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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 : V

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. What type of shed is formed by Double lift Double cylinder jacquard machine?
2. Define Single Lift Single Cylinder Jacquard.
3. Mention the four advantages of shuttle less weaving machine.
4. Write the name of different types of weft feeders used in shuttle less loom.
5. List out selvedge formation in shuttle less weaving.
6. Why hydrophilic weft yarn is not suitable for water Jet looms.
7. Write down the formula for calculating the diameter of 80^s Ne cotton yarn.
8. Write down the Pierce's formula for calculating diameter of cotton yarn in inches.
9. Define the terms thread density and areal density.
10. Define Tex.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write short notes on harness building and harness ties of Jacquard machine. (6)
B. With a suitable sketch explain the working mechanism of Double lift Double cylinder Jacquard weaving. (10)

(OR)

- C. Write the advantages of open shed jacquard weaving. (6)
D. With a neat sketch explain the working of Double lift single cylinder Jacquard weaving. (10)

12. A. Explain the main features of an electronic jacquard. (6)
B. With suitable sketch, explain the functioning of torsion bar picking mechanism in Projectile loom (10)

(OR)

- C. With neat diagram explain about the different types of selvedges formation in shuttle less loom. (6)

- D. With suitable sketch explain the weft insertion technique for single Rapier and Double Rapier in Rapier loom. (10)
13. A. Give a brief note on loom stoppage and loom efficiency. (6)
- B. Elaborate on weft insertion mechanism in water jet loom with suitable diagram and also write the merit and demerit of water jet loom. (10)
- (OR)**
- C. Write a short note on circular weaving loom. (6)
- D. With neat sketch, explain the principle of multiphase weaving loom. (10)
14. A. Calculate the yarn diameter in inches for the following yarn as per Peirce formula. (6)
- (i) 2/60^s Ne (ii) 200 Tex
- B. By taking the specific volume of yarn 1.1 cubic cm per gram derive the constant for calculating cotton yarn diameter in inch as per Peirce's Rule. (10)
- (OR)**
- C. If the diameter of 80^s cotton yarn is 1/240 inch, what will be the diameter of 60^s & 80^s cotton yarn? (6)
- D. Ascertain the a) warp fractional cover and b) weft fractional cover along with % cover of the following (10)
- Warp: 20 Tex; : 30 ends per cm
- Weft : 30 Tex; : 30 Picks per cm.
15. A. A cloth is made with 80 ends per inch of 40^s Ne yarn. Calculate the ends per inch to be required, if a cloth of the same compactness is to be produced with 60^s Ne. (6)
- B. A plain cloth woven with 30^s cotton yarn is to be changed into i) 4 thread sateen and ii) 6 thread sateen fabrics. Keeping the same number of threads per inch, what count of yarn should be used in sateen fabrics to have the same compactness. (10)
- (OR)**
- C. A cloth is made with 30^s cotton warp and weft contains 90 ends and picks per inch. Assuming that it is required to produce a new texture, but to be 1/10th light, what kind of yarn and thread per inch will be required? (6)
- D. Find the weight in kgs and weight in grams per square meter of the cloth having following particulars: count of warp is 20 Tex, count of weft is 30 Tex, ends per cm is 25 ends per cm, picks per cm is 20 picks per cm, length of cloth is 60 mts, width cloth is 120 cm, warp crimp is 7.0% and weft crimp is 6.0%. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : V

