

GTH 301 – YARN AND FABRIC MANUFACTURE

Unit I – Textile Fibre

Part A – Regular MCQs

Q1.

Which one of the following is the most important property of an ideal textile fibre?

- a) High brittleness
- b) High tensile strength
- c) Low flexibility
- d) High density

Answer: b) High tensile strength

CO: CO1 | Bloom's Taxonomy: L1 – Remember

Q2.

Which of the following is a natural protein fibre?

- a) Cotton
- b) Polyester
- c) Nylon
- d) Wool

Answer: d) Wool

CO: CO1 | Bloom's Taxonomy: L1 – Remember

Q3.

Which fibre identification test is most suitable for observing the longitudinal and cross-sectional structure of textile fibres?

- a) Microscopic test
- b) Burning test
- c) Solvent test
- d) Tensile strength test

Answer: a) Microscopic test

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q4.

During the burning test, cotton fibre produces the smell of

- a) Burning rubber
- b) Burning hair
- c) Burning paper
- d) Burning plastic

Answer: c) Burning paper

CO: CO1 | Bloom's Taxonomy: L1 – Remember

Q5.

Which fibre melts and shrinks away from the flame before burning?

- a) Wool
- b) Polyester
- c) Cotton

d) Silk

Answer: b) Polyester

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q6.

Which fibre exhibits overlapping scales under microscopic examination?

a) Wool

b) Cotton

c) Polyester

d) Nylon

Answer: a) Wool

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q7.

The ribbon-like appearance with natural convolutions is a characteristic feature of

a) Silk

b) Polyester

c) Acrylic

d) Cotton

Answer: d) Cotton

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q8.

Which manmade fibre is commonly manufactured by the melt spinning process?

- a) Rayon
- b) Acetate
- c) Polyester
- d) Viscose

Answer: c) Polyester

CO: CO1 | Bloom's Taxonomy: L1 – Remember

Q9.

Wet spinning is mainly used for polymers that

- a) Decompose before melting
- b) Melt easily
- c) Have high elasticity
- d) Are natural fibres

Answer: a) Decompose before melting

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q10.

In the dry spinning process, fibre formation occurs mainly due to

- a) Cooling of molten polymer
- b) Evaporation of solvent
- c) Mechanical twisting
- d) Polymer crystallization in water

Answer: b) Evaporation of solvent

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q11.

Which of the following fibre is manufactured by the **wet spinning** process?

- a) Polyester
- b) Nylon
- c) Viscose Rayon
- d) Polypropylene

Answer: c) Viscose Rayon

CO: CO1 | Bloom's Taxonomy: L1 – Remember

Q12.

A yarn produced from many continuous filaments twisted together is known as

- a) Monofilament yarn
- b) Spun yarn
- c) Texturised yarn
- d) Multifilament yarn

Answer: d) Multifilament yarn

CO: CO1 | Bloom's Taxonomy: L1 – Remember

Q13.

Which of the following is the main purpose of conducting a solvent test on textile fibres?

- a) To identify fibres based on their chemical solubility
- b) To determine yarn twist
- c) To measure fibre strength
- d) To determine fibre length

Answer: a) To identify fibres based on their chemical solubility

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q14.

Which spinning method is most suitable for manufacturing nylon fibres?

- a) Dry spinning
- b) Wet spinning
- c) Melt spinning
- d) Ring spinning

Answer: c) Melt spinning

CO: CO1 | Bloom's Taxonomy: L1 – Remember

Q15.

The primary advantage of texturised yarn is

- a) Reduced flexibility
- b) Increased bulkiness and elasticity
- c) Lower moisture absorption
- d) Reduced dyeability

Answer: b) Increased bulkiness and elasticity

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q16.

Which fibre is obtained from the fleece of sheep?

- a) Acrylic
- b) Silk
- c) Cotton
- d) Wool

Answer: d) Wool

CO: CO1 | Bloom's Taxonomy: L1 – Remember

Q17.

During microscopic examination, a smooth cylindrical filament without scales or convolutions is most likely

- a) Polyester
- b) Cotton
- c) Wool
- d) Flax

Answer: a) Polyester

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q18.

Which of the following is a characteristic feature of a monofilament yarn?

- a) Made from short staple fibres
- b) Consists of a single continuous filament
- c) Produced only by ring spinning
- d) Has high bulk due to texturising

Answer: b) Consists of a single continuous filament

CO: CO1 | Bloom's Taxonomy: L1 – Remember

Q19.

