

Registration Number

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INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY

Bargarh/Fulia/Guwahati/Jodhpur/Salem/Varanasi/Champa/Kannur/KHTI-Gadag/SPKM-Venkatagiri

Diploma in Handloom & Textile Technology

APR/MAY-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : **III**

Time:3 Hours

Course Code & Title : **HTPC201 Textile Fibers**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. Define monomer and co-polymer with suitable example.
2. What is Syndotactic and Isotactic polymer?
3. What is texturing?
4. Define textile fiber with example.
5. What is xanthation?
6. Quote any four example of regenerated fiber.
7. What is silk rearing?
8. What are the monomers of Nylon 6 and Nylon 66?
9. What is aromatic polyamide? Give an example.
10. Draw the chemical structure of polyester fiber.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Compare the structure of Homo polymer and Co - polymer with examples of each. (6)
B. Which types of fibers are manufactured by wet spinning? Describe the wet spinning technique with proper diagram. (10)
- (OR)
- C. Interpret the difference between melt spinning and dry spinning. (6)
D. Discuss the various polymerization techniques and explain any two of them. (10)
12. A. Explain the essential and desirable properties of textile fibers. (6)
B. Outline the classification of textiles fibers according to their origin. (10)

(OR)

- C. Compare the characteristics of UDY and FOY filaments. (6)
- D. Explain in details about the concept of crystallinity and orientation with diagram & example. (10)

- 13. A. Briefly discuss the chemical composition of jute and linen fiber. (6)
- B. Describe the morphological structure of cotton fiber with diagram. (10)

(OR)

- C. Write a note on the chemical properties and uses of cotton fibres. (6)
- D. Illustrate the manufacturing process of Viscose Rayon with neat diagram. (10)

- 14. A. Draw and explain the chemical structure of silk polymer. (6)
- B. Describe the life cycle and production process of silk fiber with diagram. (10)

(OR)

- C. Compare the chemical properties of silk and wool fiber. (6)
- D. Describe the manufacturing process of polyamide 66 with proper diagram. (10)

- 15. A. Analyze the physical and chemical properties of polypropylene fibres. (6)
- B. Discuss the manufacturing process of acrylic fibre in detail (10)

(OR)

- C. Summarize the chemical structure and application of Kevlar fiber. (6)
- D. Differentiate the physical and chemical properties of meta-Aramid and para Aramid fibres in detail. (10)

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Diploma in Handloom & Textile Technology

APR/MAY-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : **III**

Time:3 Hours

Course Code & Title : **HTPC202 Yarn Manufacturing Technology**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. What is meant by ginning outturn?
2. The percentage of trash in cotton bale is 6%. The total cleaning efficiency of the blowroom is 56 %. Find out the percentage of trash remains in the lap.
3. Write the objectives of carding machine.
4. Show the licker-in and mote-knife arrangement in carding machine with specifications.
5. What are the methods of doubling available in comber preparatory process?
6. List the functions of detaching roller in comber preparatory process.
7. Write the formula to calculate the mechanical draft and actual draft in drawframe.
8. Write the objectives of speedframe.
9. State the objectives of ringframe.
10. Name the different types of traveller used in ring frame.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Illustrate the process flow chart of carded yarn manufacturing process. (6)
B. With neat diagram, explain any one method of separation of cotton seed and fiber from the kapos. (10)

(OR)

- C. Calculate the production of blow room machine in pounds per hour with the following particulars. Speed – 15 rpm, diameter of lap roller - 9” inch , 86% efficiency, count of lap - 0.0012^s Ne (6)
D. Explain the objectives of blowroom process. Also explain the sequence of machines used in blowroom process with suitable line diagram. (10)

12. A. Write the importance of an auto-leveler in carding machine with suitable examples (6)
- B. Calculate the production of carding machine in kg per hour with the following particulars. Doffer diameter - 27", surface speed of Doffer = 200 yards / min, Sliver hank = 0.119 Ne, Card efficiency = 95%, No of Cards = 10 (10)
- (OR)**
- C. Brief about the various types of doffing system in carding machine. (6)
- D. With a neat sketch, explain the principle of operation of a modern high production card indicating the various functional elements and its specifications. (10)
13. A. Compare web doubling and sliver doubling method of comber preparatory process. (6)
- B. With suitable diagram, explain anyone method of comber lap preparation method with detailed specification of each process. (10)
- (OR)**
- C. Calculate the production in Kg per shift of 8 hour of a comber machine with the following particulars. (6)
- Combing roller speed = 400 Nips/min, Length of lap fed per nip = 5 mm , Efficiency = 93%, feed Lap weight = 65 g/m, number of heads present in the machine = 8 and Noil extracted = 17%
- D. With a neat sketch, explain the principle of operation of a modern high production comber indicating the various functional elements and its specifications. (10)
14. A. Write the importance of open loop auto-leveler used in drawframe machine. (6)
- B. With a neat sketch, explain the principle of operation of a drawframe indicating the various functional elements and its specifications. (10)
- (OR)**
- C. With neat diagram, explain the constructional features of flyer used in speedframe. (6)
- D. With a neat sketch, explain the principle of operation of a speedframe indicating the various functional elements and its specifications. (10)
15. A. Write short notes on ring and traveller used in ringframe. (6)
- B. With a neat sketch, explain the principle of operation of a ringframe indicating the various functional elements and its specifications. (10)
- (OR)**
- C. Write a brief note on bundling and baling process. (6)
- D. Explain the construction and working principle of reeling machine with suitable schematic diagram. (10)

