Registration Number | | | | | | | |

INDIAN INSTITUTE OF HANDLOOM TECHNOLOGY

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

Diploma in Handloom & Textile Technology

APRIL/MAY-2024 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 degree of polymerization.

2 . Highlight the objective of drawing and heat setting process.

3 . Why the crystallinity and orientation are very important for textile fibres?

4 . Differentiate ply and cabled yarn.

5 . List the physical properties and end uses of hemp fibres.

6 . Write the importance of ageing and xanthation in viscose fibre production.

7 . Identify the important amino acids presence in the silk fibre.

8 . Enlist the chemical properties of Nylon 66 Fibers.

9 . Differentiate acrylic and mod acrylic fibre based on their raw material.

10 . Why the aramid fibers are mainly used for bullet proof clothing?

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write the classification of polymers with suitable examples. (6)

B. Explain the important working principles of wet spinning with suitable diagrams. (10)

(OR)

C. Differentiate the working principles of draw and air jet texturizing techniques. (6)

D. Explain the spin finish composition and application techniques in detail. (10)

12. A. Identify the requirements to produce UDY, POY and FOY. (6)

B. Classify the natural, organic and inorganic fibres with suitable charts. (10)

(OR)

C. Enlist any three important essential and desirable properties of Textile fibers with suitable details. (6)

D. How the morphological structure can be related to the luster properties and explain the delustered fibre production and importance of the same. (10)

13. A. Compare the physical and chemical properties of cotton and flax (linen) fibres. (6)

B. Discuss in detail about the jute fiber cultivation, harvesting and production. (10)

(OR)

C. Identify the function of spin bath chemicals used in the viscose fiber production. (6)

D. Highlight the physical and chemical properties required to use normal and high modulus polynosic rayon in technical textiles applications. (10)

14. A. Classify the various varieties of wool fiber and grading of the same. (6)

B. Analyse the importance of throwing and weighing in silk filament production. (10)

(OR)

C. Discuss the chemical composition and properties of wool fibre. (6)

D. Enumerate in detail about the raw material requirements and manufacturing process of Nylon 6 fibre. (10)

15. A. Highlight the important physical and chemical properties of polyester fibre. (6)

B. Discuss in detail about the steps involved in the manufacturing process of polyethylene fibre (10)

(OR)

C. Enlist the important physical and chemical properties of polypropylene fibre. (6)

D. Differentiate the raw material and manufacturing process details involved in the meta and para- aramid fiber production. (10)

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APRIL/MAY-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. Mention any two blending machines employed in blow room process.
2. Write the formula to calculate cleaning efficiency of blow room.
3. State the objectives of carding machine.
4. Write any two web doffing devices employed in carding machine.
5. State the objectives of combing process.
6. What is noil in comber?
7. State the functions of autoleveller.
8. Calculate the draft applied on roving machine to produce 1.5^s Ne roving from 0.14^s Ne draw frame sliver.
9. State the objectives of ring frame.
10. Write the formula to calculate number of twists introduced per inch of the yarn if spindle speed and delivery speed are known.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

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

    B. Explain the working principle of any one ginning machine with neat sketch. (10)

(OR)

    C. What is chute feed system?. Mention its advantages and disadvantages. (6)

    D. Calculate the production of blow room machine in kg per shift of 8 hours running at 86% efficiency producing 0.0012^s Ne lap hank with speed and diameter of lap roller are 15 rpm and 9” respectively. (10)

12. A. Compare carding action and stripping action in carding machine. (6)

B. Explain the working of autoleveller commonly employed in a carding machine with suitable diagram. (10)

(OR)

C. Write the functions of coiler and mention its types employed in carding. (6)

D. With a neat sketch, explain the passage of material through high production carding machine. (10)

13. A. Write short notes on forward feed and backward feed in comber. (6)

B. With a neat sketch, explain the working of super lap former machine with its technical specifications. (10)

(OR)

C. Write short notes on various comber preparatory techniques. (6)

D. Explain combing cycle of operations with neat diagrams. (10)

14. A. Draw neat diagram of modern draw frame and mention its parts and technical specifications. (6)

B. Calculate the production of a roving frame in kg per shift of 8 hours running at 90% efficiency with spindle speed – 1400 rpm, twist factor – 1.2, roving hank – 1.8^s Ne and number of spindles – 120. (10)

