TEX 3rd/ Lib

Roll No. ..... Total Pages : 05

BT-3/D-25 43185

YARN MANUFACTURING-I

PCC-TEX-203-A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

(Compulsory Question)

1. Attempt all parts : **15×1=15**

(i) What is Bale ?

(ii) Define Staple Fibre.

(iii) What do you mean by Drafting ?

(iv) What do you mean by Tinting ?

(v) What is Blowroom ?

(vi) Define Card Clothing.

(vii) What are Yarn Faults ?

(viii) Define Cleaning.

(ix) What do you understand by Carding ?

(x) What do you mean by mature cotton fibre ?

(xi) The result of action between flat and cylinder is :

(a) Carding

(b) Stripping

(c) Brushing.

(xii) During carding following types of hooks are generated in greater proportion :

(a) Leading

(b) Trailing

(c) Both end hooks

(xiii) The major task of drafting is :

(a) To impart evenness

(b) Straightening of fibres

(c) Opening of fibres

(xiv) The number of lickers in latest generation modern card is :

(a) 3

(b) 2

(c) 4

(xv) In general, lower the trash size :

(a) More is the cleaning efficiency

(b) Less is the cleaning efficiency

(c) No change

Unit I

2. (a) What are the objectives of blending ? Discuss different methods of blending along with their advantages and disadvantages. **12**

(b) Compare between Mixing and Blending. **3**

3. (a) What is Bale Management ? What are the essential requirements for proper bale management in a spinning mill ? Describe the advantages of Bale Management ? **12**

(b) Discuss the role of spin finish application in blowroom. **3**

Unit II

4. (a) Discuss the objectives of blow room. Discuss in brief various zones of a modern blow room line. **10**

(b) Mention the causes of Lap defects and their remedies. **5**

5. What are the basic concepts of Opening ? With the help of suitable diagrams, discuss the different types of openers used in the blowroom. Describe the various components of the above machines and their respective functions. **15**

Unit III

6. (a) Explain the objectives of carding. **5**

(b) Explain the carding and stripping actions of a carding machine with the help of neat diagrams. What is the heel and toe arrangement ? **10**

7. (a) What is Autolevelling in Card ? **3**

(b) With the help of neat diagrams, describe the passage of material through a carding machine and explain the various parts of the machine along with their functions. **12**

Unit IV

8. What are the objectives of drafting ? With the help of neat diagram, explain the passage of carded sliver through Draw Frame. What are the modern developments in Draw Frames ? **15**

9. (a) What do you mean by Drafting Wave ? How to control the drafting wave ? **6**

(b) What are the different types of Drafting systems ? With the help of neat diagrams, compare different types of Drafting Systems in a Draw Frame. **9**

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Roll No. ..... Total Pages : 06

BT-3/D-25 43186

FABRIC MANUFACTURING-I
PCC-TEX-205A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

1. (a) Pattern formation during drum driven winding occurs due to :

(i) Low traverse speed

(ii) High surface speed

(iii) Low RPM of the drum

(iv) Ratio of traverse speed to RPM being a whole number

(b) With the increase in the sizing machine speed, size add-on would :

(i) Increase

(ii) Decrease

(iii) Remain constant

(iv) Increase initially and then decrease

(c) The speed of a tappet shaft on a loom weaving design on 4 ends and 3 picks will be :

(i) Same as that of crank shaft

(ii) One fourth of crank shaft

(iii) One third that of crank shaft

(iv) Three times that of crank shaft

(d) Expandable reeds are used to :

(i) Expand the width of warping machine

(ii) Control the warping tension

(iii) Ensure desired spacing between two ends

(iv) To repair the breakage during warping

(e) The change in twist of yarn during over end unwinding is :

(i) More in case of smaller diameter package

(ii) More in case of larger diameter package

(iii) Not dependent on package diameter

(iv) None of the above

(f) In over-pick loom, the shuttle velocity can be increased by :

(i) Using a large nosebit of the picking cam

(ii) Rotating the picking cam on bottom shaft

(iii) Increasing the length of picking strap

(iv) By increasing the swell pressure

(g) If the loom speed (PPM) is doubled, power cost per metre of fabric will be :

(i) 0.5 times

(ii) 2 times

(iii) 4 times

(iv) 6 times

(h) Sley velocity in m/sec at front centre of a loom running at 300 rpm is :

(i) 0

(ii) 5

(iii) 15

(iv) 45

(i) Define angle of coil and angle of wind.

(j) Define Sizing.

(k) Why starch is most widely used size ingredient ?

(l) What is bumping condition in weaving ?

(m) Draw the loom timing diagram for early shedding.

(n) Mention the different types of picking accessories.

(o) Define sley eccentricity.

15×1=15

Unit I

2. Write short notes on the following : **3×5=15**

(a) Yarn clearer

(b) Yarn tensioner

(c) Yarn fault classifying system.