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. Name any four constructional parameters of a woven fabric which would influence the Basic Weight (gram/square meter).
2. Write the formula to calculate the cover factor of a woven fabric.
3. Write any two applications of a fabric where the determination of bursting strength considered a critical parameter.
4. Write any two applications of a fabric where the determination of tear strength considered a critical parameter.
5. Define drape coefficient.
6. What is the purpose of conducting fabric shrinkage testing?
7. What is the objective of conducting fastness property of a dyed fabric?
8. What are the two types of grey scale used for determination of color fastness of a dyed sample?
9. Write the importance of final inspection to be carried out at garment industry.
10. Define MIL standards in final inspection.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. What are the precautionary measures to be taken while measuring the fabric length and width. (6)
B. Discuss in detail about the process of measurement of fabric thickness using suitable instrument. (10)
- (OR)
- C. Brief about the various precautions to be taken while preparation of samples from the fabric. (6)
D. With suitable diagram, explain the method or measurement of yarn crimp from the fabric sample. (10)
12. A. Explain the sample preparation procedure for grab test and ravelled strip test for determining tensile strength of fabrics and compare it. (6)
B. Discuss in detail the principle, construction, and working of a Universal Tensile Tester. Highlight its applications in textile testing. (10)

(OR)

- C. Draw the diagram of various methods of sample preparation technics for determining the tear strength of a fabric. (6)
- D. Explain bursting strength and ballistic impact strength of fabrics. Describe the methods used for their measurement with suitable diagrams. (10)
13. A. Explain the principle of crease recovery measurement and describe one standard technique used for its assessment (6)
- B. Describe in detail about the methods used for measuring fabric stiffness (flexural rigidity) of a fabric using suitable instrument. (10)
- (OR)**
- C. Write short notes on functioning of an air permeability tester. (6)
- D. Explain the techniques adopted in textile industry for evaluating fabric abrasion resistance highlighting the importance of measurement of this parameter. (10)
14. A. Explain the different types of chemical solution used for perspiration test and how it is prepared. (6)
- B. With suitable diagram, explain any one method of standard used for measurement of colour fastness property of a dyed fabric against rubbing process. (10)
- (OR)**
- C. Explain the method of preparation of sample for color fastness testing (6)
- D. With suitable diagram, explain the any one method of standard used measurement of colour fastness property of a dyed fabric against washing process. (10)
15. A. Explain the concept of AQL standards in final inspection (6)
- B. Discuss in detail about the methods of grading of fabric using the 4-point and 10-point systems (10)
- (OR)**
- C. Differentiate manual and automatic fabric inspection systems with suitable examples. (6)
- D. Describe the procedures involved in the quality assessment of garments with reference to various preparatory processes highlighting the types of defects commonly occur at each stage. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : V

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. Define stich density.
2. Define *Tightness Factor* (TF)
3. Differentiate between latch needle and compound needle.
4. List out the types of cams in weft knitting.
5. List out the basic weft knitted fabrics.
6. List out the types of stiches in weft knitting.
7. List out the basic elements of a flat knitting machine.
8. Name the typical rib structures produced on flat knitting machine.
9. Differentiate between Tricot and Raschel knitting.
10. What is a *queenscord* structure?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Compare the fabric properties of woven, knitted, and nonwoven fabrics. (6)
B. Discuss in detail the classification of knitting process. (10)
- (OR)
- C. Define course length, stitch length, WPI, and CPI. Explain their significance in determining fabric properties. (6)
D. Describe the preparation of staple yarns for weft knitting. (10)
12. A. Explain the various types of needles used in weft knitting with neat diagram. (6)
B. Draw the passage of yarn in single jersey machine and explain the function of different elements. (10)

(OR)

- C. Discuss the function of sinker in weft knitting machines. (6)
- D. Describe the loop forming cycle of a latch needle with neat sketches. (10)
13. A. Differentiate between plain, rib, interlock, and purl weft knitted structures in terms of production and fabric properties. (6)
- B. Discuss the types of rotations in weft knitting. (10)
- (OR)**
- C. Explain the fundamentals of formation of knit, tuck, and float stitches with neat sketches. (6)
- D. Discuss the factors affecting loop formation and explain how loop length and loop shape influence the properties of knitted fabrics. (10)
14. A. List and explain the basic elements of a mechanical type flat knitting machine with diagram. (6)
- B. Explain the knitting sequence of the flat V-bed knitting machine with suitable sketches. (10)
- (OR)**
- C. Differentiate between manual, mechanical, and computer-controlled flat knitting machines. (6)
- D. Discuss in detail the production of half and full cardigan loop structure on flat knitting machine with suitable sketches. (10)
15. A. Discuss the swinging and shogging mechanism in warp knitting. (6)
- B. Describe the various types of fabrics produced on Raschel machine and their characteristics. (10)
- (OR)**
- C. What is Run-in length? Discuss the factors influencing it. (6)
- D. Explain about various types of technical textiles produced from Tricot warp knitting. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : V

