Course Code & Title : **PDTP 301 Technology of Printing - II** Maximum Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Differentiate between the Ikat and Bandhani styles of resist printing.
2. Write the chemical name and formula of the commonly used reducing agent "Safolin."
3. Why is the discharge style of printing preferred in silk fabric printing?
4. Which types of dyes are most preferred in silk printing?
5. Which type of disperse dye is suitable for thermo-fixation methods of color fixation in printing?
6. Write the names of two binders used in pigment printing.
7. Which types of dyes are suitable for the transfer printing process, and why?
8. What precautions need to be taken in the printing of knitted fabric?
9. State the materials used in flocking for flock preparation.
10. State the four natural colors used in Kalamkari printing.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Brief about the chemistry of various type of discharging agents used in textile printing process of cotton fabric. (6)

    B. Discuss the methods of producing colored discharge prints on cotton fabric dyed with vat dyed fabric. (10)

(OR)

    C. Explain the chemistry involved in the discharge printing of cotton fabric. (6)

    D. Discuss the methods of producing white and colored discharge prints on cotton fabric dyed with Azoic colors. (10)

12. A. Evaluate the impact of auxiliaries on shade depth and colour fastness in Metal Complex dye printing of silk. (6)

B. Examine the role of acid dyes in silk printing, highlighting their application method and performance benefits or shortcoming over the metal complex dyes. (10)

(OR)

C. Describe the process of printing silk fabric using acid dyes in discharge printing (6)

D. Critically discuss how traditional discharge methods on silk can be modernized using advanced machinery or chemicals. (10)

13. A. Brief about the chemistry of binders used in pigments printing of P/C blended fabrics. (6)

B. Discuss the economic and technical aspects of using pigment printing versus Digital printing on polyester/cotton fabrics (10)

(OR)

C. Discuss the role and chemistry of crosslinking agents and fixers used in pigment printing of P/C blended fabrics. (6)

D. Why is the discharge style of printing preferred over the direct style of printing? Also, discuss the challenges, benefits, and fabric quality (including design aspect) with respect to fabrics printed by the direct and discharge styles of printing. (10)

14. A. Differentiate between the Demand on Drop and Continuous Ink Jet Technology of digital printing. (6)

B. Explain the working principle of transfer printing machines along-with suitable diagram and their application in textiles. (10)

(OR)

C. Describe the techniques suitable for printing of knitted cotton fabrics, including precautions to avoid distortion and back side penetration of paste. (6)

D. Elaborate the working principle of the Continuous ink Jet Digital Printing Machine with suitable diagrams. (10)

15. A. Differentiate between the Sanganeri Print and Bagru print. (6)

B. Why has flock printing gained popularity in the textile market? Also, describe the electrostatic method of flock printing with a diagram, along with its advantages. (10)

(OR)

C. Bried about the preparation of colors in Ajrakh Printing. (6)

D. Write the short note on the following. (10)

I. Khadi (White & Colored)

II. Batik

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Semester : **III** Time:3 Hours

Course Code &Title : **PDTP 302 Technology of Finishing** Maximum Marks:100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Classify finishing.
2. Write about liquor ammonia mercerization.
3. What is aroma finish?
4. What are durable and temporary finishes?
5. Name two antistatic agents used in textiles.
6. Name two soil release finishes used for polyester and its blends.
7. What is foam finishing?
8. Write about peach finishing.
9. Classify softeners.
10. Write the two examples of cationic softeners.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write the importance of finishing. (6)

    B. What are the structural changes taking place in mercerization? Describe yarn mercerization machine with neat diagram. (10)

(OR)

    C. Explain mechanism of creasing. (6)

    D. Describe wash & wear and durable press resin finishing. (10)

12. A. Explain pyrolysis. What are flame retardant finishes for cotton? (6)

    B. Describe bio polishing and UV protection finishing. (10)

(OR)

    C. Differentiate between water proof & water repellent finishing. (6)

    D. Describe mildew proof and rot proof finishing. (10)

13. A. Write the causes of pilling in textiles. (6)

B. What is soil release finishing? Write the mechanism of soil retention. (10)

(OR)

C. Explain anti-static finishes. (6)

D. What are the various soil release finishes for cotton? (10)

14. A. Explain calendaring and raising finishing. (6)

B. Write the object of heat setting. Explain various techniques of foam application with neat diagram of machine used. (10)

(OR)