3. Differentiates between drum winder and spindle winder. Draw a neat and labelled diagram to explain the path of yarn on modern auto winder. **15**

Unit II

4. Compare the direct warping with sectional warping. With the help of suitable diagrams, discuss the passage of yarn through direct warping and sectional warping machines. Mention the different parts and their functions in warping machines. **15**

5. (a) Explain the sizing-weaving curve. Also mention the characteristics of sized yarn. 7

(b) Explain the effect of different parameters on wet pick-up. Also explain the procedure of size paste preparation. 8

Unit III

6. Discuss in detail various principles of shedding used in weaving. Also mention their merits and demerits. **15**

7. Discuss the process of manual drawing-in. With the help of suitable diagram show and explain the drawing-in order for plain, twill and satin weaves. **15**

Unit IV

8. (a) Calculate the weight of water to be evaporated per minute during sizing with below given particulars :

Speed of sizing : 22m/min, total number of end : 3600; wet pick-up : 7.8%; add-on : 3.4%, yarn count : 32 Ne and efficiency: 89%Compare the methods of doubling and twisting between ring doubler and two-for-one twister. 7

(b) The empty diameter of a spindle-driven cylindrical package is 5 cm. The spindle speed is 2000 r.p.m. and traverse velocity is 100 m/min. Determine :

(i) Winding speed and angle of wind at the start **4**

(ii) Winding speed and angle of wind when package diameter becomes double. **4**

9. Differentiate between over picking and under picking. Discuss the over picking mechanism with a neat sketch. **15**

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Roll No. ..... Total Pages : 07

BT-3/D-25 43187

Textile Chemical Processing—I

PCC-TEX- 207A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. Q. No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. (i) Enzyme commonly used in enzymatic desizing of cotton fabrics ?

(a) Lipase

(b) Amylase

(c) Cellulase

(ii) Which alkali is most commonly used in scouring of cotton ?

(a) Ammonium hydroxide

(b) Sodium carbonate

(c) Sodium hydroxide

(iii) Sodium chlorite is preferred as bleaching agent for :

(a) Cotton

(b) Wool

(c) Polyester

(iv) Barium activity number is associated with the process :

(a) Mercerization

(b) Scouring

(c) Desizing

(v) Heat setting is done for :

(a) Removing starch

(b) Dimensional stability

(c) Whiteness

(vi) What get removed in Degumming of silk ?

(a) Fibroin

(b) Sericin

(c) Aginin

(vii) Sulphur dyes are mainly used for dyeing :

(a) Protein fibres

(b) Synthetic fibres

(c) Cellulosic fibres

(viii) Jet dyeing machine is used for the dyeing of fabric in form :

(a) Full width

(b) Rope

(c) Half-width

(ix) Basic dyes are suitable for the dyeing of fibres :

(a) Polyester

(b) Cotton

(c) Acrylic

(x) Reactive dyes fixed to the cotton textiles with....

(a) Covalent bond

(b) Mechanical entrapment

(c) Ionic bonding

(xi) Mothproofing is required for fibres

(a) Cotton

(b) Nylon

(c) Wool

(xii) Metal-complex dyes are chemically derived from :

(a) Basic dyes

(b) Acid dyes

(c) Disperse dyes

(xiii) Acid dyes are mainly applied to :

(a) Cellulosic fibres

(b) Protein fibres

(c) Polyester fibres

(xiv) The most suitable dyeing machine for disperse dyeing of polyester is :

(a) Winch dyeing

(b) Jigger machine

(c) HTHP jet dyeing machine

(xv) Which of the following is not removed during scouring of cotton ?

(a) Pectins

(b) Natural waxes

(c) Cellulose **1×15=15**

Unit I

2. Enlist the various impurities present in the cotton fibre and discuss the general process sequence followed in chemical processing of cotton. Discuss in detail the enzymatic desizing process with technical parameters with its advantages and disadvantages. **15**

3. (a) What are the objectives of singeing ? What are the different types of singeing ? Discuss the gas singing process with a neat and clean machine diagram.

(b) Explain the general sequence of pretreatment of polyester fabric with technical details of each process. **10+5=15**

Unit II

4. (a) What are the objectives of bleaching ? Discuss the hydrogen peroxide bleaching of cotton with recipe and relevant technical details.

(b) Explain the mechanism of Heat setting with technical parameters of influencing the process. Also describe the methods of evaluation of degree of heat setting in the fabric. **8+7=15**

5. Discuss the machinery used (chainless and chain type) and process parameters (NaOH concentration, temperature, tension) associated with the mercerization process. Also discuss the physical and chemical changes that take place in cotton after mercerization. **15**

Unit III

6. Discuss the dyeing of cotton with reactive dyes, including the types of reactive dyes with complete details of the reaction mechanism, recipe and application conditions. **15**

7. (a) Explain the different processes of dyeing of polyester textiles in detail.

   (b) Explain the working principle of the jigger dyeing machine with all technical details and a neat diagram. **8+7=15**

Unit IV

8. (a) Describe the various methods of silk degumming.

   (b) Explain the process of silk weighting. **8+7=15**

9. (a) Write wool milling process with technical details and a neat diagram.

   (b) Explain the process of Mildew and Moth proofing of wool. **8+7=15**

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Roll No. .....

Total No. of page (03)

BT/D-25 : 43355

TEXTILE FIBRE

Paper : PCC-TEX-217A

Time : 3 hrs.

Max Marks: 75

Note: Qusetion-1 is compulsory, and attempt total 5 questions selecting at least one question from each of the four units. All questions carry equal marks.

I.	
(i)	The main chemical component of flax fiber is: A) Lignin B) Cellulose C) Protein D) Pectin
(ii)	The cross-section of cotton fiber under a microscope resembles: A) Circular shape B) Triangular shape C) Kidney-bean shape D) Ribbon-like twisted shape
(iii)	The main constituent of wool fiber is: A) Cellulose B) Protein C) Polyamide D) Lignin
(iv)	Which of the following fibers is known for its natural crimp and resilience? A) Cotton B) Wool C) Silk D) Nylon
(v)	Linen is obtained from which plant? A) Hemp B) Jute C) Flax D) Ramie
(vi)	The main reason polyester fibers are widely used in apparel is: A) High moisture absorbency B) Excellent wrinkle resistance and strength C) Natural origin D) Low melting point
(vii)	Acrylic fibers are mainly used as a substitute for: A) Cotton B) Silk C) Wool D) Jute
(viii)	Which of the following is a regenerated cellulose fiber? A) Nylon B) Rayon C) Polyester D) Acrylic
(ix)	The main advantage of blending cotton with polyester is to: A) Reduce dye uptake B) Improve crease recovery and strength C) Increase moisture absorption D) Make the fabric heavier
(x)	The fineness of a fiber is expressed in: A) Tex or denier B) GSM C) Count D) Crimp per inch