The major objective of fibre identification is to

- a) Determine the colour of the fabric
- b) Measure the yarn count
- c) Identify the type of fibre for proper processing and end use
- d) Measure the fabric thickness

Answer: c) Identify the type of fibre for proper processing and end use

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q20.

Which of the following is **NOT** an important property of an ideal textile fibre?

- a) High durability
- b) Good dye affinity
- c) High brittleness
- d) Adequate flexibility

Answer: c) High brittleness

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q21.

Which yarn type is commonly preferred for manufacturing soft and bulky knitted garments?

- a) Monofilament yarn
- b) Metallic yarn
- c) Glass filament yarn
- d) Texturised yarn

Answer: d) Texturised yarn

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Analytical Multiple Choice Questions (Q22–Q30)**Q22. (Type 0 – Assertion–Reason)**

Assertion (A): Cotton fibre burns with the smell of burning paper.

Reason (R): Cotton is a cellulosic fibre.

- a) Both A and R are true, and R is the correct explanation of A.
- b) Both A and R are true, but R is not the correct explanation of A.
- c) A is true, but R is false.

d) A is false, but R is true.

Answer: a

CO: CO1 | Bloom's Taxonomy: L3 – Apply

Q23. (Type 2 – Table to Inference)

A textile laboratory recorded the following observations.

Fibre	Observation
X	Burns like paper
Y	Melts before burning
Z	Smells like burning hair

Which option correctly identifies X, Y and Z?

- a) X–Cotton, Y–Polyester, Z–Wool
- b) X–Silk, Y–Cotton, Z–Polyester
- c) X–Polyester, Y–Wool, Z–Cotton
- d) X–Nylon, Y–Cotton, Z–Silk

Answer: a

CO: CO1 | Bloom's Taxonomy: L4 – Analyze

Q24. (Type 3 – Flowchart)

Choose the correct sequence for **wet spinning**.

- a) Polymer melt → Spinneret → Cooling → Winding
- b) Polymer solution → Spinneret → Coagulation bath → Drawing → Winding
- c) Staple fibre → Carding → Drawing → Ring Spinning
- d) Polymer chips → Heating → Ring Frame → Winding

Answer: b

CO: CO1 | Bloom's Taxonomy: L3 – Apply

Q25. (Type 14 – Problem Solving)

A polymer decomposes before reaching its melting point. Which spinning technique should be selected?

- a) Melt spinning
- b) Ring spinning
- c) Wet spinning
- d) Rotor spinning

Answer: c

CO: CO1 | Bloom's Taxonomy: L4 – Analyze

Q26. (Type 16 – Process Sequence)

Arrange the following steps involved in **melt spinning**.

1. Cooling
 2. Extrusion through spinneret
 3. Melting of polymer chips
 4. Winding
- a) 3 – 2 – 1 – 4
 - b) 2 – 3 – 1 – 4
 - c) 3 – 1 – 2 – 4
 - d) 1 – 2 – 3 – 4

Answer: a

CO: CO1 | Bloom's Taxonomy: L3 – Apply

Q27. (Type 10 – Financial Aspects)

A garment manufacturer plans to produce **10,000 T-shirts**. Two yarn options are available:

Yarn Type	Cost (₹/kg)	Suitable for T-shirts
Spun Cotton Yarn	280	Yes
Texturised Polyester Yarn	360	Yes

The manufacturer wants to produce comfortable T-shirts at the **lowest raw material cost**.

Which yarn should be selected?

- a) Texturised polyester yarn, because it has higher elasticity.
- b) Texturised polyester yarn, because it has better wrinkle resistance.
- c) Spun cotton yarn, because it is less expensive and suitable for comfortable garments.
- d) Both yarns have the same cost and performance.

Answer: c) Spun cotton yarn, because it is less expensive and suitable for comfortable garments.

CO: CO1 | Bloom's Taxonomy: L4 – Analyze

Q28. (Type 4 – Case Study)

A garment manufacturer wants to produce **summer shirts** that are comfortable, highly absorbent and breathable. Which fibre is the most suitable?

- a) Nylon
- b) Polyester
- c) Cotton
- d) Acrylic

Answer: c

CO: CO1 | Bloom's Taxonomy: L4 – Analyze

Q29. (Type 12 – Incomplete Data)

A fibre sample softens before burning. The burning test alone is insufficient to distinguish between polyester and nylon. Which additional test should be carried out?

