Registration Number | | | | | | | |

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

April/ May - 2026 Semester Examination

(Regulation-2021)

Semester : **III** Time:3 Hours

Course Code & Title : **HTPC201 Textile Fibres** Maximum Marks: 100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. Define 'Degree of Polymerization'.
2. Classify polymers based on their monomer composition.
3. Differentiate between a staple fiber and a continuous filament.
4. Why is 'Crystallinity' important for the strength of a textile fiber?
5. State the chemical composition of cotton fiber.
6. Mention two main end-uses of Jute fiber.
7. What are the main protein components of silk?
8. State the monomers used for the production of Nylon 66.
9. Mention any two uses of polypropylene fiber.
10. What are Aromatic Polyamides?

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Explain addition and condensation polymerisation with suitable examples. (6)

    B. Describe the melt spinning process with a neat sketch and list the fibres produced by this method. (10)

(OR)

    C. Explain post-spinning operations and state their objectives. (6)

    D. Explain any two solution spinning techniques used to produce man-made fibres. (10)

12. A. Classify textile fibers based on their origin with suitable examples. (6)

    B. Classify the types of yarns and explain their properties (10)

(OR)

C. Explain the terms UDY, POY and FOY. (6)

D. List and explain the essential and desirable properties required for a fiber to be called a 'Textile Fiber'. (10)

13. A. Compare the physical properties of Cotton and Linen fibers. (6)

B. Describe the manufacturing process of Viscose rayon with a flow chart. (10)

(OR)

C. Discuss the chemical composition of Hemp and Jute fibres. (6)

D. Describe the manufacturing process of Polynosic rayon with a flow chart. (10)

14. A. Compare silk and wool in terms of chemical composition. (6)

B. Describe the life cycle of a Silkworm with a neat diagram and explain how silk filament is extracted from the cocoon. (10)

(OR)

C. Describe the physical and chemical properties of Nylon 66 fibre. (6)

D. Explain the manufacturing process of Nylon 6 with a neat sketch. (10)

15. A. Describe the physical and chemical properties of acrylic fibre. (6)

B. Explain the manufacturing process of Polyester (PET) fiber with a neat sketch. (10)

(OR)

C. Describe the properties and applications of Kevlar and Nomex fibres. (6)

D. Discuss the manufacturing process of any one aromatic polyamide fibre. (10)

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Diploma in Handloom & Textile Technology

April/ May - 2026 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. Write the objectives of Ginning process.
2. Name any three-machine employed in Blow room line.
3. State the objectives of Carding Machine.
4. Show the position of front plate and back plate around the carding cylinder.
5. Write the functions of top comb in combing machine.
6. Name any two-comber preparatory machines.
7. Write the objectives of Draw frame machine.
8. Discuss the objectives of Speed frame.
9. State the relation between twist per unit length and twist multiplier.
10. Outline the objective of reeling process.

PART-B ((6+10) ×5=80 Marks)

Answer all the questions in detail

11. A. Write the process flow chart of carded yarn manufacturing. (6)

    B. With neat sketch, explain the working mechanism of anyone type ginning machine. (10)

(OR)

    C. Explain in brief about chute feed system and its advantages. (6)

    D. Explain the objectives of a Blow room process. Also, explain the sequence of various machines and their roles in Blow room line. (10)

12. A. Explain in brief about carding action and stripping action. (6)

    B. With neat sketch, explain the passage of material through carding machine. (10)

(OR)

C. Write the function of mote knives and flats in carding machine. (6)

D. Calculate the production in Kg per shift of 8 hours with the following particulars. (10)

Doffer Speed=40 rpm, Diameter of doffer=27inch, Hank of Sliver =0.15 Ne, Machine Efficiency=92% (assume other relevant data if required).

13. A. Write the objectives and advantages of combing process. (6)

B. With neat diagram, explain the passage of material through modern Comber machine. (10)

(OR)

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

D. With a neat sketch, explain the passage of material through sliver lap former machine. (10)

14. A. With neat diagram explain any one drafting system used in modern draw frame. (6)

B. With schematic diagram, explain the passage of material through a high-speed Draw frame. (10)

(OR)

C. Write short notes on mechanical draft and actual draft. (6)

D. With neat diagram, explain the passage of material through Speed frame machine. (10)

15. A. Find out the total draft applied in the ring frame machine with the following particulars. (6)

Count of roving feed is 1.15 Ne, and yarn produced in the frame is 30 Ne.

