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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 : 05

Time:3 Hours

Course Code & Title : **HTPC301 Weaving Technology- II**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

- 1 . Write the functions of Jacquard.
- 2 . List the advantages of jacquard shedding over dobby shedding mechanism.
- 3 . Mention the advantages of quick style change in modern loom
- 4 . Enlist the different types of weft feeders used in shuttleless loom.
- 5 . State the functions of pre-nozzle in jet looms.
- 6 . Classify the Rapier loom.
- 7 . Write the formula for calculating loom efficiency.
- 8 . Calculate the diameter in inch of the 120^s cotton yarn using Pierce's Rule.
- 9 . Define the term of 'cover factor'.
- 10 . Give the formula for change threads per inch keeping same level of compactness of fabric in indirect system.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Discuss the merits and demerits of electronic jacquard over mechanical type. (6)
B. Demonstrate the working principles of DLDC jacquard shedding mechanism with neat sketch. (10)

(OR)

- C. Describe the process of card cutting and card lacing in jacquard loom. (6)
D. Explain the concepts in various methods of Tie-up and harness building on jacquard loom with suitable sketch. (10)
12. A. Write the technological and economic benefits of shuttleless loom. (6)
B. Explain about the sequence of operations involved in weft insertion in a projectile loom with a neat sketch. (10)

(OR)

- C. Illustrate the beat up mechanism used in projectile loom. (6)
- D. Describe the working principle of picking mechanism in modern weaving machine with a neat sketch. (10)

13. A. Discuss the basic technical requirements of compressed air for air jet loom. (6)
- B. With neat sketch explain the sequence of operations involved in weft insertion in water jet loom. (10)

(OR)

- C. Mention the merits and demerits of air jet loom. (6)
- D. Explain the working principle and limitations of various multi-phase weaving loom with neat diagram. (10)

14. A. By taking the specific volume of yarn as 1.1 cubic cm per gram, derive the constant for calculating Ne system of cotton yarn diameter in inch as per Peirce's Rule. (6)
- B. Calculate the diameter in inch of the following yarns using Peirce's Rule. (10)
1. 2/80^s cotton yarn
 2. 50 Tex polyester yarn

(OR)

- C. By taking the specific volume of yarn as 0.06713 cubic inch per gram, derive the diameter in inch as per Peirce's Rule. (6)
- D. Calculate as per the Peirce's rule of the yarn count. The following cotton yarns diameter is (10)

 - I. 1/177 inch diameter yarn
 - II. 1/250 inch diameter yarn

15. A. If the diameter of 80^s cotton yarn is 1/240 inch, what will be the diameter of 40^s and 20^s cotton yarn? (6)
- B. Calculate the relative warp and weft cover of the cloth, which is specified as follows. (10)
- Warp : 64 Tex cotton ; 334 ends per 100 mm
- Weft : 81 Tex cotton ; 198 picks per 100 mm

(OR)

- C. A cloth is made with 48 EPI of 16^s yarn. Calculate the count of yarn to be used, if a cloth of same compactness is to be produced with 60 EPI. (6)
- D. A cloth is made with 30^s cotton warp and weft contains 90 EPI and PPI, width of the cloth 1 meter. Assuming that it required to producing a new texture, but it should be 1/10th light. What kind of yarn count and threads per inch will be required? (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 05

Time:3 Hours

Course Code & Title : **HTPC302 Textile Testing - II**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. Write the formula to calculate the areal density of a fabric.
2. Write down the formula to calculate the Fabric cover factor
3. What is Grab test?
4. List the merits and demerits of electronic based tensile strength tester.
5. Write the importance of measurement of water repellency of a fabric.
6. What is “drape coefficient”?
7. State the importance of colour fastness testing of a dyed fabric.
8. Illustrate the grey scale used for colour fastness assessment.
9. List the advantages of automatic inspection system
10. What is meant by MIL standard?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Give a detailed note on measurement of length and width of a fabric (6)
B. Explain the procedure to measure the thickness of the fabric sample with schematic diagram. (10)
- (OR)
- C. Draw the diagram showing the systematic selection of sample from the fabric and also write the precautions to be taken while drawing a fabric sample. (6)
D. With line diagram, explain the procedure to measure the crimp percentage of yarn unraveled from the fabric. (10)
12. A. Explain the different method of preparation of fabric sample for tensile (6)

strength testing.

