

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-2023 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 03

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 Oligomer.
2. What are post spinning operations in synthetic fiber manufacturing?
3. Which fiber is called; Artificial Wool & Artificial Silk?
4. Define crystalline & amorphous.
5. Write the chemical composition of cotton fiber.
6. Which natural fiber is called; King of fibers & Queen of fibers
7. What is carbonizing process in wool?
8. What is the difference between Nylon 6 & Nylon 6, 6 in chemical structure?
9. Which synthetic fibers are called floating fibers (floating on water)?
10. Name the spinning techniques used for production of following fibers; Polyester, Polypropylene, Viscose & Acrylic.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Classify the polymers; (i) Based on polymer structure of the monomer chain (6)
(ii) Based on polymerization.
 - B. Name the commonly using spinning techniques for production of synthetic fiber? (10)
Explain the process of polymer to fiber conversion using melt spinning technique with neat diagram and its merits and demerits?
- (OR)**
- C. Name the different types of spin finishes and discuss the application of spin finish. (6)
 - D. With suitable line diagram, explain the draw texturing process and its principle with advantages and disadvantages. (10)

12. A. Classify the Textiles Fibers. (6)
B. Brief the essential and desirable properties of textile fibers. (10)
(OR)
C. Write the difference between POY and FOY yarns and its properties. (6)
D. Define the following; (i) Dope dyed (ii) Spun yarn (iii) De-luster (iv) Folded yarn (10)
(v) Hydrophobic fiber.
13. A. Explain the morphological structure of Cotton fibers with suitable diagram. (6)
B. Write minimum two properties in each on physical, chemical, thermal and biological (10)
properties of cotton fiber and discuss briefly.
(OR)
C. Write few important physical & chemical properties of Polynosic Rayon fiber and (6)
its applications
D. Brief the chemical reactions in the manufacture of Viscose Rayon with suitable flow (10)
diagram.
14. A. Briefly Classify the wool fiber and write the chemical composition of wool Fiber. (6)
B. Brief the life cycle of Bombyx Mori moth with diagram and write the chemical (10)
composition of mulberry silk.
(OR)
C. Write few important physical & chemical properties of Nylon 6, 6 fiber and its (6)
applications
D. Demonstrate the polymer production and fiber manufacturing process of Nylon 6. (10)
15. A. Write the following properties of polypropylene; (i) density (ii) melting point (6)
(iii) moisture regain
B. Explain the polymer production and fiber manufacturing process of Polyester. (10)
(OR)
C. What are aromatic polyamide fibers? Give the chemical structures of aromatic (6)
polyamides.
D. Demonstrate the polymer production and fiber manufacturing process of (10)
polypropylene.

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Diploma in Handloom & Textile Technology

NOV/DEC-2023 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. Write the objective of a Ginning process.
2. Name any four machines employed in blowroom process.
3. Show the positions of a front plate and back plate around the carding cylinder.
4. state the functions of a mote knives and show their position with respect to licker-in.
5. Write the objectives of combing machines.
6. Name any two comber lap preparatory methods
7. Write the following parameters of speedframe.
Amount of draft and twist applied, Name of the feed and delivery material
8. Write the objectives of draw frame.
9. State the role of ring and traveller in ringframe machines.
10. Illustrate the relationship between delivery speed and TPI in ring spinning machines.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write the process flow chart of a combed yarn manufacturing process. (6)
B. With neat diagram, explain the method of separation of cotton seed and lint in anyone type ginning machine. (10)

(OR)

- C. Differentiate lap feed and chute feed system. (6)
D. Explain the objectives of a blowroom process. Also explain the sequence of various machines and their role in blowroom process. (10)

12. A. Differentiate carding action and stripping action. (6)
B. With neat diagram, explain the passage of material through various functional elements of a carding machine. (10)

(OR)

- C. Differentiate closed loop autoleveller and open loop autoleveller used in carding machine. (6)
D. Calculate the production of a high speed carding machine in kg per shift of 8 hours with the following particulars. (10)
Doffer speed – 40 rpm, Diameter of doffer – 27 inch, Hank of sliver delivered – 0.15^s Ne, Efficiency of the machine – 92%