(xi)	Kevlar is a high-performance fiber belonging to the class of: A) Polyolefins B) Aramids C) Polyesters D) Polyacrylonitriles	
(xii)	The main raw material used in the manufacture of nylon 6.6 is: A) Caprolactam B) Adipic acid and hexamethylene diamine C) Terephthalic acid and ethylene glycol D) Acrylonitrile	
(xiii)	The property of a fiber to return to its original length after stretching is known as: A) Elastic recovery B) Resilience C) Tenacity D) Extensibility	
(xiv)	Which of the following fibers is naturally thermoplastic? A) Cotton B) Silk C) Wool D) Nylon	
(xv)	The main environmental concern in viscose rayon production is due to: A) Excessive water absorption B) Use of carbon disulfide and alkali C) Fiber brittleness D) High cost of raw material	1×15 =15
	UNIT-I	
2.	Define a textile fiber. Enlist the essential and desirable properties required for a material to be classified as a textile fiber. Classify textile fibers based on origin and chemical composition with a neat flow chart.	15
3.	Discuss the chemical composition of cotton fiber and give details on the physical and chemical properties of cotton fiber.	15
	UNIT-II	
4.	(a) Compare flax, jute, and hemp fibers with respect to their chemical composition, structure, and end uses. (b) Write the details of the process of obtaining Sisal fiber.	9+6 =15
5.	Explain the chemical composition and structure of silk fiber. Discuss its degumming process and explain how it affects the physical properties and dyeability of silk.	15
	UNIT-III	
6.	Discuss the chemical composition of wool fibers and explain the physical and chemical properties of wool fiber. Describe the	15

	processes involved in the removal of impurities from raw wool.	
7.	Describe the general principles of manufacturing man-made fibers. emphasizing the different spinning techniques used.	15
	UNIT-IV	
8.	Give a flow chart for the manufacturing of viscose rayon with important technical points.	15
9.	(a) Write a technical note on the manufacturing of Polyester fiber from petrochemical raw materials.	8+7 =15
	(b) Chemistry of Acrylic fibers, their polymerization methods, and different types (homo-polymers and co-polymers).	

-- End of Paper --

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Roll No. ..... Total Pages : 6

45214

BT-5/D-25

TEXTILE TESTING-I

Paper : PCC-TEX-301A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt any *five* questions in all, selecting at least *one* question from each unit. Question No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. Attempt all parts :

(i) Which is finest among these yarn count?

(a) 40 Ne

(b) 30 Ne

(c) 30 Tex

(d) 20 Nm.

(ii) INSTRON works on the principle of

(a) CRE

(b) CRT

(c) CRL

(d) None of the above.

(vii) In the case of polyester, coarser fibres as compared to finer fibres have

(a) Lower flexural rigidity

(b) Lower specific surface area

(c) Higher flexural rigidity

(d) Higher specific surface area.

(viii) Strength of cotton fibre is maximum at humidity level of

(a) 25%

(b) 50%

(c) 65%

(d) 90%

(ix) Which instrument is used to measure the strength of a fibre bundle?

(a) Stelometer

(b) AFIS

(c) Baer Sorter

(d) Shirley Trash Analyzer.

(x) What is the full form of HVI?

(a) High Volume Instrument

(b) High Value Indicator

(c) Heavy Volume Indicator

(d) High Viscosity Index.

(xi) What does U% indicate in yarn testing?

(a) Uniformity %

(b) Unevenness %

(c) Ultimate Strength %

(d) Utility %

(xii) The area under a stress-strain curve measures

(a) Tensile Strength

(b) Work of Rupture

(c) Elastic Recovery

(d) Young's Modulus.

(xiii) Fibre elongation can be measured on

(a) Stelometer

(b) HVI

(c) Instron

(d) All of these.

(xiv) The principle used in Uster Evenness Tester is

(a) Capacitance Principle

(b) Optical Principle

(c) Mechanical Principle

(d) Magnetic Principle.

(xv) Diamond bars appear in the fabric due to:

(a) Faulty loom parts

(b) Excessive warp irregularity

(c) Periodic faults in warp yarn

(d) Periodic faults in weft yarn. (15×1=15)

UNIT–I

2. (a) Why do we need of testing for textiles? What is the difference between Random and Biased Sample? Discuss the different sampling techniques used in textiles. (9)

(b) Discuss the Zoning technique with a diagram. (6)

3. (a) Define moisture regain and moisture content. Derive the relation between the two. (9)

(b) What factors influence moisture regain in textiles? Discuss how moisture affects the physical and mechanical properties of textile materials. (6)

UNIT–II

4. (a) Explain the importance of fiber length in determining the quality of cotton fibers. Define various length parameters used to express cotton fibre length. (10)

(b) What is HVI and AFIS? State the various parameters evaluated in HVI and AFIS. (5)

5. (a) What do you understand by maturity? How can we measure the maturity of cotton fiber? (9)

(b) With a suitable diagram, show the working principle of fibre fineness by Air flow meter. (6)

UNIT–III

6. (a) What is direct and indirect system of yarn numbering? Define the English Count, Tex, Denier, Metric Count and Worsted Count. (9)

(b) Explain the measuring technique for yarn count using a wrap reel and an electronic balance. (6)

7. (a) What are the causes of Yarn Irregularities? Explain the principle and work of any one evenness tester. (9)

(b) Explain the working principle of the twist tester used in the textile testing. (6)

UNIT–IV

8. Discuss the stress-strain curve and define the terms related to tensile testing, such as breaking strength, elongation, tenacity, and modulus. Discuss the working principle of CRE, CRT and CRL testing device. (15)

9. (a) What is Hairiness? Discuss the principle and method of measuring yarn hairiness. (9)

(b) What factors affect the tensile test results? Explain in detail. (6)

Roll No. ..... Total Pages : 6

45215

BT-5/D-25

YARN MANUFACTURING–III

Paper : PCC-TEX-303A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting *one* from each Section. Question No. 1 of Section A is Compulsory.