Time:3 Hours

Course Code & Title : **HTPE302 Advanced Fabric Structure**

Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. Define reversible damask.
2. When is the plain card punching not required to weave figured extra weft fabric?
3. Mention two loom techniques used for producing figured patent satin fabric.
4. Name the two different series of warp in pique structure.
5. What is the objective of construction of backed cloth?
6. Name two Indian traditional tapestries.
7. Indicate the size of the guide graph to be punched for 200 hooks jacquard, set with sectional draft for producing figured double cloth with the design repeats on 160 picks.
8. Mention the different types of picks in figured terry weaving.
9. List the different series of warp in leno weaving.
10. Mention the two operations involved in chenille pile fabric weaving.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Draw a neat diagram of straight tie straight draft arrangement on a loom with 200 hooks jacquard machine. (6)
B. Indicate the complete structure of a reversible damask fabric on 48X48 woven with pressure harness set of 3 decked mail eye and 8 heald shafts taking a guide graph of 16X16. (10)
(OR)
C. Write about the advantages of using healds along with jacquard in figured extra warp weaving? (6)
D. Develop the complete structure of a figured extra weft design on 20X40 with the pick ratio of 1 ground : 1 extra taking a guide graph of 20X20. (10)
12. A. Mark down two weaves (ground and figured) of patent satin. (6)
B. Draw a guide graph of 20X9 and develop the complete structure of fast back figured pique for it on 36X36. (10)
(OR)
C. Write the advantages of use of working comber board. (6)
D. Taking a guide graph of 16X16, indicate the complete structure of figured patent satin on 32X24 for straight tie with healds method. (10)

13. A. Write a short notes on tapestry. (6)
B. Indicate the complete structure of reversible warp backed cloth on 40X20 using a guide graph of 20X20. (10)

(OR)

- C. Mark down two weaves (ground and figure) in figured weft backed cloth. (6)
D. Indicate the four weaves of reversible 4-pick tapestries. Also, draw the picks interlacing diagram for the same. (10)
14. A. Draw the diagram of straight harness with sectional draft jacquard set up for weaving figured double cloth. (6)
B. Develop the complete structure of figured 3-pick terry on 48X48 using the guide graph of 12X16. (10)

(OR)

- C. Calculate the size of a guide graph with the following particulars for figured 3-pick terry weaving using sectional harness with sectional draft method. (6)
Figuring capacity of the jacquard = 400 hooks.
Total number of picks in the repeat of design = 300.
D. Mark the complete structure of four colour figured interchanging double cloth on 32X32. (10)

15. A. Differentiate the gauze and leno. (6)
B. Draw the draft and interlacing diagram of the leno cord effect combined with plain weave. (10)
- (OR)
- C. Construct the draft to produce a stripe effect with combination of plain weave and straight draft leno. (6)
D. Draw the thread interlacement diagram and drafting order to produce a leno structure with pointed draft. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 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. Compare Style and design with suitable examples.
2. List various stages of fashion cycle.
3. Give the types and characteristics of texture for selection of fabric for stout and lean physique.
4. Write short notes on value and intensity of color.
5. What is the normal proportion for the top and bottom garments?
6. Write short notes on formal and informal balance.
7. List the types of sleeves.
8. Classify the tucks and its functions.
9. Write short notes on market research.
10. What is meant by story board?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Analyze the reasons for change in fashion. (6)
B. With neat sketch explain the fashion cycle for FAD and classic fashion. (10)
- (OR)
- C. Enumerate the classification of fashion with suitable example. (6)
D. Discuss the designer's role in styling and production of costumes. (10)
12. A. Compare structural and decorative designs with suitable examples. (6)
B. Explain with neat sketch characteristics and applications of line in designs. (10)

