

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

NOV/DEC-2024 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. What is co-polymerisation? Give the name of a textile fibre formed by this method.
2. State the need for a spin finish while producing synthetic fibres.
3. What are dope dyed fibres?
4. Draw the cross-sectional and longitudinal view of cotton fibre.
5. Why do viscose rayon fibres possess low wet strength?
6. Write any two chemical properties of linen fibres.
7. List the various types of silk.
8. State the monomers of Nylon 6 and Nylon 66 fibres.
9. Mention the uses of polypropylene fibres.
10. What are aromatic polyamides? Give an example.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Compare the structure of atactic, isotactic and syndiotactic polymers with examples. (6)
B. Enumerate the various polymerisation techniques and explain any two of them. (10)

(OR)

- C. State the types of heat setting and analyse the influence of heat setting on fibre behaviour. (6)
D. Elucidate the melt spinning technique with a neat line sketch. (10)

12. A. Compare the characteristics of spun yarn and filament yarn. (6)
B. Describe the essential properties of textile fibres in detail. (10)

(OR)

- C. Briefly explain the importance of crystallinity and orientation of fibres. (6)
D. Elucidate the classification of fibres with a flowchart. (10)

13. A. Briefly discuss the chemical composition of any two Natural fibres. (6)
B. Elaborately discuss the Viscose Rayon manufacturing process. (10)

(OR)

- C. Write a note on the physical properties and uses of polynosic Rayon fibres. (6)
D. Discuss the physical and chemical properties of Cotton and Jute fibres in detail. (10)

14. A. What is throwing and weighting of silk? Explain the two processes briefly. (6)
B. Explain the lifecycle of a silkworm with a neat sketch and state the chemical properties of silk fibres. (10)

(OR)

- C. Compare the properties of Nylon 6 and Nylon 66 fibres. (6)
D. Elaborately discuss the chemical composition and properties of wool fibres. (10)

15. A. Outline the physical and chemical properties of polyethylene fibres. (6)
B. Discuss the manufacturing process of polyester fibre in detail. (10)

(OR)

- C. Write a short note on the steps involved in Acrylic fibre production. (6)
D. Analyse the physical and chemical properties of meta-Aramid and para-Aramid fibres in detail. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 03

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 . State the objectives of ginning process.
- 2 . Give two examples of pre-cleaning machines in blow room.
- 3 . State the advantages of web doffing systems in carding machine.
- 4 . What is meant by heel and toe arrangement in flats of the carding machines?
- 5 . List the machines used in sliver doubling method of comber preparatory process.
- 6 . What is a piecing wave in comber sliver?
- 7 . If 3 draw frames passages are given a doubling of 6 slivers in each process, determine the total doubling.
- 8 . Give the range of total draft and TPI given in speed frame.
- 9 . Give the formula for calculation of TPI in ring frame.
- 10 . Outline the objectives of reeling process.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write the process flow chart for combed yarn manufacturing. (6)
B. Explain the construction and working principle of saw gin with neat diagram. (10)

(OR)

 - C. Discuss the advantage of chute feed system. (6)
D. With suitable illustrations, explain the and working of blowroom process. (10)
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12. A. With suitable diagram, explain the carding action and stripping action in carding machine. (6)
B. Draw the material passage of modern high production carding machine and mark the various zones and components in it (10)

(OR)

 - C. With suitable sketch, compare the two types of coiling of slivers in the can. (6)
D. State the objectives of autolevellers in carding machine and explain the construction and working of type of autolevellers used in modern carding machine. (10)

13. A. Even number of passage is required between carding and comber. Justify the statement with suitable diagram. (6)
B. Explain the material passage through the lap former machine with neat sketch. (10)

(OR)

- C. An eight head comber is running at 300 nips/min. The lap fed is 62 Ktex and noil level is 18%. If the feed/nip is 6 mm, what is the production of comber in Kgs/hr/machine at 90% machine efficiency? (6)
D. Explain the combing cycle in comber with suitable diagrams. (10)

14. A. Outline the different drafting systems used in draw frame with their merits and demerits. (6)
B. Calculate the production of the draw frame in kgs/shift of 8 hrs / machine (10) with the following data.
Hank of card sliver – 0.13 Ne
No. of doubling – 8
Total draft – 8
Delivery rate – 800 yards/min
Deliveries per machine – 2
Efficiency – 90%

(OR)