SECTION–A

(Compulsory Question)

1. Answer the following questions :

(i) The force pulling the traveller around the ring is :

(a) Aero-dynamic drag
(b) Yarn tension
(c) Centrifugal force
(d) Traveller–ring friction.

(ii) Larger balloon diameter leads to :

(a) Higher yarn tension
(b) Lower yarn tension
(c) No effect
(d) Reduced twist.

(b) Sheath-core
(c) Fully parallel
(d) Compact.

(ix) Compact spinning is primarily designed to reduce :
(a) Fibre length
(b) Spinning triangle
(c) Twist level
(d) Yarn strength.

(x) The core fibres in MJS yarn are :
(a) Highly twisted
(b) Nearly twist-less
(c) Compressed heavily
(d) Randomly oriented.

(xi) Suitable fibres for air-jet spinning have :
(a) Short and weak fibres
(b) Long and strong fibres
(c) Highly crimped fibres
(d) Very coarse fibres.

(xii) Air-jet yarn evenness is :
(a) Better than ring yarn
(b) Equal to ring yarn
(c) Worse than ring yarn
(d) Unaffected by fibre length.

(xiii) The speed of friction spinning is generally :
(a) Very low
(b) Moderate
(c) Higher than rotor and ring spinning
(d) Equal to compact spinning.

(xiv) In Repco spinning, two yarns are :

(a) Twisted separately

(b) Fed together and allowed to ply

(c) Wound individually

(d) Electro spun.

(xv) Increasing drum speed generally :

(a) Increases twist

(b) Decreases twist

(c) Has no effect

(d) Stops fibre deposition. (15×1=15)

SECTION–B

2. (a) Draw a labelled neat and clean diagram to show the forces acting on the traveller and yarn in ring spinning. Which of these forces is maximum? (7)

(b) Explain a few developments in ring spinning that have been made to overcome its limitations. (8)

3. (a) What are the causes that led to invention of Open-end spinning systems? (5)

(b) Give an acceptable classification of OE systems and discuss in brief the principle involved in each group. (10)

SECTION–C

4. (a) With the help of a neat and clean diagram, discuss the twist profile of various segments in rotor spinning. (8)

   (b) Explain the factors conducive to the formation of wrapper fibres in rotor spun yarn. (7)

5. (a) Discuss the basic principle of yarn formation in air-jet spinning and outline the basic constraints and their remedies lying with this system. (9)

   (b) With the help of an example, show the production calculation of a rotor spinning machine in kg/day. (6)

SECTION–D

6. (a) What endeavours have been made to improve fibre straightening in friction spinning? (5)

   (b) How do friction ratio, suction pressure and core sheath ratio influence the structure and properties of friction spun yarns? (5)

   (c) What is Self-twist spinning? Define various terms related to yarn formation during self-twist spinning. (5)

7. (a) Explain the mechanism of yarn formation in friction spinning. (5)

(b) In what respect friction spinning differ from rotor spinning? (5)

(c) What is Wrap spinning? List the uses of yarns spun by this system. (5)

SECTION–E

8. (a) How do fancy yarns contribute to the aesthetic value of a garment? (6)

(b) What is principle of compact spinning? In how many ways compact spun yarns are produced? Discuss in brief in respect of merits and demerits. (9)

9. (a) How is a sewing thread characterized? List a few different types of sewing threads with production of any one. (7)

(b) Compare the properties of compact, ring, rotor and air-jet spun yarns in the light of their structural differences. (8)

Roll No. ..... Total Pages : 3

45216

BT-5/D-25

FABRIC MANUFACTURING-III

Paper–PCC-TEX-305A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting *one* from each unit. Question No. 1 is compulsory. All questions carry equal marks.

(Compulsory Question)

1. (a) Mention the advantages of shuttle-less weaving.
   (b) What are the functions of nozzles in jet weaving?
   (c) Mention the air quality requirements for air-jet weaving.
   (d) Compare the flexible and rigid rapier.
   (e) What do you mean by spunlace fabrics?
   (f) Define intermittent and continuous take-up motion.
   (g) Mention different types of selvedges.
   (h) Water-jet weaving is suitable for which type of fabric and why?

(i) What is the difference between single phase and multiphase weaving?