(OR)

- C. Discuss the psychology of color, and its applications in apparels. (6)
- D. Explain with suitable sketch color schemes. (10)
13. A. Explain with neat sketch the symmetrical and asymmetrical design garments. (6)
- B. Discuss with neat sketch rhythm through repetition progression and gradation. (10)
- (OR)**
- C. Discuss with neat sketch various methods to Emphasis the garments. (6)
- D. Explain the harmony of lines, shapes, colour and textures. (10)
14. A. Illustrate and explain the types of neckline. (6)
- B. Discuss the basic concepts in designing variety of skirts. (10)
- (OR)**
- C. Enumerate with neat sketch the types of collars. (6)
- D. Explain with neat sketch pleats and gathers used in apparels. (10)
15. A. Discuss the methods of trend forecast. (6)
- B. Illustrate and explain the types of silhouettes. (10)
- (OR)**
- C. Discuss the wardrobe planning for men. (6)
- D. Explain the various steps and board to develop portfolio. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 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. Name any four sectors of technical textiles
2. What are high-performance fibres?
3. Name two fibres suitable for use in tyre cords
4. Write any two mechanical properties of conveyor belts
5. Give two examples of a textile material used in liquid filtration.
6. Mention two advantages of textiles in dry filtration.
7. State any two requirements of protective clothing.
8. Give two applications of flame resistant textiles.
9. Mention any one property required for suture materials.
10. List any two functions of geo-textiles.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Write short notes on the applications of glass fibres and aramid fibres. (6)
B. Explain in detail of raw materials used in technical textiles and their application. (10)
- (OR)
- C. Discuss the structure and properties of carbon fibres used in technical textiles. (6)
D. Explain in detail the definition, scope, and milestones in the development of technical textiles (10)
12. A. Explain the requirements of tyre cords. (6)
B. Explain the manufacturing process of conveyor belts and write its various types. (10)

(OR)

- C. Give a brief note on property requirements for the seat belts and air bags (6)
 - D. Discuss the manufacturing process of polyester tyre cords with neat sketches (10)
13. A. Explain the principles of filtration with suitable examples. (6)
- B. Explain in detail the various cleaning mechanisms of filters with suitable illustrations (10)

(OR)

- C. Describe the dust collection theory in dry filtration. (6)
 - D. Discuss the applications and importance of textiles in liquid filtration. (10)
14. A. Give a brief note on different layers of chemical protective clothing (6)
- B. Explain the working mechanism of ballistic body armour with suitable sketches (10)

(OR)

- C. Discuss the role of flame-resistant fibres in protective clothing. (6)
 - D. Describe the principle, fibre, and fabric requirements for ballistic protection. (10)
15. A. Explain the applications of non-implantable medical textiles. (6)
- B. Explain in detailed applications of geo-textiles in drainage, separation and soil reinforcement (10)

(OR)

- C. Describe the raw materials used for manufacturing geo-textiles. (6)
- D. Elaborate the various implantable textile materials with respect to it requirements, fibres and fabric structure used (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : V

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. Mention the scope of Apparel marketing.
2. Define market research.
3. List the functions of merchandising department.
4. Justify the need of visual merchandiser in a brand outlet.
5. Write the various methods of raw material sourcing process.
6. What are buying houses?
7. List out any two documents required by importing countries
8. What you mean by BL & AWB?
9. List some practical check points to be monitored during the apparel production.
10. How does computer application helpful in apparel marketing.