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Diploma in Handloom & Textile Technology

APR/MAY-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : **III**

Time:3 Hours

Course Code & Title : **HTPC203 Handloom Weaving
Technology**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. Differentiate the cheese and spool yarn package form.
2. What are the objectives of sizing?
3. Write the functions of lease rod.
4. Write the two differences in throw shuttle handloom and fly shuttle handloom.
5. Define fell of the cloth.
6. Write the names of two auxiliary motions of handloom.
7. Define the 10^s worsted count.
8. Write the conversion factor for tex system to cotton English system.
9. Count of the folded yarn in spun silk system has been expressed as 80/2. What is the resultant count of the folded yarn?
10. What are the two systems of numbering of reed count?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. What are precautions to be taken during warping process? (6)
B. What are the different methods of warping and explain the method of preparation of warp on a sectional warping machine? (10)
(OR)
C. What are the sizing ingredients used in size mixture and write the main function of any two ingredients? (6)
D. What are the various forms of sizing? Explain briefly the process of street warp sizing. (10)
12. A. Write the main functions of reed. (6)
B. Taking a suitable weave explain the shedding mechanism of handloom using jack and lam rod. (10)

(OR)

- C. Draw the passage of warp in fly shuttle frame loom. (6)
- D. Explain about different types of shed formation with their diagrams. (10)
13. A. Explain about different types of shuttle used in handloom industry with their suitability. (6)
- B. What are different types of reed used on handlooms with their suitability. (10)

(OR)

- C. Differentiate between closed shed beating and cross shed beating. (6)
- D. Explain the working principle of Barrel dobby with neat diagram. (10)
14. A. If 1 bundle contains 180 hanks of cotton yarn, what is the count of the yarn in New English? (6)
- B. (a) Calculate the length of 340 grammes of nylon yarn whose count is 20 Tex. (10)
- (b) The count of 300 yards of worsted yarn was found to be 60^S worsted. Calculate the weight in ounces.

(OR)

- C. Convert 30 tex count to New French system. (6)
- D. Derive the conversion factor to convert from New English system to Denier Metric system and convert 50^SNe cotton to Denier Metric System. (10)
15. A. A three fold yarn composed of 8^S, 24^S and a thread of unknown count. If the count the folded thread was found to be of 4^S. Calculate the count of the unknown thread. (6)
- B. A 5^S folded yarn is composed of one thread of 25^Scotton and another thread of 10^Scotton. 10^Scount of thread is having a regain of 60%. Calculate the weight of component threads in 100 pounds of the folded yarn. (10)

(OR)

- C. A warp consists of yarns of the following particulars. (6)
- 3 pounds of 20^Syarn
6pounds of 16^S yarn
9 pounds of 24^S yarn
Calculate the average count.
- D. Calculate the total number of ends in the warp with the following particulars: (10)
- Count of reed : 48^SST
Denting : 2 ends per dent for body and 4 ends per dent in selvedge
Reed Width : 52inch (including ½ inch on each side)

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APR/MAY-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : **III**

Time:3 Hours

Course Code & Title : **HTPC204Fabric Structure – I**

Maximum Marks:100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. Name any two types of basic weaves.
2. Define drafting order.
3. Name two types of twill derivatives.
4. Draw the warp faced twill on 4x4.
5. Construct the smallest irregular sateen weave.
6. Write two differences between diamond and diaper weaves.
7. Why honey comb weaves are suitable for towelling fabrics?
8. Name the weave suitable for using mosquito net fabric.
9. Mention the two ways of producing crepe fabrics.
10. Write about the tensioning of the different warp series in distorted warp effects.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Explain about the classification of woven fabrics with examples. (6)
- B. i) What is the object of ornamentation of plain fabrics? (10)
- ii) Construct the design, draft and peg plan of 3 and 1 warp rib, 2 and 2 weft rib and 3 and 3 mat weave.
- (OR)**
- C. Write about any 6 ways of ornamentation of plain fabric. (6)
- D. Discuss the derivatives of plain weave with suitable examples. (10)
12. A. Define warp faced twill and weft faced twill with suitable examples. (6)
- B. i) Mention any 4 differences between wavy twill across and wavy twill along the cloth. (10)
- ii) Construct a herring bone twill across the cloth taking the base of 2 up 2 down twill. Indicate the draft and peg plan for it.