(j) What is parallel laid non woven? (10×1.5=15)

UNIT–I

2. (a) Explain the different features of unconventional weaving. (5)

(b) Explain the different types of weft accumulators and their working with the help of suitable figure. (10)

3. (a) Explain the feeding of yarn to projectile with suitable diagram. (5)

(b) What is the basic principle of projectile weaving? Explain the picking mechanism of projectile weaving with suitable diagram. (10)

UNIT–II

4. What are the limitations of air-jet weaving? With the help of suitable diagram explain the design and working of confuser guides, profile reed and main nozzle of air-jet weaving. (15)

5. Explain the weft insertion cycle of DEWAS system with suitable diagram. (15)

UNIT–III

6. (a) What are the merits and demerits of water-jet looms? (5)

   (b) Explain the working principle and sequence of weft insertion in a modern waterjet loom with the help of suitable diagram. (10)

7. (a) Discuss the working principle of weft way multiphase weaving with a suitable sketch. (10)

   (b) Explain the working of electronic let-off with neat sketch (5)

UNIT–IV

8. Define non woven fabrics. How it differs from woven and knitted fabrics? Classify the different types of non wovens. Discuss in details the fibre property requirements for non woven production. (15)

9. Briefly discuss the different web bonding techniques used in non woven fabric production. Also mention the factors affecting the level of bonding for each method. (15)

Roll No. ..... Total Pages : 2

45217

BT-5/D-25

FABRIC STRUCTURE AND DESIGN

Paper : PCC-TEX-307A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt any *five* questions in all, selecting at least *one* question from each unit.

UNIT–I

1. What do you mean by Colour? With the help of Colour Wheel, explain Primary, Secondary and Tertiary colours. What are Warm and Cool Colour. Also discuss the application of colour in Textile Products. (15)

2. What do you mean by Woven Structure? With the help of suitable diagram, explain the passage of warp through a Weaving Machine. Also discuss the basic elements of Woven design with the help of neat diagrams. (15)

UNIT–II

3. What are the Elementary Weaves? What is Plain Weave? With the help of suitable Design, Draft, Lifting Plan and Denting Plan, discuss the derivatives of Plain Weave and usefulness of the above weaves. (15)

4. What are the Twill Weaves? Discuss the characteristics of twill weaves. With the help of suitable Design, Draft, Lifting Plan, discuss the derivatives of Twill Weave and usefulness of the above weaves. (15)

UNIT–III

5. What do you understand by Satin and Sateen Cloth? With the help of suitable Design, Draft, Lifting Plan, discuss the Satin/Sateen Weaves and usefulness of the above weaves. (15)

6. What are Honey Comb Weaves? How it differs with Huck-A-Back Weaves? With the help of suitable Design, Draft, Lifting Plan, discuss the above Weaves and usefulness of the above weaves. (15)

UNIT–IV

7. Define Extra Figuring Structures. Classify different types of Extra Figuring Structures. With the help of suitable motif, draw one example of each type of Figuring Structures. (15)

8. What are the Velvet and Velveteen Structures? With the help of neat diagram and motif, explain how the above structures are made. (15)

Roll No. ..... Total Pages : 5

47330

BT-7/D-25

TECHNICAL TEXTILES–I

Paper : PCC-TEX-401A

Time : Three Hours] [Maximum Marks : 75

Note : Section A is compulsory, attempt *one* question each from Sections B, C, D, and E. All questions carry equal marks.

SECTION–A

1. (i) Which fiber is preferred for high-performance composites in aerospace applications?
   (a) Aramid
   (b) Glass
   (c) Carbon
   (d) Polypropylene.
   (ii) Nomex fibre is mainly used for :
   (a) Seat covers
   (b) carpets
   (c) fire fighter suits and heat resistant clothing
   (d) Casual wear.
   (iii) Fiber exhibits the highest modulus is :
   (a) Nylon
   (b) Polyester

(c) Carbon fiber

(d) Aramid.

(iv) Which technical textile is used in the reinforcement of concrete structures?

(a) Geogrid

(b) Nonwoven polypropylene

(c) Warp-knit polyester

(d) Aramid mesh.

(v) In a drainage application, the main function of a non-woven geotextile is :

(a) Reinforcement

(b) Separation

(c) Filtration and water flow.

(d) Structural support.

(vi) What is the primary advantage of non-woven filters over woven filters?

(a) Higher tensile strength

(b) Better filtration efficiency

(c) Lower cost of production

(d) Greater elasticity.

(vii) Which of the following parameters critically influences the filtration efficiency of a melt-blown nonwoven fabric?

(a) Denier of the fibre

(b) Fibre orientation

(c) Electrostatic charge retention

(d) Moisture regain.

(viii) Which of the following is not a mechanical property tested in geotextiles?

(a) Tensile strength

(b) Tear resistance

(c) Permittivity

(d) Puncture resistance.

(ix) The fabric used for airbags is usually made from :

(a) Cotton

(b) Nylon

(c) Polyester

(d) Polypropylene.

(x) Which property is most critical in tire cord fabrics?

(a) Colour fastness

(b) Softness

(c) Tensile strength

(d) Air permeability. (1.5×10=15)

SECTION–B

2. (a) What are technical textiles, and how are they different from conventional textiles? (5)

(b) Which types of textile products fall under the Buildtech and mobiltech category of technical textiles and what are their uses? (10)

3. (a) What are specialized fibers, and how do they differ from conventional textile fibers? (5)

(b) How are carbon fibers characterized in terms of strength and weight, and what applications benefit from these properties. (10)

SECTION–C

4. (a) In what ways do fibre and yarn characteristics influence the filtration efficiency of a fabric?

(b) What are the fundamental principles behind the design of filtration fabric? (7.5×2=15)

5. (a) Provide a concise explanation of the principles concerning soil particle size and pore size distribution in relation to hydraulic applications. (10)

(b) What methods are used to test the long-term performance or service life of filter fabrics under real or simulated conditions. (5)

SECTION–D

6. (a) Explain the various functions of geotextiles in civil engineering applications. Provide examples of how each function is applied in real-world projects.

(b) Discuss the differences between woven and nonwoven geotextiles and also compare the performance of geotextiles with traditional construction materials. (7.5×2=15)

7. (a) Compare woven and non-woven geotextiles in terms of manufacturing, structure, and applications. (10)

(b) What are the applications of geotextiles? (5)

SECTION–E

8. (a) Compare different types of fibers used in automotive textiles. How are synthetic and natural fibers evaluated for suitability in automotive applications.