- C. Draw the material passage in modern speed frame indicating the functional parts. (6)
D. Calculate the production in kgs/shift of 8 hrs / simplex machine with the following data. (10)
No. of spindle / machine – 120
Spindle speed in rpm – 1100
Twist Multiplier (TM) – 1.1
Efficiency – 89%
Hank of roving – 1.43 Ne

15. A. Write short notes on travellers and rings used in ring frame. (6)
B. Give a detailed account on modern developments in latest ring frame with suitable illustrations. (10)

(OR)

- C. Write brief note on bundling and baling process. (6)
D. Explain the construction and working principle of reeling machine with neat diagram. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2024 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. What are the different processes involved in weaving preparation?
2. What are the requirements of the sizing process?
3. What are the functions of the lease rod and temples in handloom weaving?
4. What are the primary motions in handloom weaving?
5. What is the suitability of the roller shuttle in handloom weaving?
6. What are the functions of the reed in handloom weaving? What are the different types of handloom reeds?
7. What do you mean by the yarn number of 60^s Ne?
8. Write the conversion factor for Ne system to New French system.
9. Calculate the count of 3-fold yarn twisted from three singles of 60^s Ne yarn.
10. What do you mean by Heald Count?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. What are the ingredients used in the size mixture, and what are their uses? (6)
B. What are the different types of warping used in the handloom industry? (10)
Explain sectional warping in detail, including appropriate figures.
(OR)
C. Explain the different types of yarn packages used in the handloom industry, (6)
along with clear sketches
D. Explain Hank sizing and street warp sizing in detail, including suitable (10)
diagrams. Also, describe the various sizing defects.
12. A. What are the different types of Heald reversing motions used in handlooms? (6)
B. Explain in detail, with diagrams, the various shed formations in handlooms. (10)

(OR)

- C. Explain in detail the various types of motions in handloom weaving. (6)
- D. Describe the different parts of handlooms and include a sketch showing the passage of warp yarn through a handloom. (10)
13. A. Explain the beat-up processes in handlooms, including closed shed beating and crossed shed beating. (6)
- B. Describe the various types of let-off motions in handlooms and explain in detail with a figure about the rope-lever and weight let-off motions. (10)
- (OR)**
- C. Explain the take-up motion in handlooms, focusing on the poker rod and ratchet & pawl mechanisms. (6)
- D. Describe the functions of dobbies in handloom weaving and explain in detail with neat sketches of lattice handloom dobby. (10)
14. A. Given a cone of yarn with a length of 1,00,000 meters and a weight of 1.5 kg, calculate the yarn count in the Metric system. (6)
- B. i) Find out the conversion factor to convert **Ne** yarn number to **Linen (Lea)** yarn number (10)
ii) Convert 100 Tex yarn into equivalent New English system.
- (OR)**
- C. If 24,000 yards of yarn weigh 600 gram, find out the count of yarn in worsted system (6)
- D. Derive the conversion factor to convert Ne system to Tex system and convert 100^s Ne to equivalent Tex. (10)
15. A. Calculate the average count of yarn used in a warp sheet of 840 yards, with 10 threads of 40^sNe, 20 Threads of 60^sNe, and 70 threads of 20^sNe. (6)
- B. Calculate the total number of ends in the reed from the following particulars: (10)
- Count of the reed: 60^s ST
Denting: 2 ends per dent for body & 4 ends per dent in selvedge
Reed width: 50 inch (including ½ inch selvedge on each side)
- (OR)**
- C. Calculate the resultant count of folded yarn composed of 100 Tex , 60 Tex and 50 Tex. (6)
- D. A threefold yarn is composed of 80^s worsted, 40^s cotton and 20^s spun silk yarn. Ascertain the resultant count of the folded yarn in cotton system. Also calculate the weight of each component yarn in 100 pounds of the folded yarn, ignoring the contraction due to twisting. (10)

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NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 03

Time:3 Hours

Course Code & Title : **HTPC204 Fabric Structure - I**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. Name the different draft orders used for drawing ends in healds.
2. Define 'Peg-plan'.
3. Write the twill weaves constructed on 4 X 4 for Warp face and weft face.
4. What is 'Angle of Twill'?
5. Is it possible to construct the Sateen in 6 X 6? Justify
6. Name two weaves combined to prepare the Diamond weave
7. Name the weaves used for weaving Towels.
8. What is the effect produced by Mock-leno weave?
9. Show Mock-leno weave combined with Plain, for weaving stripe effect
10. Define the 'Colour and weave effect'

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Explain the Catch-cord technique used in Handloom with a neat diagram. (6)
B. i) When is the Catch-cord technique required? (10)
ii) Construct design, draft, and peg-plan of Warp rib, Weft rib, and Mat weave by taking suitable ends and picks per repeat.
(OR)
C. Classify the Woven fabric structures with examples (6)
D. Construct basket weave on 10 X 10. Indicate its draft and peg-plan. (10)
12. A. Draw two types of Wavy twills based on 4 X 4 Twill. (6)
B. i) Write a note on the characteristics of Twill weave (4 points) (10)
ii) Construct Broken twill on 6 picks. Indicate its draft and peg-plan.