C. Write the drawbacks of foam finishing. (6)

D. Explain the sanforisation process with neat diagram of machine used. (10)

15. A. Explain the mechanism of weight reduction of PET by using alkali. (6)

B. Describe the cationic and silicon emulsion softeners used in textiles. (10)

(OR)

C. What are reactive softeners used in finishing? (6)

D. What is nano finishing? Write about micro encapsulation technique used in finishing process. (10)

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Semester : **III** Time:3 Hours

Course Code & Title : **PDTP303 Chemistry of Intermediates & Dyes** Max. Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Define natural dyes and synthetic dyes.
2. What is coal tar distillation?
3. What is nitration? Give an example.
4. Classify dyes based on chemical structure.
5. What are azo dyes?
6. Write a short note on vat dyes.
7. What are disperse dyes?
8. List any two important dye intermediates.
9. What is H-acid?
10. Name any two synthetic dyes and their uses.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Explain the raw materials used in dye manufacture and coal tar distillation process. (6)

    B. Describe unit processes in organic synthesis such as halogenation, nitration, sulphonation and diazotisation with examples. (10)

(OR)

    C. Classify dyes based on chemical structure with suitable examples. (6)

    D. Explain the relationship between dye structure, application and fibre interaction. (10)

12. A. Discuss the chemistry of anthraquinone vat dyes. (6)

    B. Explain in detail the chemistry of indigoid and thioindigoid dyes. (10)

(OR)

    C. Write detailed notes on Azo dyes (6)

    D. Explain relationship between dye structure, application and dye fibre interaction. (10)

13. A. Explain Chemistry of anthraquinone vat dyes? (6)
B. Write detailed note on solubilised vat dyes. (10)

(OR)

C. Explain chemistry of indigoid dyes? (6)
D. Write detailed note on disperse dyes. (10)

14. A. Explain the preparation and preparation and properties of aniline. (6)
B. Discuss important dye intermediates derived from benzene and naphthalene. (10)

(OR)

C. Describe the structure and importance of H-acid. (6)
D. Explain intermediates obtained from anthracene. (10)

15. A. Write the preparation and uses of Naphthol AS. (6)
B. Explain the synthesis and properties of Indigo dye (10)

(OR)

C. Describe the preparation of Rhodamine B and Auramine. (6)
D. Explain the manufacture of Methylene Blue and Alizarin. (10)

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Semester : **III** Time:3 Hours

Course Code &Title : **PDTP304 Ecology & Pollution Control in Textile Industry** Maximum Marks:100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. What is Natural & Man-made Environment?
2. Differentiate between Primary and Secondary Pollutants.
3. Mention any four causes of air pollution.
4. What is meant by Air Quality Standards?
5. Classify water pollutants.
6. What do you mean by COD and BOD?
7. Give two examples of chemical treatment methods.
8. State any two functions of primary treatment in ETP.
9. Mention any two harmful effects of noise pollution.
10. What is an Eco-label?

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Describe the Components and Segments of Environment. (6)

    B. Describe the harmful effects of environmental pollution. (10)

(OR)

    C. Briefly describe various pollutants in Textile Industries. (6)

    D. Classify pollutants and explain textile pollutants in detail. (10)

12. A. Classify air pollutants and explain with suitable examples. (6)

    B. Explain in detail the sources of air pollution in a textile mill and suggest suitable control measures. (10)

(OR)

C. Discuss indoor and outdoor air pollution. (6)

D. Study the harmful chemicals used in textile industry and explain their impact on air quality and human health. (10)

13. A. Describe the various sources of wastewater in textile wet processing. (6)

B. Discuss the characteristics of textile wastewater such as SS, TDS, DO, COD and BOD and explain their environmental significance. (10)

(OR)

C. Describe water conservation methods in textile industry. (6)

D. Describe the problems associated with textile wastewater and explain chemical recovery and reuse methods. (10)

14. A. Describe sources of solid waste in textile industry and methods of waste reduction. (6)

B. Explain in detail the methods of wastewater/effluent treatment including physical, chemical and biological processes with suitable examples. (10)

(OR)

C. Discuss methods of textile dye house wastewater decolourization. (6)

D. Explain the tolerance levels of effluents in wet processing of textiles and their environmental significance. (10)

15. A. Describe preventive and control measures of noise pollution in textile industry. (6)

B. Define Noise Pollution and discuss in detail its harmful effects on human health and environment. (10)

(OR)

C. Explain noise pollution parameters and their significance. (6)

D. Describe ISO 14000 series and current environmental policies related to textile industry and explain their significance. (10)

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