(b) List the essential performance characteristics needed for seat belts, and suggest suitable material specifications including the recommended fiber type, its linear density (in Tex), weave structure, the required number of warp ends, and the most suitable type of loom for manufacturing them." (7.5×2=15)

9. (a) Explain the different types of textiles used in automotive interiors and discuss their specific functional roles.

(b) Outline the mechanism behind airbag activation and emphasize the importance of how the fabric reacts during expansion. (7.5×2=15)

Roll No. ..... Total Pages : 5

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BT-7/D-25

ADVANCED CHEMICAL PROCESSING

Paper : PCC-TEX-403A

Time : Three Hours] [Maximum Marks : 75

Note : Qusetion No. 1 is compulsory, and attempt *five* questions in all, selecting at least *one* question from each of the four units. All questions carry equal marks.

Compulsory Question

1. Multiple Choice Questions :

1. Combined pre-treatment associated with use of _____

(a) Sodium hypochlorite
(b) Hydrogen Peroxide
(c) Sodium Chlorite.

2. Cellulase enzyme is used for the

(a) Desizing
(b) Biopolishing
(c) Wool scouring.

3. Waterless dyeing was done using

(a) Plasma
(b) Supercritical CO_2

(c) Solvent.

4. Enzyme used for the degumming of silk fibre
   (a) Pectinase
   (b) Amylase
   (c) Protease.

5. Direct dyes have wash fastness in the range of
   (a) 4-5
   (b) 1-2
   (c) 2-3.

6. Fastness to light graded using
   (a) Grey scale
   (b) Blue wool standards
   (c) Tegwa Scale.

7. Instrument used for the light fastness evaluation
   (a) Crockmeter
   (b) Perspirometer
   (c) Weatherometer.

8. Softeners used in the textile industry are
   (a) Resins based
   (b) Starch based
   (c) Silicones based.

9. K/S value measure the
   (a) Colour uniformity
   (b) Colour strength
   (c) Reflectance.

10. Colour difference for matching shade using CCM is evaluated as

(a) ΔE

(b) ΔL

(c) Δa.

11. Easy-care finish associated with chemical

(a) DMDHU

(b) Polysiloxanes

(c) Silver nano-particles.

12. Zero formaldehyde crease resistance is associated with

(a) Citric acid

(b) Urea-formaldehyde

(c) DMDHEU

13. Which illuminant is equivalent to average daylight?

(a) D55

(b) D65

(c) TL84

14. HE type of reactive dyes has

(a) High affinity

(b) High reactivity

(c) Both of them.

15. Silver nanoparticles are associated with _____ finish.

(a) Anticrease

(b) Antisoil

(c) Antimicrobial. 15×1=15

UNIT–I

2. Describe the continuous open-width processing of textiles with a neat machine diagram. 15

3. Discuss the concept of Supercritical CO_2 dyeing with recipe details and relevant technical information. Also, describe the advantages and disadvantages of this technique over conventional dyeing. 15

UNIT–II

4. Describe the Inkjet printing technique with its types and discuss all the technical, process, and ink details. 15

5. (a) Write the concept of zero-formaldehyde easy-care finishing with technical details. 8

   (b) Write the technical details on the concept of antimicrobial finishing of textiles. 7

UNIT–III

6. (a) Explain the different colour mixing laws and give examples of their association. 8

   (b) Differentiate between natural and artificial sources of light. What are CIE illuminants? Explain. 7

7. Describe the Munsell colour order system in detail. Write a note on the Whiteness & Yellowness indices for textiles. 15

UNIT–IV

8. (a) What is the Kubelka-Monk equation? Discuss its features and significance. 7

   (b) What do you understand by Metamerism? Discuss its types and quantification. 8

9. Describe the process of recipe prediction using a computer colourmatching system with a neat flowchart. 15

Roll No. ..... Total Pages : 6

47332

BT-7/D-25

PROCESS CONTROL IN SPINNING AND WEAVING

Paper : PEC-TEX-409A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, selecting *one* question from each Section. Question No. 1 of Section-A is compulsory.

SECTION–A

(Compulsory Question)

1. Answer the following questions :

(i) The primary goal of process control in spinning and weaving is :

(a) Random operation

(b) Consistent quality and cost optimization

(c) Increase defects

(d) Reduce speed and efficiency.

(ii) Maximum yarn quality is achieved when :

(a) Parameters fluctuate

(b) Parameters are stable

(c) Drafting is loose

(d) Waste is high.

(iii) Linear programming helps in optimizing :

(a) Machine noise

(b) Cotton mix cost

(c) Draft pressure

(d) Roller diameter.

(iv) Yarn count control primarily ensures :

(a) Fabric handle

(b) Uniform yarn fineness

(c) Higher twist

(d) Lower U% value only.

(v) Sizing viscosity must be controlled to avoid :

(a) Yarn staining

(b) Count variation

(c) Excessive pick-up

(d) Yarn twist change.

(vi) Waste control contributes directly to :

(a) Lower yarn realization

(b) Higher CV%

(c) More machine stoppages

(d) Higher yarn realization.

(vii) Pirn winding mainly supplies weft for :

(a) Air-jet looms

(b) Shuttle looms

(c) Rapier looms

(d) Projectile looms.

(viii) High machine efficiency means :

(a) Few stoppages

(b) Poor lubrication

(c) Low production

(d) High breaks.

(ix) High waste at any stage reduces :

(a) Realization

(b) Fibre length

(c) Picker speed

(d) Package weight.