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

(OR)

C. Write brief note on bundling and baling process. (6)

D. With neat diagram, explain the working principle of reeling machines. (10)

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April/ May - 2026 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 objectives of sizing?
2. Write down the two main objectives of winding.
3. Write down the advantages of fly shuttle handloom over throw shuttle handloom.
4. State the functions of a reed in handloom weaving.
5. What type of shed is formed by barrel dobby?
6. Name the different types of reed used in handloom weaving.
7. Define the term Millitex and Kilo tex.
8. Give the conversion factor for converting NE count to NF count.
9. Calculate the count of 2-fold yarn twisted from 2 single of 60^{s} cotton yarn.
10. Calculate the number of ends per inch (EPI) of 64^{s}ST (stock port) reed, if 2 ends are drawn per dent.

PART-B ((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. What are the precautions to be taken during warping. (6)

    B. Mention the different methods of warping and explain any one of them with a neat sketch. (10)

(OR)

    C. Describe the preparatory processes involved in weaving. (6)

    D. What are the various forms of sizing? Explain briefly the process of street warp sizing. (10)

12. A. Compare the throw shuttle handloom and fly shuttle handloom. (6)

    B. Explain in detail about the different motions of a Handloom. (10)

(OR)

C. Explain the roller heald reversing motion on handloom. (6)

D. With a neat sketch, discuss in detail about the four main parts of handloom their function. (10)

13. A. Illustrate the closed shed beating and crossed shed beating of a handloom. (6)

B. Discuss the various types of let-off motions in handloom and explain in detail with a neat sketch about rope lever and weight let-off motion. (10)

(OR)

C. Write about the essential features of a Pit loom. (6)

D. Explain the working principle of lattice dobby with a neat diagram. (10)

14. A. Calculate the count in New French system of 800 metres of cotton yarn, if its weight is 32 grams. (6)

B. i) Drive the conversion factor for converting yarn count from worsted to New English. (10)

ii) The count of 500 yards of worsted yarn was found to be 80^{s}worsted. Calculate it's weight in gram.

(OR)

C. Drive the conversion factor for converting the yarn count from New English to Denier English system. (6)

D. Calculate the count in Denier English of 260 yards of rayon yarn, which weight is of 50 gram. (10)

15. A. Calculate the count of a two-fold yarn which is made from 2 single component, one of 40^{s} and the other of 60^{s}yarn. (6)

B. A 5^{s} folded yarn is composed of, one thread of 25^{s} and another of 10^{s}**.** The later is having the regain of 60%. Calculate the weight of component threads in 100 pounds of folded yarn. (10)

(OR)

C. Calculate the count of the unknown component thread of a 2 - fold yarn, if the count of the folded yarn is 18 tex and the count of the known component is 9 tex. (6)

D. Calculate the total number of ends in the reed from the following particulars: (10)

Count of reed : 80^{s} ST

Denting order : 2 ends per dent for body & 4 ends per dent in selvedge

Reed width : 50 inches (including ½ inch selvedge on each side)

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April/ May - 2026 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. What is Union fabric?
2. Construct the design and draft for warp rib weave.
3. Construct one design of each warp way and weft way twill.
4. Mention the drafting order for wavy twill on 16 X 8 with 8 thread twill.
5. Construct an irregular sateen using 6 threads.
6. Differentiate between diamond and diaper weave. (any 2 points)
7. Why is the honeycomb weave suitable for towelling fabrics?
8. Indicate the suitable denting order of 3 and 3 Mock leno.
9. Mention the any two methods of producing crepe weaves.
10. Define the Colour and weave effects.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Draw interlacing diagrams for 2 & 2 warp and weft rib weaves. (6)

    B. What are plain weave derivatives? Explain with suitable diagram. (10)

    (OR)

    C. Explain about any 6 methods of ornamentation of plain weave with suitable examples. (6)

    D. What is catch cord technique in handloom and its purpose? Explain its arrangement and working with suitable diagrams. (10)

12. A. Construct a warp faced, weft faced and equal faced twill on 6 threads. (6)

    B. Draw one repeat of design, draft, peg plan of a wavy twill on 8 X 16 with the base of 4 up 4 down Twill (10)

(OR)