- B. Elucidate the principle and method of measurement of bursting strength of a fabric (10)

(OR)

- C. Explain the different method of preparation of fabric sample for tear strength testing. (6)

- D. Elaborate the principle and method of measurement of tensile strength of a fabric in Universal tensile Tester. (10)

13. A. Give a detailed note on wrinkle recovery testing of fabric. (6)

- B. Explain the procedure to determine the flexural rigidity of a fabric with suitable diagram. (10)

(OR)

- C. Write short notes on fabric shrinkage testing of a fabric. (6)

- D. Explain the method of determination of pilling resistance of a fabric with suitable diagram. (10)

14. A. Discuss about the importance of colour fastness testing of a textile material. (6)

- B. Elucidate the procedure to determine the colour fastness against washing. (10)

(OR)

- C. Discuss in brief about the colour fastness testing against perspiration. (6)

- D. Elucidate the procedure to determine the colour fastness against light. (10)

15. A. Write short notes on classification of fabric faults. (6)

- B. Elaborate the method of grading of fabric using 4-point system. (10)

(OR)

- C. Give a detailed note on AQL. (6)

- D. Explain the procedure to assess the quality of garment manufacturing process from fabric to packing. (10)

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NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : V Semester

Time:3 Hours

Course Code & Title : HTOE301- PRODUCT DESIGN

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. List any two essential features of product design.
2. What is brainstorming? Specify the objectives.
3. Specify any four challenges of product development.
4. List any two important marketing aspects that are to be considered during the product development phase.
5. What is meant by 'design by imitation'? Give one example.
6. Define the term 'iteration' in product design.
7. What are the decision variables in optimization?
8. Define the term 'Rapid prototyping'.
9. Specify any four environmental factors that are to be considered in the product design.
10. What is design for 'Recyclability'?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Brief the steps involved in creative design process. (6)
B. Explain the activities in a typical product development process with a flow chart. (10)

(OR)

- C. Brief about any two idea generation methods for the new product design and development. (6)
D. List the seven phases of morphology of design process and explain about any two phases in detail. (10)

12. A. List the essential characteristics of successful product development. (6)
B. Explain the different stages of a product using the product life cycle plot. (10)

(OR)

- C. What are the essentials of customer need identification? Also, brief about any one method of assessing the customer need. (6)
D. Explain about the design for simplification and standardization, the product development practices used in industry. (10)

13. A. Differentiate the design for evolution and the design for innovation. (6)
B. List the activities of standards of performance considering the output and environmental factors. (10)

(OR)

- C. Specify the role and effect of aesthetics in product design. (6)
D. Explain the different steps in 'Detailed design' of a product with a flow chart. (10)

14. A. Brief about 'Design for six sigma' by considering two wheeler automotive as example. (6)
B. Explain the role of computers in design, and analysis of a product with an example. (10)

(OR)

- C. Brief the use of break-even chart in financial feasibility analysis of a product. (6)
D. Explain the use of rapid prototyping in product design with steps involved in it. (10)

15. A. Illustrate the steps involved in 'Design for robustness'. (6)
B. Explain the role of design engineer in the development of garments for medical application. (10)

(OR)

- C. Brief about 'Design for Manufacturing'. (6)
D. Explain steps involved in re-engineering of used garments in textile sector. (10)

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NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 05

Time:3 Hours

Course Code & Title : **HTOE310 Renewable Energy Technologies** Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. Define – (a) Energy (b) Renewable Energy.
2. Define - Wave Energy.
3. Define solar radiation.
4. List the different types of PV Systems.
5. Enumerate advantages and disadvantages of Wind Energy.
6. List main components of Wind power plant.
7. What do you mean by Biomass Direct Combustion?
8. Point out the factors affecting biogas generation.
9. What is Hybrid System?
10. List methods of Hydrogen Energy Storage.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write short note on World Energy Use. (6)
B. Explain the Energy Scenario around the World. (10)
(OR)
C. Write short note on Reserves of Energy Resources in India. (6)
D. Discuss in detail about Economics of renewable energy systems. (10)
12. A. Differentiate the Flat plate and Concentrating collectors. (6)
B. Discuss about Solar Radiation and its measurements. (10)