13. A. Calculate the quantity of sliver lap delivered in kg/hour with the following particulars. (6)

Surface speed of delivery roller - 140 metre / min and count of lap - 65 kilotex, efficiency of the machine – 75%, number of sliver lap machine – 2

- B. With neat diagram and technical specifications, explain the passage of material through various functional elements of a sliver lap machine. (10)

(OR)

- C. Calculate the production in Kg/hr of a comber machine with the following particulars. (6)

Combing roller speed = 420 Nips/min, Length of lap fed per nip = 5 mm , Efficiency = 93%, feed Lap weight = 70 g/m, number of heads present in the machine - 8 and Noil extracted = 17%

- D. With neat diagram and technical specifications, explain the passage of material through a modern combing machine. (10)

14. A. Draw the block diagram of open – loop auto leveller in draw frame. (6)

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

(OR)

- C. Draw the schematic diagram of material passage in speedframe and indicate the various functional parts. (6)

- D. Calculate the production of a roving frame in kg / shift of 8 hours running at (10)

85% efficiency with the spindle speed of 1200 rpm. The amount of twist inserted on the roving in one inch is 1.5 and the count of roving delivered is 1.5 Ne. The number of spindle functioning on the frame is 120.

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

Count of roving is 1.5 Ne yarn produced in the ring frame is 40 Ne.

- B. With schematic diagram and technical specifications, explain the passage of material through a modern ring frame. (10)

(OR)

- C. Write brief note on bundling process. (6)

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

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Diploma in Handloom & Textile Technology

NOV/DEC-2023 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 03

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 warping?
2. Write down the two common sizing defects occurs during sizing.
3. Write the names of two heald reversing motions in handloom weaving.
4. What are the two main differences between frame loom and pit loom?
5. What are the objectives of reed in handloom weaving?
6. Write the names of two let-off motions used on handloom.
7. Define the 10^S Decimal cotton count.
8. Write down the length and weight unit of Tex yarn count system.
9. Explain the term heald count.
10. What do you understand by Stockport reed count system?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Give the names of sizing ingredients used in size mixture with their functions. (6)
B. Write the objectives of warp sizing. With the help of neat sketch, explain the street warp sizing process. (10)
- (OR)
- C. Explain different forms of yarn packages used in handloom industry with the help of figure. (6)
D. Explain the sectional warping process in detail, with the use of suitable diagram. (10)
12. A. Explain the roller heald reversing motion on handloom. (6)
B. Explain primary, secondary and auxiliary motions of handloom in detail. (10)

(OR)

- C. Differentiate between pit loom and frame loom. (6)
- D. Explain different types of shed formations in detail with suitable sketches. (10)
13. A. Discuss different types of shuttles used in handloom weaving with their suitability. (6)
- B. Write, types of let-off motions used in handloom weaving. Explain rope-lever and weight let-off motion with suitable sketch. (10)
- (OR)**
- C. Explain different types of reed used in handloom weaving. (6)
- D. Discuss the working principle of lattice dobby in detail with the help of suitable sketch. (10)
14. A. Convert 60 Denier metric count to Tex count system. (6)
- B. Drive the conversion factor to convert Worsted system to New English system. Also convert 40^s Worsted count to New English count system. (10)
- (OR)**
- C. Calculate the count of yarn in Tex system. If 135 grams of polyester yarn having 13500 meters of length. (6)
- D. (a) Calculate the weight of yarn in kilogram. If 33000 yards of cotton yarn having 32^s Ne cotton count. (10)
- (b) Calculate the count of a yarn in Nf system. If length of yarn is 6000 meters and weight is 240 grams.
15. A. Calculate the resultant count of two fold yarn composed of 40^s and 30^s Worsted. (6)
- B. With the use of following particulars find out the total number of ends in 44^s stock-port reed. 60 inches reed width. Denting order - 2 ends per dent and 4 ends per dent in alternate order. (10)
- (OR)**
- C. Calculate the average count of 20^s, 40^s, 50^s and 80^s New English cotton yarn. (01 Thread = 01 Hank) (6)
- D. A folded cotton yarn whose length is 1680 yards and weight is 4 ounce. If one of the component thread is found to be 20^s Nec. What will be the count of another component thread? (10)

12. A. Write the factors that influence the angle of twill. (6)
B. Construct a transposed twill with its draft and peg plan on 24 ends x 8 picks (10)
with 3-up 1-down and 1-up 3-down twill base having transposed in groups of 3.