(OR)

- C. Construct 8 thread transposed twill. (6)
- D. i) List the commercial names of fabric woven in plain and twill weaves. (10)
 ii) Draw the graph design for Steep and Flat twill
13. A. Construct 8 thread Sateen with all the possible moves (6)
- B. i) What is Diaper weave (10)
 ii) Show the Diamond weave on 12 X 12 using 6 X 6 Twill weave as a base. Indicate its draft and peg-plan.
- (OR)**
- C. Construct a Dice check design on 10 X 10 using 5 thread sateen and satin (6)
- D. i) What is Diamond weave (10)
 ii) Show the Diaper weave on 12 X 12 using 6 X 6 Twill weave as a base. Indicate its draft and peg-plan.
14. A. Illustrate the graph design of the single-stitched and double-stitched Honeycomb on 8 X 8 (6)
- B. i) List the uses of Mock-leno fabric (10)
 ii) Show the Huck-a-back design on 14 X 14. Indicate its draft, peg-plan, tie-up, and sequence of treadling order
- (OR)**
- C. Show the Huck-a-back design in 10 X 10 with its draft and peg-plan (6)
- D. i) What are the essential characteristics of toweling fabric? (10)
 ii) Show the Brighton Honeycomb in 20 x 20
15. A. Construct the crepe weave based on the sateen weave (6)
- B. Sketch the colour and weave design showing any two effects. (10)
- (OR)**
- C. Construct weft distorted thread effect on 12 X 12. (6)
- D. Combine 10 X 10 huck-a-back with plain to produce a stripe effect. Indicate its draft, peg-plan, tie-up, and sequence of treadling order (10)

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NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 03

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. Differentiate between scouring and souring.
2. What is saponification in scouring of cotton?
3. What is the working principle of Hydro extractor?
4. Classify dyes.
5. Write about Vinyl Sulphone dyes
6. Classify Reactive dyes.
7. Name the common problems in dyeing of cotton with Sulphur dyes
8. Write the coupling reaction in dyeing of cotton with Azoic dyes.
9. What are chrome dyes?
10. Classify Metal complex dyes.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write the recipe and process of enzyme desizing for cotton. (6)
B. What is Singeing? Describe the working of Gas Singeing machine with neat diagram. (10)

(OR)

- C. What are the objects of Mercerization of cotton? Write the structural changes taking place in Mercerization of cotton. (6)
D. Explain the bleaching of cotton by Hydrogen peroxide with chemical reactions. What are the advantages of Hydrogen peroxide bleaching over Hypochlorite bleaching of cotton. (10)

12. A. Define the term percentage shade and percentage expression. (6)
B. Describe the working of Jigger dyeing machine with neat diagram. (10)

(OR)

- C. Explain the working of Cabinet hank dyeing machine. (6)
D. Describe the working of HTHP Beam dyeing machine with neat diagram. (10)

13. A. What is hydrolyzed Reactive dye? Write the recipe for M & H Reactive dyes for dyeing of cotton. (6)
B. Describe the dyeing of cotton with direct dyes and its after treatments with cationic dye fixing agents. (10)

(OR)

- C. What are M & H Reactive dyes? (6)
D. Explain the dyeing process of cotton with Vinyl Sulphone Reactive dyes. (10)

14. A. What are Solubilised Vat dyes? (6)
B. Explain the dyeing of cotton by Azoic dyes with chemical reactions involved in dyeing. (10)

(OR)

- C. Write in brief about Tendering and Bronziness in dyeing of cotton with Sulphur dyes. (6)
D. Describe the process of dyeing cotton with Vat dyes. (10)

15. A. Explain the Silk Degumming methods. (6)
B. Explain the process of Milling with neat diagram of machine used for Milling. (10)

(OR)

- C. Explain the dyeing of Silk with Acid dyes. (6)
D. Describe the Crabbing, Potting and Decatising processes for setting of wool. (10)