(OR)

- C. Describe any one type of Solar direct Thermal Application. (6)
- D. Explain the construction and working of Liquid heating flat plate collector with neat sketch. (10)

- 13. A. Discuss principle used in the measurement of speed of the wind. (6)
- B. Explain in details about the various components present in the wind power plant with neat sketch. (10)

(OR)

- C. What are the advantages of wind power systems? (6)
- D. Generalize the factors to be consider for the site selection to install the wind power plant. (10)

- 14. A. Write down the applications of Bio-energy. (6)
- B. What are the types of dome and drum type biogas digesters? Explain the construction and working of any one type of it with neat sketch. (10)

(OR)

- C. Enumerate the advantages and disadvantages of Biogas. (6)
- D. Explain the construction and working of any two Biomass Gasifiers. (10)

- 15. A. Discuss about the Electrical Energy Generation from Geothermal Energy. (6)
- B. Explain with a neat sketch the operation of OTEC plants. (10)

(OR)

- C. Describe the working principle of OTEC. (6)
- D. Explain the operation of hydrogen energy system with schematic diagram. (10)

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NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 05

Time:3 Hours

Course Code &Title : **HTPE301-KNITTING TECHNOLOGY** Maximum Marks:100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

- 1 . Differentiate between weaving and knitting.
- 2 . List the basic stitches of weft knitting.
- 3 . Give the different types of needles that are used in weft knitting machine.
- 4 . State the purpose of spreader in weft knitting machine.
- 5 . Draw the diagrammatic and symbolic notations of the basic stitches of weft knitting.
- 6 . List the basic weft knitted structures.
- 7 . List the different types of flat knitting machines.
- 8 . List the basic structures produced by flat knitting machine.
- 9 . Draw the lapping notations:1-2/1-0//.
- 10 . Differentiate between Tricot and Raschel machines.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Discuss the classification of knitting process. (6)
B. Give a detailed comparison of fabric properties of woven, non-woven and knitted fabrics. (10)
- (OR)**
- C. Give a brief note on yarn quality requirements for knitting. (6)
D. With suitable illustrations, explain the basic terminologies used in weft knitting. (10)
12. A. Describe the constructional features of latch needle machines with suitable (6)

diagram.

- B. With suitable diagram, explain the material passage in a weft knitting machine. (10)

(OR)

- C. Outline the elements of knitted loop structures with suitable diagram. (6)
D. Explain the takedown and winding mechanism in circular knitting machine. (10)

13. A. Give a brief account on factors affecting the formation of loop. (6)
B. With suitable diagrams, explain the sequence of loop formation in single jersey weft knitting process. (10)

(OR)

- C. Draw the symbolic and diagrammatic notations of single jersey and Rib knitted fabrics. (6)
D. Explain the notations of knit, tuck and float stitches with suitable illustrations. (10)

14. A. Give a short note on types of needles used in flat knitting machine. (6)
B. Discuss in detail, the construction and working mechanism of computer control flat knitting machine with suitable diagram. (10)

(OR)

- C. Compare the circular knitting and flat knitting with respect to the fabric structure and properties. (6)
D. Elaborate the production of various weft knitted structures using flat knitting machines with suitable illustrations. (10)

15. A. Write short notes on swinging and shogging motion in warp knitting. (6)
B. With suitable diagrams, explain one complete knitting cycle for a Tricot warp knitting machine. (10)

(OR)

- C. Compare weft and warp knitting and find out the reason for the popularity of warp knits in technical textiles. (6)
D. Discuss in detail the basic stitches that are developed in warp knitted fabric structures with necessary sketches. (10)

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NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 05