(x) Preventive maintenance helps :

(a) Reduce downtime

(b) Increase faults

(c) Decrease efficiency

(d) Lower output.

(xi) Loom efficiency is influenced by :

(a) Warp quality

(b) Blow room settings

(c) Card feed

(d) Roving hank.

(xii) Yarn quality index is influenced by :

(a) Warp count

(b) Twist, strength, CV%

(c) Beam density

(d) Traveller life.

(xiii) Improper creeling in warping causes :

(a) Weft variation

(b) Less tension

(c) Smoother beams

(d) Yarn entanglement.

(xiv) Labour allocation aims to :

(a) Increase idle time

(b) Match skill and machine load

(c) Create imbalance

(d) Reduce training.

(xv) Effective process control ultimately leads to :

(a) Unstable production

(b) Consistent quality at optimum cost

(c) Higher random variation

(d) Low efficiency. (15×1=15)

SECTION–B

2. (a) A sample from 20s mixing from 20 bales gave 7% trash content in cotton. The laps produced from the same mixing gave a trash content of 3%. Find the cleaning efficiency. (5)

(b) Explain Linear programming technique to discuss its application for preparing a mixing of different varieties of cotton. (10)

3. (a) 2.5% span length of cotton mixing and laps are 30 mm and 27.8mm respectively. Comment on fibre rupture. (5)

(b) Mention different types of cotton contaminations along with their source of origin. Suggest some measures to control these. (10)

SECTION–C

4. (a) If a plot of distribution curve for yarn linear density from several observations produces two humps for its frequency distribution, what interpretation can be drawn from the analysis? What effect will be there if such a population of yarn is used for the manufacture of a fabric? (8)

   (b) How are machines allotted to a worker in preparatory and ring spinning sections? Discuss in detail. (7)

5. (a) Classify faults along with importance. How can these be controlled? (7)

   (b) Define nep. How can the neps in a sliver be controlled at various stages of yarn formation. (8)

SECTION–D

6. (a) Define size pick up. Discuss in brief the factors affecting its level. (5)

   (b) How can the end breaks on a warping machine be controlled? What should be the optimum level? (5)

   (c) How can the efficiency of fault removal on a winding machine be judged and improved thereafter? (5)

7. (a) What is Hard waste? How can it be controlled in winding and warping sections? Mention the standard norms for hard waste at these sections. (6)

(b) What is the role of moisture in sized yarn? How can it be controlled? (5)

(c) Outline the factors affecting the efficiency and productivity of a winding machine. (4)

SECTION–E

8. (a) Assuming suitable data, stepwise show the method of calculating the productivity and efficiency of a loomshed having 400 looms. (9)

(b) What are reed parameters? What is their significance? How do these affect weaving performance? (6)

9. Write short notes on any *three* :

(a) Role of RH% in loomshed.

(b) Productivity Indices.

(c) Fabric defects and its control.

(d) Material Handling in weaving. (5×3=15)

Roll No. ..... Total Pages : 6

47333

BT-7/D-25

PROCESS CONTROL IN GARMENT

Paper–PEC-TEX-411A

Time : Three Hours] [Maximum Marks : 75

Note : Attempt *five* questions in all, select *one* question from each Section. Question No. 1 is compulsory.

Compulsory Question

1. (i) In progressive bundle system, garments moves through production in

(a) Random order

(b) Bundles by operation

(c) Single process flow

(d) Finished form.

(ii) Poor ergonomics conditions in a garment factory can lead to which of the following

(a) Higher fabric yield

(b) Increased production speed

(c) Better finishing quality

(d) Musculoskeletal disorders (MSDs).

(iii) Which of the following machine uses CAD data to perform cutting operations?

(a) Lockstitch machine

(b) Gerber Cutter

(c) Embroidery machine

(d) Overlock machine.

(iv) Which of the following stitches are commonly used for finishing the edges of knitted fabrics to prevent unraveling?

(a) Over lock stitch

(b) Zigzag stitch

(c) Blind stitch

(d) Running Stitch.

(v) Which of the following is a common reason for thread breakage during seam stitching?

(a) Incorrect needle size

(b) High seam strength

(c) Smooth fabric texture

(d) Low fabric weight.

(vi) What is the primary cause of 'seam grin' in garments?

(a) Excessive washing

(b) Poor thread tension

(c) Incorrect stitch type

(d) Low quality fabric.

(vii) Which stitch is most suitable for seams in stretchy knitted fabrics to avoid seam distortion?

(a) Chain stitch

(b) Lock stitch

(c) Zigzag stitch

(d) Running stitch.

(viii) In garment production, what does the term 'marker' refers to?

(a) A tool used to measure fabric length

(b) A blueprint used to arrange patterns efficiently on the fabric

(c) The cutting line on the fabric

(d) A type of fabric used for cutting.

(ix) Which of the following is the best thread choice for a cotton shirt to ensure the seam is soft and breathable?

(a) Cotton thread

(b) Silk thread

(c) Polyester thread

(d) Nylon thread.

(x) In the needle numbering system, the first number (e.g. 80, 90, 100) refers to

(a) The diameter of the needle in millimeters

(b) The length of the needle

(c) The gauge or thickness of the needle

(d) The length of the needle's eye.

(xi) Which of the following needle types is best suited for sewing knit or stretchy fabrics?

(a) Universal needle

(b) Jeans needle

(c) Ballpoint needle

(d) Leather needle.

(xii) Which stage of garment production typically involves in-line inspections?

(a) Final finishing stage

(b) Cutting stage

(c) Post production shipment

(d) Sewing stage.

(xiii) Which of the following is a common method for garment inspection?