(OR)

C. Calculate the production of a draw frame in pounds per hour running at 90% efficiency with delivery speed - 500 meters per minute and draw sliver hank – 0.14^s Ne. (6)

D. Explain the passage of material through speed frame with neat sketch. (10)

15. A. Write brief notes on bundling process. (6)

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

(OR)

C. Write brief notes on reeling process. (6)

D. Calculate the production of a ring frame in kg per shift of 8 hours running at 88% efficiency with spindle speed – 20000 rpm, twist per inch – 22, yarn count – 40^s Ne and number of spindles – 1080. (10)

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APRIL/MAY-2024 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 Limitations of peg warping?

2 . Differentiate between winding and warping.

3 . What are the advantages of center closed shed over bottom closed shed?

4 . Differentiate between pit loom and frame loom.

5 . Mention the specifications of shuttles that are suitable for cotton and silk saris.

6 . Write the limitations of barrel dobby.

7 . Define the term of millitex and kilotex.

8 . Give the conversion factor for Ne to Denier.

9 . Calculate the count of 2 fold yarn twisted from 2 singles of 40^s yarn.

10 . How do you express the reed particulars? Give the example.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write the essential characteristics required for weaving of warp and weft yarns. (6)

B. Identify the type of yarn packages suitable for handloom weaving process and explain their characteristics and uses with suitable illustrations. (10)

(OR)

C. Formulate the size recipe for combed cotton and polyester/cotton blended yarns. (6)

D. What are the objectives of sizing? Summarize the ingredients used in size mixture for the handloom industry and their functions. (10)

12. A. Differentiate between throw shuttle and fly shuttle handlooms with respect to process and products. (6)

B. With neat sketch Discuss in detail about the various parts of the handloom and their functions. (10)

(OR)

C. Explain jack and lam rod system shedding mechanism on handloom with neat diagram (6)

D. Discuss in detail about the position and movement of warp layers in different types of sheds with suitable sketch. (10)

13. A. What are the various types of reed? Explain the suitability and characteristics for various types of handloom fabrics with suitable illustrations. (6)

B. Explain the construction, working principle and limitations of barrel dobby in handloom with neat sketch. (10)

(OR)

C. Explain the working mechanism of fly shuttle picking mechanism of the handloom along with its advantages. (6)

D. Describe the functions and working mechanism of poker rod and ratchet wheel take up motion with neat diagram. (10)

14. A. If 2800 yards of cotton yarn weigh 40 grams, Calculate the count of the yarn in New English System. (6)

B. (i) If 7900 yards of jute yarn weighs 3 pounds. Calculate the count of the yarn?
(ii) Calculate the length of a skein of flax yarn whose weight is 0.5 lb. and the count is 16 pounds per Spyndle. (10)

(OR)

C. If 1550 metres of Silk yarn weighs 7.5 grams. Calculate the count of the yarn in Denier system. (6)

D. Deduce the conversion factors for converting yarn count from New English system to metric system and Convert 80^s Ne cotton count to metric system. (10)

15. A. Calculate the resultant count of the three fold cotton yarn composed of 12^s, 15^s and 20^s single yarn. (6)

B. The take-up of one of the component threads in a loop yarn is 90%. The count of this component yarn is 40**s**. If the count of the other component yarn is 80**s**, calculate the length and weight of component threads are there in 5 pounds of the resultant yarn. (10)

(OR)

C. Calculate the average count of 10 tex, 15 tex, and 20 tex yarns. The length of yarn in each case is same in 1Km. (6)

D. Calculate the total number of ends in the reed from the following particulars: (10)
Count of the reed : 48s ST
Denting : 2 ends per dent for body & 4 ends per dent in selvedge
Reed width : 52 inch (including one inch selvedge on each side)

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APRIL/MAY-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. Give the names of different types of draft.
2. Give the names of two derivative structure of plain weave.
3. What do you understand by warp faced twill weave?
4. How many minimum ends and picks required for 3/1 twill weave.
5. Write the possible moves number for 5 thread satin weave.
6. Name the draft order used for sateen weave.
7. Give the names of two weaves that can produce toweling effect.
8. Write the drafting order of 8 x 8 ordinary honey comb weave.
9. Define the hounds tooth effect.
10. Define the Bird's Eye effect.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Give the classification textile fabrics. (6)