Time:3 Hours

Course Code & Title : **HTPE302 : ADVANCED FABRIC STRUCTURE** Max. Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. What are the advantages of using sectional harness mounting?
2. What are the different functions of healds in association with jacquard in compound figured fabric?
3. Write the purpose of using working comber board in figured patent satin.
4. Define fast back piques.
5. Name the series of ends and picks used in figured warp backed structure.
6. Define reversible and non-reversible weft tapestry.
7. With a card diagram, Indicate the control of two colour of pile ends for Straight tie – sectional draft jacquard arrangement.
8. Calculate the size of punching graph for 100 hooks jacquard, set with sectional draft to produce figured double cloth of 100 picks.
9. Write the objective of shaker motion in Gauze weaving.
10. Draw the interlacing diagram of Gauze structure woven by using two beams.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Differentiate Pressure Harness and Bannister harness in respect of Damask fabric. (6)
B. Using the guide graph on 12x12, develop the complete structure of figured extra warp graph on 36x12, Taking as 2 ground ends: 1 extra warp figure end ratio. (10)
- (OR)**
- C. Draw the drafting order followed in loom set with jacquard and healds to weave figured extra warp. (6)
 - D. Indicate the complete structure of a damask fabric on 40 x 45 woven with pressure harness set of 2 and 3 eyes per decked mail alternately and 5 healds shafts by taking a guide graph/ punching graph of 16 x 15. (10)

12. A. Indicate the different tensions of the beams to be maintained for weaving the Patent satin and Fast Back Piques structures. (6)
- B. Using 12x9 punching graph, Indicate the complete structure of patent satin on 36x36 for working comber and healds set up (10)
- C. Draw the drafting order followed in loom set with straight tie and healds to weave figured pique. (6)
- D. Using 12x9 punching graph, Indicate the complete structure of fast back figured pique on 36x36. (10)
13. A. Draw the Drafting diagram for sectional tie sectional draft arrangement for weaving figured warp backed cloth. (6)
- B. Indicating the three weaves, draw the weft interlacing diagram of three picks Reversible weft tapestry. (10)
- (OR)**
- C. Show the method of interlacing colour picks in plain shed to develop figures in the traditional tapestry (6)
- D. Develop a Reversible figured weft backed structure on 20 x 40 by taking a guide graph of 20x20. (10)
14. A. Show the punching procedure followed for loom set with the sectional tie sectional draft along with healds to weave Figured Terry fabric. (6)
- B. Indicate the complete structure of two colour figured double cloth on 36x36. (10)
- (OR)**
- C. Show the punching procedure followed for loom set with the sectional tie sectional draft to weave Plain Figured interchanging double cloth fabric. (6)
- D. Using the 12x12 guide graph, Develop the complete structure of figured 3 pick terry on 48x36. (10)
15. A. Differentiate Bottom douping and Top douping. (6)
- B. Draw the draft and interlacing diagram using straight draft leno combined with twill weave(3/1) to produce stripe effect with the shedding order of – open, open, , cross, cross, (4 picks) (10)
- (OR)**
- C. Explain about the stages involved in manufacturing of Chenille pile fabric. (6)
- D. Draw the draft and interlacing diagram using point draft leno combined with plain weave to produce stripe effect with the shedding order of 2 open, 2 cross (4 picks) (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : V

Time:3 Hours

Course Code &Title : HTPE303 : FASHION DESIGNING

Maximum Marks:100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. Classify Fashion.
2. Compare FAD and Classic.
3. What are the key elements of design?
4. What is color harmony? Give an example.
5. Describe balance in fashion design.
6. How does asymmetrical balance contribute to the overall aesthetic of a design?
7. What are the basic concepts to consider when designing different types of skirts?
8. Give the functions of plackets and pockets in clothing design.
9. How do fashion designers use trend forecasting to plan their collections?
10. What is the role of portfolio development in fashion design?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Explain the factors in detail that drive the change of fashion. (6)
B. Discuss the responsibilities of designers in translating ideas into wearable fashion and the processes they go through from concept to production. (10)
- (OR)
- C. Examine the reasons for changes in fashion over the centuries. (6)
D. Describe fashion cycle, its stages and importance. (10)
12. A. Describe how texture enhances the sensory and visual experience of a garment. (6)
B. Discuss how horizontal, vertical, diagonal, curved, and zigzag lines create (10)

various visual effects and illusions in clothing with suitable diagram.