C. Differentiate between wavy twill and herringbone twill. (6)

D. Draw one repeat of broken twill design by filling and missing method of 8 thread twill base along with it's draft. (10)

13. A. Draw one repeat of design and the draft of diamond weave on 8 x 8 with the base of $\frac{2}{2}$ Twill. (6)

B. Draw one repeat of the design, draft and peg plan of diaper on 12 x 12 with $\frac{3}{3}$ Twill base. (10)

(OR)

C. Differentiate between satin and sateen weaves with suitable illustrations. (6)

D. What are dice checks? Explain briefly the construction of sateen dice checks. (10)

14. A. Draw the design and draft of Devon huck – a – back. (6)

B. Construct the design and draft of brighton honey comb weave on 16 X 16 (10)

(OR)

C. Construct the design and draft of Mock-leno weave on 6 x6. (6)

D. Construct the both warp corkscrew and weft corkscrew weave on 11x11. (10)

15. A. Construct a crepe weave on 8 X 8 by the method of combination of floating weave with plain thread. (6)

B. Combine the following weaves to form a check effect. Also, indicate its draft. (10)
Weave -1: 8 thread honey comb, Weave – 2: plain weave

(OR)

C. Construct weft distorted thread effect on 12 X 12. (6)

D. i) Define combination of weaves. (10)
ii) Draw an all-over pattern using 4 up 4 down warp way twill with the colour pattern of 4 light, 8 dark and 4 light in both directions.

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Semester : **III** Time:3 Hours

Course Code & Title : **HTPC205 Chemical Processing of Textiles-I** Max Marks100

PART-A (10×2=20 Marks)

Answer all the questions within two to three sentences

1. State the objects of Scouring of cotton.
2. Mention the temperature and pH for hypochlorite bleaching.
3. Define the term "percentage exhaustion."
4. Write the full form for HTPE dyeing machine.
5. What is the function of alkali in reactive dyeing?
6. Suggest a treatment to improve the light fastness of direct dyes.
7. What are the precautions to be taken during the dyeing of cotton with Vat dyes?
8. Name the two chemicals used for diazotization of the base.
9. What is the objective of Decatising wool?
10. Differentiate between Chrome dyes and metal complex dyes.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Explain the use of enzymes in the desizing of cotton with merits and demerits. (6)

    B. Describe the working of a Gas singeing machine with a neat sketch, along with the necessary precautions to be taken. (10)

(OR)

    C. What are the advantages of hydrogen peroxide bleaching over hypochlorite bleaching? (6)

    D. State the objects of mercerization. Explain the working of Pad- Chain Merceriser with a neat diagram. (10)

12. A. Explain the working of Vertical Can dryer with a neat sketch. (6)

B. Describe the working of the Cabinet Hank dyeing machine along with its merits and demerits. (10)

(OR)

C. Explain the principle of HTHP Beam dyeing machine. What are its limitations? (6)

D. Draw a neat diagram of the Winch dyeing machine and explain its working, along with its merits and demerits. (10)

13. A. How will you improve the fastness properties of direct dyed material by using a cationic dye fixing agent? (6)

B. Describe the procedure for dyeing of cotton with Direct dyes, along with recipe, process conditions, and the function of chemicals used. (10)

(OR)

C. Classify reactive dyes based on the presence of Functional groups. (6)

D. Describe the procedure for dyeing of cotton with Procion H dyes, along with recipe, process conditions and function of chemicals used. (10)

14. A. Classify the vat dyes based on application & chemical composition. (6)

B. Discuss the various steps involved in the application of Vat dyes on cotton (10)

(OR)

C. Mention the defects of Sulphur black dyeing and suggest suitable remedies. (6)

D. Describe the proceduce for dyeing of cotton with Azoic dye vat along with recipe, process conditions and merits and demerits. (10)

15. A. State the objects of degumming of silk. Discuss soap degumming in detail. (6)

B. Describe the procedure for dyeing of silk with Metal Complex dyes, along with recipe, process conditions, and function of chemicals used. (10)

(OR)

C. List the various impurities present in raw wool. Explain the emulsion scouring method of wool. (6)

D. Describe the procedure for dyeing wool with Leveling Acid dyes, along with recipe, process conditions and function of chemicals used. (10)

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