(OR)

- C. Construct the combined twill by end and end combination of $\frac{2}{1} \frac{1}{2}$ and $\frac{3}{3}$ twill. (6)
- D. i) Define figured twills. (10)
 ii) Construct the design and draft of regular wavy twill across the cloth on 12x6 using $\frac{3}{3}$ twill base.
13. A. Draw the twill dice check design on 8x8. (6)
 B. i) Write on the characteristics of satin and sateen weave (4 points). (10)
 ii) Construct the 10-thread irregular satin weave. Indicate the draft and peg plan of it.
- (OR)**
- C. Draw a diamond design on 8x8 using 2 up 2 down twill. (6)
 D. Construct the diaper design on 12x12 along with the draft and peg plan taking base twill 3 up 3 down. (10)
14. A. Construct Devon huck – a – back weave. (6)
 B. Construct Brighton honey comb weave on 16x16 along with its draft and peg plan. (10)
- (OR)**
- C. Construct mock leno weave on 8x8 along with its draft. (6)
 D. Construct the both warp corkscrew and weft corkscrew weave on 11x11. (10)
15. A. Construct a crepe weave on 8x8 by reversing method. (6)
 B. Combine 8x8 brighton honey comb with plain weave to produce check effect. (10)
 Indicate it's draft and peg plan.
- (OR)**
- C. Construct warp distorted thread effect on 14x14. (6)
 D. i) Define colour and weave effects. (10)
 ii) Draw an all-over pattern using 4 up 4 down twill with the colour pattern of 6 dark, 6 light in both directions.

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APR/MAY-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : **III**

Time:3 Hours

Course Code & Title : **HTPC205 Chemical Processing of
Textiles-I**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. What are the objectives of pretreatment?
2. What is the function of stabilizer in H₂O₂ bleaching?
3. What are Chromophores and Auxochromes? Define with examples.
4. What is exhaustion percentage in exhaust dyeing?
5. How the fastness properties of direct dye can be improved?
6. What type of bond is formed by reactive dyes with cotton? Name 2 bond/forces involved in dyeing with Direct dyes.
7. What is Tendering and Bronziness?
8. Write the properties of Vat dyes.
9. Define the Crabbing and Decatising process of wool.
10. What is Metal Complex dyes?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write a common type of enzyme used in enzyme desizing. What are the advantages of enzyme desizing? (6)
B. Describe the NaOCl Bleaching process for cotton with chemical reactions. (10)
What are the advantages and disadvantages of NaOCl bleaching?
(OR)
C. Explain the Saponification and Emulsification process involved in cotton scouring. (6)
D. What are the objectives of Singeing? Describe the Gas Singeing with neat diagram and mention the disadvantages of this process. (10)

12. A. What are the different types of padding mangle? Explain three Bowl padding mangle with neat diagram. (6)

B. Describe the working procedure of package dyeing machine with neat diagram. (10)

(OR)

C. Write a short note on Vertical Can Dryer machine. (6)

D. Describe the working procedure of Jet Dyeing machine with neat diagram. (10)

13. A. What are the properties of Direct dyes? Classify Direct dyes. (6)

B. Describe the Direct dyeing process with dyeing mechanism, recipes and process conditions. (10)

(OR)

C. Explain the chemistry of Vinyl Sulphone and Triazine based Reactive dyes. (6)

D. Describe in details the mechanism, recipes and dyeing procedure of H reactive dyes. (10)

14. A. Brief about the steps involved in the dyeing with Azoic dyes. (6)

B. Describe in details the dyeing mechanism, recipes and application of Vat dyeing on cotton. (10)

(OR)

C. Write the properties and advantages of Solubilized Vat dyes. (6)

D. Describe in details the mechanism, recipes and dyeing procedure involved in Sulphur dyeing on cotton. (10)

15. A. Explain different types of Woolen Setting Process. (6)

B. Describe in details the bleaching process of Wool with H_2O_2 . (10)

(OR)

C. Explain the dyeing of Wool with Acid dyes. (6)

D. Describe in details the application methods of Mordant dyes and mention the advantages and disadvantages of each method. (10)