(OR)

- C. Explain in detail about color and its characteristics. (6)
- D. Describe the importance of texture in fashion design, types of texture and their applications. (10)

- 13. A. Compare formal and informal balance in garment design. (6)
- B. Discuss how planning shapes and spaces in a garment affect the overall harmony and visual impact. Why proportion is critical for flattering silhouettes. (10)

(OR)

- C. Explain the different techniques used to achieve rhythm for creating movement and flow of a design. (6)
- D. Compare the relationship between emphasis and harmony in fashion design. (10)

- 14. A. Suggest any 3 design principles for creating a variety of trousers with neat diagram. (6)
- B. Discuss the techniques used to add fullness to garments, such as tucks, pleats, gathers, and shirring. (10)

(OR)

- C. Study the role of waistlines in garment design. (6)
- D. Design any 5 innovative neckline designs. How do necklines affect the overall style of a garment? (10)

- 15. A. Discuss the various methods of market research used in fashion trend forecasting. (6)
- B. Explain about silhouettes in fashion design and types of silhouettes. (10)

(OR)

- C. What is wardrobe planning and suggest how a functional and versatile wardrobe can be created? (6)
- D. Discuss about the boards of fashion portfolio. (10)

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NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : V

Time:3 Hours

Course Code & Title : **HTPE304 Technical Textile**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. List five primary applications of technical textiles.
2. What natural and synthetic raw materials are commonly used in technical textiles?
3. Compare the suitability of different fibers for tyre cords.
4. What are the critical safety requirements for seat belts?
5. Differentiate between mechanical and electrical filtration.
6. State the significance of pore size in filtration.
7. List the important fabric requirements for ballistic protection.
8. Mention the key requirements for chemical protective textiles.
9. List the key characteristics required for medical textiles.
10. Enlist the primary functions of geotextiles.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Identify and describe the twelve sectors of technical textiles (6)
B. Compare carbon, aramid, and ultra-high modulus fibers' tensile strength and stiffness. (10)
- (OR)
- C. Describe the advantages of carbon fibers in composite materials. (6)
D. Explain the role of high-performance fibers in the aerospace and automotive industries. (10)
12. A. Discuss the benefits of using high-tenacity fibers in seat belts. (6)
B. Describe the manufacturing process of polyester and nylon tyre cords. (10)

(OR)

- C. List key physical properties required for the conveyor belts (6)
 - D. Explain in detail the functions of an airbag with their requirements. (10)
13. A. Discuss the relationship between textile structure and filtration efficiency. (6)
- B. Explain the role of textile finishes in enhancing filtration efficiency in dry filtration. (10)

(OR)

- C. Explain how textile structure affects dust collection efficiency. (6)
 - D. Outline the differences between mechanical and chemical cleaning with example (10)
14. A. Analyse the importance of comfort and durability in protective clothing. (6)
- B. Describe the role of finishing treatments in enhancing protective properties of the textiles (10)

(OR)

- C. Explain the difference between flame resistance and flame retardancy. (6)
 - D. Evaluate the effectiveness of different materials for ballistic protection (10)
15. A. Discuss the relationship between fiber properties and medical textile performance. (6)
- B. Explain the importance of biocompatibility in medical textile materials. (10)

(OR)

- C. List common raw materials used in geo-textile production. (6)
- D. Analyse the geo-textile use in filtration and erosion control with reasons. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : 05

