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INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY

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

Diploma in Handloom & Textile Technology

NOV/DEC-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. State the objectives of Ginning machine.
2. Write the formula to find cleaning efficiency of a blow room line.
3. State the functions of front plate in a carding machine.
4. What do you understand by “Heel and toe arrangement” in a card?
5. What are the advantages of combing process?
6. What do you understand by “Piecing wave” in comber?
7. What do you understand by doubling and drafting in a draw frame?
8. State the functions of flyer in speed frame.
9. What is the function of traverse motion fitted behind the back pair of drafting rollers in a ring frame?
10. In a ring frame, if the Twist Multiplier (TM) given for spinning 40s yarn count is 3.5, find the number of Twists Per Inch (TPI) inserted in the yarn.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Compare carded and combed yarn manufacturing processes. (6)

    B. Explain the working of principles of any two types of Ginning machines. (10)

(OR)

    C. Compare the lap feed and chute feed systems used in blow room. (6)

    D. With a neat sketch, explain the working of any one type of opening and cleaning machine used in blow room. (10)

12. A. With line sketches, explain carding and stripping actions in a carding machine. (6)

B. With a neat line diagram, explain the passage of material through a high production carding machine. (10)

(OR)

C. Explain any two types of web doffing systems used in carding. (6)

D. Calculate the production in kilograms of a carding machine with the following particulars: (10)

Diameter of doffer = 27″	Speed of doffer =30 rpm
Hank of sliver = 0.18 Ne	Machine efficiency = 92%
Time = 8 hours	Tension draft = 1.2

13. A. Write short notes on lap preparation techniques for comber machine. (6)

B. With a neat sketch, describe the passage of material through super lap former. (10)

(OR)

C. Explain forward and backward feeding in a comber. (6)

D. With a neat sketch, describe the passage of material through a modern comber. (10)

14. A. State any six developments of a modern draw frame. (6)

B. With a neat sketch explain any one drafting system used in a draw frame. (10)

(OR)

C. With line diagrams, explain the principles of auto-levellers used in draw frames. (6)

D. Calculate the production in kilograms in a speed frame with the following particulars: (10)

Spindle speed = 1200 rpm	TPI = 1.4
Hank of rove = 1.5 Ne	Machine efficiency = 95%
Time = 8 hours	Number of Spindles = 120

15. A. Mention the functions of i) Spindle ii) Ring iii) Traveller in a ring frame. (6)

B. With a neat sketch explain the passage of material through a ring frame. (10)

(OR)

C. State any six salient features of a modern ring frame. (6)

D. With line sketches, explain the working principle of bundling and baling presses. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-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. Why are weaving preparatory processes needed?
2. Write the suitability of sectional warping over other types.
3. Write the functions of picker in handloom.
4. Write the primary motions of handloom.
5. What is meant by auxiliary motions in a loom?
6. Write about handloom dobbies.
7. What do you mean by yarn numbering systems?
8. Convert 100^{s}Ne count into equivalent count in Tex system.
9. Find out the number of ends per inch (EPI) of a 100^{S} ST (stock port) reed, if 3 ends are drawn per dent
10. Calculate the count of 2 fold yarn twisted from 2 singles of 100^{s} Ne yarn.

PART-B ((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Discuss the features of ideal sizing. How does it improve weaving performance? (6)

    B. Compare peg warping, vertical warping, and sectional warping with neat sketches. (10)

(OR)

    C. Describe the preparatory processes involved in warp and weft yarn preparation. (6)

    D. Explain the different forms of yarn packages (hanks, cones, cheeses, and spools) along with their purposes and end uses. (10)

12. A. Compare pit loom and frame loom. (6)

    B. With sketches, explain different types of shed formation (centre closed, bottom (10)

closed, top closed, open shed, semi-open shed).

(OR)

C. Write about the heald reversing motions used in handloom. (6)

D. Explain the passage of warp in a fly shuttle handloom with a neat diagram. (10)

13. A. Compare poker rod and ratchet & pawl take-up motions in handlooms. (6)

B. With the help of neat sketches, explain the working of lattice dobby. (10)

(OR)

C. Compare closed shed beat up with cross shed bet up. (6)

D. How does rope and weight let-off differ from rope-lever and weight let-off? Explain with figure. (10)

14. A. The count of 5600 yards of worsted yarn was found to be 30s worsted. Calculate the weight in grain. (6)

B. Derive the conversion factor for converting yarn count from Tex to New English system. Also convert 100 Tex into Equivalent New English system. (10)

(OR)

C. Derive the Conversion factor for converting New English system yarn number to Worsted system yarn number. (6)

D. A cone having length of 126000 yards and weight of 1816 Grams. Find out the count of yarn in (i) Linen System (ii) Worsted system (10)