    B. What are the derivatives of plain weave? Mark a weave for each derivative. (10)

(OR)

    C. Explain the methods of representing design/weave on graph paper. (6)

    D. Explain the arrangement and working of a catch cord technique with suitable diagram. (10)

12. A. Construct one repeat of warp and weft face twill weave on 5 ends and 5 picks. (6)

    B. Construct one repeat weave, draft and peg plan of a herring bone twill on 16 x 8 with 4/4 twill base. (10)

(OR)

C. Write the factors that influence the angle of twill. (6)

D. Construct design, draft and peg plan of a wavy twill along the cloth on 8 x 16 with 4/4 twill base weave. (10)

13. A. Differentiate regular / irregular satin and sateen weaves. (6)

B. Construct a diamond weave with suitable drafting order. (10)

(OR)

C. Construct diaper weave with 2/2 base twill. (6)

D. Construct the design, draft, peg plan for (10)

(i) 2/2 twill base diamond weave on 6 x 6 (ii) 5 thread sateen weave.

14. A. Construct a mock leno design on 6 x 6. (6)

B. Construct a Huck-a-Back design on 10 x 10 and furnish drafting and peg plan. (10)

(OR)

C. Construct honey comb weave on 6 threads. (6)

D. Construct brighton's honey comb suitable for weaving with 8 heald shaft. (10)

15. A. What are the different methods for constructing crepe fabric? (6)

B. Construct the design, draft, peg plan by combining mock-leno and plain weave to produce a check fabric (10)

(OR)

C. Name any four colour and weave effects. (6)

D. Construct the design, draft, peg plan by combining honey comb and plain weave to produce a check fabric. (10)

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APRIL/MAY-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. What is the object of spotting in preparatory process of Textiles.
2. Write the function of tri sodium phosphate in bleaching.
3. Write two examples of ingrain dyes/colour.
4. What is the M:L ratio of padding mangle.
5. Write the name of bond formed between reactive dye & cotton.
6. Write two commercial names of Direct dyes.
7. Write the coupling reaction in azoic dyeing of cotton.
8. Write the name of chemicals used in reduction of Sulphur dyes.
9. Define Milling.
10. Write the decatising process for wool.

PART-B **(**(6+10)×5=80 Marks)

Answer all the questions in detail

11. A. What is the need of preparation of grey fabric for dyeing. (6)

    B. Explain the saponification and emulsification process of scouring cotton. Write the method of bleaching cotton with hydrogen peroxide. (10)

(OR)

    C. Write the objectives of Mercerisation. Discuss in short about parameter of Mercerization. (6)

    D. Explain the working of Gas singeing machine with neat diagram. (10)

12. A. Write in detail the classification of dyes. (6)

    B. Explain the working of J box with neat diagram. What are the advantages of J box machine? (10)

(OR)

C. Write in brief shade percentage, affinity and percentage expression. (6)

D. Explain with diagram the working of Soft Overflow Jet dyeing machine with its advantages. (10)

13. A. Define direct dyes. Explain the after treatments of direct dyed goods. (6)

B. Write about various types of Reactive dyes. Explain the method of dyeing using H brand reactive dyes with recipe and functions of chemicals used. (10)

(OR)

C. Write the method of application of cationic dye fixing agent on direct dyed cotton. (6)

D. What do you know about Vinyl sulphone reactive dyes? Write the method of dyeing with VS dyes on cotton. (10)

14. A. Write about classification of Vat dyes according to application method. (6)

B. Explain in detail the development of Azoic color on cotton with objectives of chemical used. (10)

(OR)

C. Define solubilized vat dyes. Write the details of dyeing process using Solubilized vat dyes on cotton. (6)

D. Write in detail about defects such as tendering and bronziness in Sulphur dyed goods and their remedies. (10)

15. A. Explain degumming of Silk. Write the method of degumming. (6)

B. What do you know about Setting of Wool? Explain the working of Milling machine with neat diagram? (10)

(OR)

C. Write in detail the dyeing of Silk using Acid dyes with recipe and objectives of chemicals used. (6)

D. What are metal complex dyes? Explain the classification of acid dyes. (10)

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