Time:3 Hours

Course Code & Title : **HTPE305 Apparel Marketing and Merchandising**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. State the scope of apparel marketing.
2. List out the different types of advertising media.
3. Define apparel merchandising.
4. Review the functions of merchandising department.
5. Enlist the important factors that influences the sourcing.
6. Indicate the functions of buying houses.
7. Illustrate the order confirmation process in apparel industry.
8. Write the importance of techpack in order documents.
9. Why the action plan is important in time management?
10. List the various charts used in production scheduling.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Explain the objectives of market research in apparel Industry. (6)
B. Summarise any ten functions of apparel marketing department. (10)
- (OR)
- C. Write in detail any few sales promotion methods for apparels. (6)
D. Discuss the steps involved in conducting market research. (10)
12. A. Identify the qualities of a good merchandiser. (6)

B. Differentiate retail and visual merchandising in detail. (10)

(OR)

C. Highlight the role of a merchandiser in sampling. (6)

D. Indicate the responsibilities and importance of maintaining the relationship with other departments of export merchandiser. (10)

13. A. Outline about the MRP principle used in apparel industries. (6)

B. Analysis the different methods or techniques used for sourcing of materials. (10)

(OR)

C. Compare the merits and demerits of overseas sourcing. (6)

D. Enumerate the importance of supply and demand chain analysis in apparel industry. (10)

14. A. Highlight the various regulatory process involved in the exporting of goods. (6)

B. Review in detail about the pre-shipment documents that are used in apparel industry. (10)

(OR)

C. List out the post-shipment documents used in apparel exports. (6)

D. Discuss on the mode of payment terms and also indicate the various level of invoices used in apparel industry. (10)

15. A. Explain the route-card process used in apparel industry. (6)

B. Discuss on accessories purchasing timelines and time management. (10)

(OR)

C. List out the various practical check points used in time management of apparel production process. (6)

D. Outline the application of computers in merchandising with suitable examples. (10)

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NOV/DEC-2024 SEMESTER EXAMINATION

(Regulation-2021)

Semester : V

Time:3 Hours

Course Code & Title : **HTPE306 Advances in Textile Processing**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. Write the name of different enzymes used for desizing, scouring, bleaching, and finishing.
2. How do we avoid the application of stones in denim washing to get a stone-washing effect?
3. What is the benefit of blending viscose with polyester related to dyeing?
4. What are the precautions that need to be taken while pretreating a cotton knitted fabric blended with spandex?
5. Write the classification of inkjet printing.
6. What is Crepon printing?
7. What are the machineries used for garment processing?
8. Which type of plasma technique is suitable for textile processing and why?
9. What is the purpose of an ETP plant?
10. What is TDS in effluent, and what is its tolerance limit while discharging to surface water?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Explain the merits and demerits of the enzymatic process. (6)
B. Why bioscouring is considered as an eco-friendly pretreatment process? (10)
Describe bioscouring process with the detailed mechanism.
(OR)
C. Brief about the depilling process. (6)
D. Explain the enzymatic desizing process with the mechanism, recipe, and process cycle used. (10)

12. A. What are the precautions required while processing P/W blended fabric? (6)
B. Describe the combined desizing, scouring, and bleaching process of cotton fabric in a continuous process with a line diagram. (10)

(OR)

- C. Write the process benefits of the combined pretreatment process. (6)
D. Explain the pretreatment and dyeing of P/C blended fabric in detail. (10)
13. A. Brief the mechanism and process used in brasso printing. (6)
B. Elaborate pretreatment and printing method used in continuous inkjet printing. (10)

(OR)

- C. Write the mechanism involved in piezoelectric inkjet printing. (6)
D. Describe the process details for Flock and Foam printing (10)
14. A. Write the application of ultrasonic-assisted processing in textiles with its advantages and disadvantages. (6)
B. Explain the steps involved in garment processing in detail. (10)

(OR)

- C. Brief about the merits and demerits of garment processing. (6)
D. Elaborate on the concept, application, and advantages of Plasma processing in textiles. (10)
15. A. What are the harmful chemicals used in textile processing, and write the alternatives to them? (6)
B. Explain the process involved in an ETP with a diagram. (10)

(OR)

- C. Write a short note on banned dyes. (6)
D. Explain the characterization process of textile wastewater. Write the norms used for the safe discharge of wastewater to surface water after the effluent treatment process. (10)

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