15. A. Give a short note on Reed Count & Heald Count (6)

B. The take up of one of the component threads of a loop yarn is 80% and it's yarn count is 40s cotton. If the count of the other component thread is 80s cotton, what length and weight of component thread are there in 10 pounds of resultant yarn. (10)

(OR)

C. A threefold yarn composed of 16s, 48s, and a thread of unknown count was found to be 8s cotton. Calculate the count of unknown thread (6)

D. A warp is composed of 60s, 40s, 2/42s cotton yarns in the following proportion: (10)
26 Hanks of 60s yarn
16 Hanks of 40s yarn
10 Hanks of 2/42s Yarn
What is the average count of warp

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : III 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. Write the two differences between woven and knitted fabrics.
2. Indicate warp up and weft up thread interlacing diagram (flat view).
3. What is the normal angle produced by an ordinary twill weave?
4. Differentiate herring bone twill and broken twill.
5. Define move number of a weave.
6. Name the twill derivatives used to produce diaper designs.
7. How many cells are formed in one repeat of the Brighton honey comb weave?
8. Indicate the suitable denting order of 3 and 3 Mock leno.
9. Write the salient feature of Distorted thread effect.
10. What is the basic characteristics of crepe fabrics?

PART-B **((**6+10)×5=80 Marks)

Answer all the questions in details

11. A. With a diagram explain the working of catch cord technique in weaving of mat and warp rib. (6)

    B. Construct the design, draft and peg plan along with interlacement diagram (Flat view) of the following design i) 4 and 3 warp rib ii) 2 and 2 mat (10)

(OR)

    C. Write about different ways of ornamentation of plain fabrics. (6)

    D. Construct the following weaves (10)

    i) 3 and 3 weft rib ii) 4 and 4 mat weave

    iii) 5 and 3 mat weave iv) 5 and 4 weft rib

12. A. Construct warp faced, weft faced and equal faced twill on 4 thread. (6)

B. Construct a transposed twill with its draft and peg plan on 24 ends x 8 picks with 4-up 4-down twill base having transposed in groups of 3. (10)

(OR)

C. How does the twist direction in the yarn influence the prominence of twill? (6)

D. Construct the design, draft, peg plan for herring bone twill along weave taking 4up 4down twill as a base. (10)

13. A. Differentiate between diamond and diaper weave. (6)

B. Construct the design , draft, peg plan for i) Irregular satin on 6x6 ii) twill dice check on 8 x8 (10)

(OR)

C. Differentiate between regular and irregular sateen. (6)

D. Construct the diamond design in 12 x12 with draft and peg plan taking base twill 2up 2 down. (10)

14. A. Construct the design, draft, peg plan of Huck a back weave in 10 x 6. (6)

B. Construct the design, draft, peg plan for Double stitched honey comb weave on 16 x16. (10)

(OR)

C. Construct the design, draft, peg plan of Mock-leno weave in 10 x 10. (6)

D. . Construct the design , draft, peg plan for i) Brighton Honey comb weave in 8 x 8 ii) Warp cork screw weave in 7 x 7. (10)

15. A. Construct crepe weave in 8 X 8 by the method of combining floating weave with plain threads. (6)

B. Define colour and weave effect? Construct Hounds tooth effect with the following and colouring order: (10)

Weave : 2 and 2 twill, Warp colour pattern : 4 dark 4 light and weft colour pattern : 4 dark 4 light

(OR)

C. Construct weft distorted thread effect in 14 x 14 taking 4 and 11 picks for distortion. (6)

D. Combine the following weaves to form check effect with its draft and peg plan Weave 1- 8 thread honey comb, Weave 2- plain (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : **III** Time:3 Hours

Course Code & Title : **HTPC205 Chemical Processing of Textiles-I** Max. Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Explain why pre-treatments are necessary for textile materials before dyeing or printing.
2. Define the terms Scouring and Souring in textile wet processing.
3. Differentiate between dyes and pigments with appropriate points.
4. State the principle of a package dyeing machine.
5. What is the after-treatment process of direct dyes and explain its significance?
6. Why Reactive Dye gives good fastness to cotton than Direct dye.
7. Describe the dyeing mechanism of vat dyes.
8. What is Tendering and in which class of dyes it is most commonly observed.
9. Define degumming. Explain the change in silk weight after degumming.
10. Classify metal complex dyes. Justify why they are so called metal complex dyes.