(OR)

- C. How does the twist direction in the yarn influence the prominency of twill? (6)
D. Construct a Broken twill with its draft and peg plan on 18 x 6 with 3 up 3 (10)
down twill base by filling and missing style (3 fill 2miss)
13. A. Explain the principle of forming Diamond weave. (6)
B. Construct the design, draft, peg plan for i) Satin dice check on 10 x 10 ii) twill (10)
dice check on 8 x 8

(OR)

- C. Explain the salient features of satin fabric. (6)
D. Construct the diaper design on 12 x 12 with draft and peg plan taking base (10)
twill 2up 2 down.

14. A. Construct Huck a back on 10 x 10. (6)
B. Construct Brighton Honey comb in 16 x 16 with draft and peg plan. (10)

(OR)

- C. Construct Warp cork screw weave in 9 x 9. (6)
D. Construct design, draft, peg plan for Mock-leno weave on 10 x 10. Also, (10)
indicate the denting order.

15. A. Construct crepe weave on 8 X 8 by the method of combination of floating (6)
weave with plain threads.
B. What is colour and weave effect? Show the stages of color application taking (10)
a weave 2up/2 down twill warp way with colouring order of 1 black and 1
white both in warp and weft.

(OR)

- C. Construct the weft distorted thread effect in 14 x 14 taking 4 and 11 picks for (6)
distortion.
D. Combine the following weaves to form check effect on 20 x 20 with draft and (10)
peg plan ; Weave 1 - 10 x 10 mock leno, Weave 2 - plain

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NOV/DEC-2023 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 03

Time:3 Hours

Course Code &Title : **HTPC 205 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 is the need for pretreatment process?
2. What are OBA's? How they are different from blueing agents?
3. Define Chromophores and Auxochromes with examples.
4. Compare between dyes and pigments.
5. Write the properties of Direct dyes.
6. What is the role of salt and soda in the application of reactive dyes? Explain with chemical reactions.
7. What are the advantages of solubilised vat dyes?
8. What is the role of Sodium Sulphide in the dyeing of cotton with Sulphur dyes?
9. Define the Crabbing and Potting process of wool.
10. What are metal complex dyes? What are their advantages?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Brief about the working of Gas singeing process with neat diagram.
B. What is the composition of Cotton fiber? Explain in detail about the recipe of conventional scouring of cotton with all the mechanisms by which the impurities are removed.

(OR)

- C. Explain in detail about the acid and enzyme desizing process with appropriate recipe and mechanism.
D. Brief about the pad chain mercerization process with neat diagram.

12. A. Brief about the different types of Padding mangles with neat diagram.
B. Elaborate in detail about the Pressure Kier with the neat sketch.

(OR)

- C. Brief about the principle, construction and working of Jet dyeing machine with neat diagram.
D. Enumerate in detail about the principle, construction and working of Jigger dyeing machine with neat sketch.

13. A. Brief about the components of a Reactive dye with chemical structure and examples.
B. Why direct dyes have poor wash fastness? Explain the various after treatments used to overcome the problems with emphasis on the use of cationic dye fixing agents.

(OR)

- C. Brief about the classification, recipe and method of application of direct dyes on cotton.
D. Explain in detail about the mechanism, recipe and dyeing procedure of H reactive dyes on cotton.

14. A. Brief about the recipe, mechanism and application method of Solubilized vat dyes on cotton.
B. Explain in detail about the process sequence, recipe and application of Vat dyes on cotton.

(OR)

- C. Brief about the general properties of Azoic dyes.
D. Describe in detail about the steps involved with recipe in the dyeing of cotton with sulphur dyes.

15. A. Brief about the degumming process of silk using enzymes.
B. Elaborate in detail about the recipe, mechanism on dyeing of silk using acid dyes.

(OR)

- C. Brief about the milling process of wool with neat sketch.
D. Explain in detail about the recipe, chemistry and application of chrome dyes on wool.