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Discuss on the marketing strategies. (6)
B. Discuss in detail on the market research to be carried for the different market sections. (10)
- (OR)
- C. Write about the types of advertising media. (6)
D. Summarize the sales promotion methods adopted in the apparel industry. (10)
12. A. Categorize the possible types of merchandiser in an apparel industry. (6)
B. Describe the roles and responsibilities of a Merchandiser. (10)

(OR)

- C. Discuss in short on the importance of retail merchandising. (6)
- D. Explain how planning plays a critical role in apparel merchandising? (10)
13. A. Examine the various factors to be considered while sourcing the raw materials for production. (6)
- B. Explain the principles and working of MRP. (10)
- (OR)**
- C. Discuss on the sourcing strategies used in apparel industry. (6)
- D. Explain the process of Supply chain and demand chain analysis. (10)
14. A. Discuss about letter of credit and its types. (6)
- B. Explain the post - shipment documentation process. (10)
- (OR)**
- C. Discuss on the various payment terms involved in apparel export. (6)
- D. Explain in detail on the process of order confirmation. (10)
15. A. Discuss on the route-card format followed in apparel industry. (6)
- B. Elaborate on the production scheduling process in detail. (10)
- (OR)**
- C. Discuss on the follow-up process involved in the selection of accessories for apparel production. (6)
- D. Summarize on the application of computers in merchandising process. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : V

Time:3 Hours

Course Code & Title : **HTPE306 Advance in Textile Processing** Maximum Marks: 100

PART-A

(10×2=20 Marks)

Answer all the questions within two to three sentences

1. What are the advantages of enzymatic desizing over chemical desizing.
2. Name the enzyme's commonly used in denim washing.
3. What are the challenges in dyeing of cotton/spandex blended fabrics.
4. State the need of continuous process in textile wet processing
5. What is Brasso printing?
6. Name two commonly used inks in digital textile printing.
7. What is plasma treatment?
8. Mention two agents used for antimicrobial treatment.
9. State two important characteristics of textile waste water.
10. What do you mean by "tolerance level" of effluent?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Compare chemical and enzymatic desizing methods. (6)
B. Explain enzyme-based pretreatment and finishing processes as eco-friendly alternatives to traditional methods. (10)
- (OR)
- C. Discuss the role of enzymes in textile bleaching. (6)
D. Describe in detail the factors affecting enzyme efficiency in textile processing. (10)
12. A. Why elastane (spandex) is sensitive in pretreatment? Explain precautions. (6)
B. Explain combined scouring and bleaching process with suitable chemicals, machine used, and merits over batch process. (10)

(OR)

- C. Explain the continuous dyeing of polyester/cotton blends. (6)
- D. Discuss the pretreatment and dyeing of polyester/wool blends. (10)
13. A. Differentiate between Flock printing and Foam printing. (6)
- B. Discuss the digital printing with the principle, methods, pretreatment, ink types, substrates, advantages and disadvantages. (10)
- (OR)**
- C. Describe the different methods of digital printing. (6)
- D. Discuss various special printing techniques of Brasso and Kadi with examples and applications in textile printing. (10)
14. A. Explain the principle of micro-encapsulation in textile finishing. (6)
- B. Discuss antimicrobial finishes in detail, including types, methods of application, advantages and limitations. (10)
- (OR)**
- C. Explain the principle of ultrasonic energy and its application in textiles. (6)
- D. Describe plasma technology in detail, its process, applications, advantages, and limitations in textiles. (10)
15. A. Discuss the harmful effects of banned dyes and suggest safer alternatives. (6)
- B. Elaborate on the characteristics of textile wastewater and how they affect aquatic life. (10)
- (OR)**
- C. Write short notes on: Banned dyes & Harmful textile chemicals (6)
- D. Explain the different methods of effluent treatment and justify their importance in achieving permissible tolerance levels. (10)

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Diploma in Handloom & Textile Technology

NOV/DEC-2025 SEMESTER EXAMINATION

(Regulation-2021)

Semester : V

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. What is product Design?
2. What is Brain storming?
3. Specify any four challenges of product development.
4. What do you mean by Consumerism?
5. What is aesthetics design?
6. Define the term 'iteration' in product design.
7. Why the product designs depend on Concepts?
8. What is design for reliability?
9. Specify any four environmental factors that are to be considered in the product design.
10. Define Re-Engineering.