PART-B ((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Explain in detail the acid desizing process, including the chemical recipe, processing steps and its pros and cons. (6)

    B. Describe the working principle of a gas singeing machine with a neat labeled diagram and write its merits and demerits over other singeing methods. (10)

(OR)

    C. Write are the objects of Mercerization in cotton processing. Explain the structural and morphological changes that occur during the mercerization of cotton. (6)

    D. Justify why Hydrogen Peroxide (H_2O_2) is referred to as a universal bleaching agent. Explain the bleaching mechanism of cotton using H_2O_2, with an appropriate recipe and chemical reactions. Evaluate the advantages and disadvantages of H_2O_2 bleaching compared to hypochlorite bleaching. (10)

12. A. Illustrate and explain the different types of padding mangles with neat diagrams. (6)

    B. Describe the working mechanism of a jigger dyeing machine with a line sketch and evaluate its merits and demerits. (10)

(OR)

C. Define the terms percentage shade, percentage exhaustion and percentage expression in dyeing processes. (6)

D. Describe the working principle of a jet dyeing machine with a neat sketch and assess its advantages and limitations. (10)

13. A. Justify why reactive dyes are named so. Classify the reactive dyes based on their reactive groups and application characteristics. (6)

B. Explain the dyeing procedure using H brand reactive dyes on cotton, including the chemical recipe and the functions of each chemical used. (10)

(OR)

C. Why direct dyes exhibit poor wash fastness. Explain the after-treatments applied to improve wash fastness, with emphasis on the use of cationic dye fixing agents. (6)

D. Define vinyl sulphone reactive dyes. Describe the method of dyeing cotton using VS dyes with an appropriate recipe, process steps and functions of chemicals used. (10)

14. A. Explain the development of azoic colours on cotton, stating the objectives and functions of chemicals used during each stage of the process. (6)

B. Describe in detail the dyeing process of cotton using sulphur dyes, including the process sequence, recipe, chemical functions and a comparative evaluation of its merits and demerits over other cotton dyes. (10)

(OR)

C. Define solubilised vat dyes and state their typical applications. (6)

D. Explain the complete dyeing process of cotton using IN vat dyes, including process sequence, chemical recipe, functions of each chemical and critically evaluate the merits and demerits of vat dyes. (10)

15. A. Enumerate the various methods of degumming. Explain the enzyme-based degumming process for silk, with emphasis on mechanism and process conditions. (6)

B. Describe the dyeing of silk with acid dyes, including the chemical recipe and functions of chemicals used. (10)

(OR)

C. Explain the treatments of wool: Crabbing, Potting and Decatising, with their objectives and process details. (6)

D. Explain the dyeing process of wool using metal complex dyes, along with chemical recipe, process conditions and functions of the chemicals used. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-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. Write the names of the monomers of polyethylene and polystyrene.
2. Name two antistatic agents commonly used in spin finish.
3. What is a textile fiber? Define it with suitable examples.
4. State the effect of molecular orientation on fiber properties.
5. Among linen, jute, and hemp which fiber contains the highest cellulose content? Give a reason.
6. Why viscose is called as regenerated cellulosic fibre?
7. What is Tussar silk and Eri silk?
8. What are the qualities of wool to be considered while grading?
9. Differences between HDPE and LDPE and their effect on fibre properties.
10. What are aromatic polyamides? Give two examples.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Describe the difference between addition and condensation polymerization with suitable examples. (6)
    B. Differentiate wet, dry, and melt spinning processes. How do they influence fiber quality, cost, and product performance? (10)

(OR)

    C. Briefly discuss the advantages and limitations of melt spinning. (6)
    D. Describe the post-spinning operations of fibers, including drawing and heat setting, with neat diagrams, and explain how they affect fiber properties. (10)

12. A. Explain in detail the classification of textile fibers based on their origin with suitable examples (6)
    B. Discuss the morphological structure of cotton fiber and explain how its structure affects its properties. (10)

(OR)

C. Explain the concept of dope-dyed and delustered fibers and discuss their advantages (6)

D. Compare spun, monofilament, and multifilament yarns, and discuss how different yarn types affect fabric properties and their end-uses. (10)

13. A. Explain the chemical composition, physical and chemical properties, and uses of cotton fiber. (6)

B. Compare linen, jute and hemp fibers in terms of chemical composition, physical properties and end-uses. (10)

(OR)

C. Describe the manufacturing process of wet spinning of polynosic fibre with a neat sketch. (6)

D. Explain the modifications in the regular viscose process for the production of HT viscose rayon with a neat sketch. (10)

14. A. With a neat sketch, draw and explain the chemical structure of silk fibroin polymer. (6)

B. With a neat diagram, explain the life cycle of the silkworm. How does each stage contribute to silk production? (10)

(OR)

C. Describe the main process flow stages in the production of Nylon 6 and Nylon 66. (6)

D. Analyze the chemical composition, physical and chemical properties of wool. Explain how these properties influence its end uses. (10)

15. A. Compare the different methods of manufacturing polyester fibre and analyze how process variations affect fibre quality. (6)

B. Evaluate the manufacturing process of acrylic fibre and analyze how its physical and chemical properties determine its performance and applications. (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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