(a) 10 point system

(b) 4 point system

(c) 5s system

(d) Both (a) and (b).

(xiv) What does the 'AQL' (Acceptable Quality Level) system determine in garment production?

(a) The price of the garment

(b) The maximum number of defects considered acceptable in a sample.

(c) The quality of the packaging

(d) The time taken for production.

(xv) Which of the following would you use to track and monitor the variation in a production process continuously

(a) Fishbone diagram

(b) Control charts

(c) Pareto Chart

(d) Scatter Plot. (1×15=15)

SECTION–A

2. Compare and contrast the progressive bundle system and unit production system. What are the advantages and limitations of these systems? (15)

3. (i) Explain the advantage of using programmable sewing machines in mass garment production. (8)

(ii) What is ergonomics and why is it important in the apparel manufacturing industry? (7)

SECTION–B

4. (i) Explain the term 'seam grin'. What causes it and how can it be prevented? (7)

(ii) Explain the causes and consequences of seam puckering? How can it be minimized during production? (8)

5. Explain the difference between stitch requirements between knitted and woven fabrics. Why are certain stitches more suitable for one than the other? (15)

SECTION–C

6. Explain the factors to be considered to select the right sewing thread for a specific fabric type. What problem can arise if the wrong type of thread is used? (15)

7. Discuss the needle numbering system for sewing needle. Explain how using a needle that is too large or too small can affect the overall seam appearance. (15)

SECTION–D

8. Explain the importance of a garment inspection system in the apparel industry. Also discuss the different stages of garment inspection during the production process. (15)

9. Define quality. Explain the key difference between the 4 point inspection system and 10 point inspection system. In which scenario would each system be used and what are their advantages and disadvantages. (15)

Roll No. ..... Total Pages : 6

47335

BT-7/D-25

FUNDAMENTAL OF MANAGEMENT

Paper : OEC-TEX-415 A

Time : Three Hours] [Maximum Marks : 75

Note : Question No. 1 is compulsory. It has 15 multiple choice questions covering all the four units. Q. No. 2 to 9 are long answer type questions (two questions from each unit). Student are required to attempt *one* question from each unit.

Compulsory Question

Multiple Choice Questions (MCQs) (1 mark each)

1. (i) Production Management is primarily concerned with :
   (a) Financial planning
   (b) Managing human resources
   (c) Conversion of inputs into finished goods
   (d) Marketing of products.

   (ii) Financial management mainly deals with :
   (a) Production decisions
   (b) Investment, financing, and dividend decisions
   (c) Marketing and HR decisions
   (d) Research and development decisions.

(iii) The main objective of financial management is :

(a) Maximization of profit

(b) Minimization of cost

(c) Maximization of shareholders' wealth

(d) Increase in sales revenue.

(iv) The ideal plant location should ensure :

(a) Maximum distance from raw materials

(b) Minimum transportation cost and easy access to market

(c) High labor cost

(d) Difficult communication.

(v) Which of the following is not a tool of financial planning?

(a) Budgeting

(b) Cash flow statement

(c) Cost sheet

(d) Trial balance.

(vi) Plant layout refers to :

(a) The arrangement of machines and equipment for smooth workflow

(b) The financial plan of the organization

(c) The number of workers in the plant

(d) The company's management hierarchy.

(vii) Working capital refers to :

(a) Fixed assets minus current liabilities

(b) Current assets minus current liabilities

(c) Current liabilities minus current assets

(d) Total assets minus total liabilities.

(viii) Marketing Management primarily deals with :

(a) Managing finances of the company

(b) Managing production activities

(c) Managing marketing functions to satisfy customer needs

(d) Managing administrative tasks.

(ix) Factors affecting the requirement of working capital include :

(a) Nature of business

(b) Size of business

(c) Business cycle

(d) All the above.

(x) The scope of marketing management includes :

(a) Marketing research, product planning, and pricing

(b) Employee motivation

(c) Financial accounting

(d) Plant layout.

(xi) Personnel Management mainly deals with :

(a) Machines and materials

(b) People at work

(c) Production process

(d) Marketing of products.

(xii) Capital structure refers to :

(a) The composition of a company's debt and equity

(b) The working capital ratio

(c) The dividend policy

(d) None of these.

(xiii) The main objective of Personnel Management is :

(a) To increase production only

(b) To manage financial resources

(c) To ensure effective use of human resources

(d) To control machines.

(xiv) The Marketing Mix is also known as :

(a) 3Ps of marketing

(b) 5Ps of management

(c) 4Ps of marketing

(d) 6Ps of finance.

(xv) Marketing Information System (MIS) helps managers to :

(a) Store employee data

(b) Collect, analyze, and use marketing data for decision-making

(c) Monitor financial performance only

(d) Design product packaging.

Long Answer Questions (15 Marks Each)

UNIT–I

2. Explain the objectives of financial management and discuss how these objectives help in achieving overall organizational goals.

3. Define financial planning. Describe the various tools of financial planning and explain their importance in business decision-making.

UNIT–II

4. Discuss in detail the Managerial and Operative Functions of Personnel Management with suitable examples.

5. What is Job Analysis? Explain the process of job analysis and differentiate between job description and job specification. Also, discuss the concept of Human Resource Development (HRD).

UNIT–III

6. Define Production Management. Discuss its meaning, definition, and objectives in detail.

7. What is Plant Location? Explain the concept of an ideal plant location and discuss the factors affecting plant location.

UNIT–IV

8. Define Marketing Management. Explain the modern nature, scope, and importance of marketing management.

9. What is a Marketing Information System (MIS)? Explain its meaning, components, and importance in managerial decision-making. Also discuss the scope of international marketing.