PART-B((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. Define the different type of products with suitable example of each. (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. Explain the steps involved in New Product Development (NPD). (10)
12. A. What are the Characteristics of Successful Product Development? (6)

B. Do you agree Product life cycle can change the Business Strategy? Discuss. (10)

(OR)

C. What are the techniques used for product analysis?. Define each of them with an example (6)

D. Explain about the design for simplification and standardization, the product development practices used in industry. (10)

13. A. Explain the evolution and the types of Product Design. (6)

B. List the activities of standards of performance considering the output and environmental factors. (10)

(OR)

C. How aesthetics play an important role in product design? (6)

D. Write down the different phases of Morphology Design (10)

14. A. Brief about 'Design for six sigma' by considering two wheeler automotive as example. (6)

B. How the economic factor and financial feasibility does work in design? (10)

(OR)

C. Differentiate between product development and product design. (6)

D. Write step by step procedure for making model by using Rapid prototype techniques. (10)

15. A. Illustrate the steps involved in 'Design for robustness'. (6)

B. Explain all the necessary steps required in designing Handloom product by considering any one product in Handloom industry. (10)

(OR)

C. What is the role of Designer in the product module? (6)

D. Explain all the necessary steps required in designing Handloom product in Handloom industry. (10)

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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 : V

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. What are the conventional and non-conventional energy sources?
2. Define the scope of Renewable energy.
3. Mention the limitations of the solar photovoltaic system.
4. Distinguish between global radiation and diffuse radiation.
5. List out the different types of wind turbines.
6. Merits and demerits of wind power generation.
7. What are the factors that affect the generation of Biogas?
8. Classification of the significant mass energy sources.
9. List out the applications of OTEC.
10. What are the limitations of tidal power generation?

PART-B

((6+10)×5=80 Marks)

Answer all the questions in detail

11. A. What is an energy system? Explain in brief. (6)
B. Briefly explain the Economics of Renewable Energy Systems. (10)
(OR)
C. Discuss different renewable sources of energy with special reference to the Indian context. (6)
D. Discuss in detail the Environmental aspects of Energy Utilization. (10)
12. A. Explain how solar flat plate collectors work with the help of a diagram. (6)
B. Discuss the Solar Thermal Power plant and its methodological process in detail with a suitable process flow diagram. (10)

(OR)

- C. What are the main applications of the solar photovoltaic system? (6)
- D. Describe solar concentrators in detail and the process involved in making them with the help of diagrams. (10)

- 13. A. What is the basic principle of wind energy conversion? (6)
- B. Explain Wind energy and its importance in detail. Describe briefly the main components of the windmill. (10)

(OR)

- C. What factors are taken into consideration in site selection? (6)
- D. What prohibits large-scale utilization of wind power for electricity generation? (10)

- 14. A. What is biomass? How is it useful? (6)
- B. Write in detail about Anaerobic digestion and the steps in its process in Biomass. (10)

(OR)

- C. List out the advantages and disadvantages of Biogas. (6)
- D. Compare the fixed dome type plant and the movable drum type plant. (10)

- 15. A. Explain how the double basin tidal system works. (6)
- B. What is a Fuel Cell? Describe the principle of working of an $H_2 - O_2$ cell. Give also a limitation. (10)

(OR)

- C. Explain OTEC in detail and its types. (6)
- D. Discuss the Electrical Energy Generation from hydro and Geothermal Energy resources. (10)