- a) Twist test
- b) Solvent test
- c) Yarn count test
- d) GSM test

Answer: b

CO: CO1 | Bloom's Taxonomy: L4 – Analyze

Q30. (Type 7 – Controversial Statements)

Statement I: Melt spinning is the fastest and most economical method for thermoplastic polymers.

Statement II: Wet spinning is suitable for all synthetic fibres.

Choose the correct answer.

- a) Both statements are true.
- b) Statement I is false, but Statement II is true.
- c) Statement I is true, but Statement II is false.
- d) Both statements are false.

Answer: c

CO: CO1 | Bloom's Taxonomy: L4 – Analyze

PART B – Descriptive Questions (Q31–Q35)

Q31.

a) Explain the important properties of an ideal textile fibre with suitable examples. **(10 Marks)**

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q32.

a) Explain the burning test used for the identification of textile fibres. Mention the burning characteristics of cotton, wool, silk, polyester, nylon and acrylic fibres. **(10 Marks)**

CO: CO1 | Bloom's Taxonomy: L2 – Understand

Q33.

Explain the melt spinning process with a neat sketch. Discuss its principle, working procedure and applications. (10 Marks)

CO: CO1 | Bloom's Taxonomy: L3 – Apply

Q34.

Differentiate between **Spun yarn, Monofilament yarn, Multifilament yarn and Texturised yarn** with respect to:

- Manufacturing method
- Properties
- Applications

(10 Marks)

CO: CO1 | Bloom's Taxonomy: L3 – Apply

Q35. Analytical Question

(Analytical Type 8 – Multiple Tables & Inference)

A garment manufacturing company plans to produce the following products:

Product	Required Properties
School Uniform	High durability, good moisture absorption and comfort
Sportswear	Lightweight, wrinkle resistance and quick drying
Winter Sweater	Warmth, softness and good insulation

Based on the above information, answer the following:

- a) Select the most suitable fibre for each product and justify your choice based on fibre properties. (5 Marks)
- b) Recommend the most suitable fibre identification test to verify each selected fibre before production and justify your answer. (5 Marks)

CO: CO1 | Bloom's Taxonomy: L4 – Analyze

Unit II – SPINNING PROCESS

Part A – Regular MCQs

Q1.

What is the primary objective of the **ginning** process?

- a) To remove short fibres from sliver
- b) To separate fibres from seeds
- c) To increase yarn twist
- d) To produce roving

Answer: b) To separate fibres from seeds

CO: CO2 | Bloom's Taxonomy: L1 – Remember

Q2.

Which process is mainly carried out to obtain a uniform blend of different fibres?

- a) Carding
- b) Drawing
- c) Ring spinning
- d) Blending

Answer: d) Blending

CO: CO2 | Bloom's Taxonomy: L1 – Remember

Q3.

Which machine performs the opening and cleaning of cotton tufts before carding?

- a) Blow room
- b) Comber
- c) Ring frame
- d) Simplex

Answer: a) Blow room

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q4.

The main function of the **carding** process is to

- a) Twist the yarn
- b) Wind the yarn
- c) Individualize the fibres
- d) Produce fancy yarn

Answer: c) Individualize the fibres

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q5.

Which process improves fibre parallelization and sliver uniformity after carding?

- a) Ring spinning
- b) Drawing
- c) Combing

d) Doubling

Answer: b) Drawing

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q6.

Which spinning preparatory process removes short fibres and neps?

- a) Mixing
- b) Blow room
- c) Roving
- d) Combing

Answer: d) Combing

CO: CO2 | Bloom's Taxonomy: L1 – Remember

Q7.

The main purpose of the **roving** process is to

- a) Produce the final yarn
- b) Remove seeds
- c) Produce a fine sliver without twist
- d) Reduce sliver thickness and insert a small amount of twist

Answer: d) Reduce sliver thickness and insert a small amount of twist

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q8.

Which machine produces the final yarn from roving?

- a) Carding machine
- b) Draw frame
- c) Ring frame
- d) Blow room

Answer: c) Ring frame

CO: CO2 | Bloom's Taxonomy: L1 – Remember

Q9.

Which yarn is smoother and stronger due to the removal of short fibres?

- a) Carded yarn
- b) Mélange yarn
- c) Slub yarn
- d) Combed yarn

Answer: d) Combed yarn

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q10.

Which of the following statements correctly describes **Z-twist** in yarn?

- a) The direction of twist resembles the middle portion of the letter **S**.
- b) The fibres are arranged without any twist.
- c) The direction of twist resembles the middle portion of the letter **Z**.
- d) The yarn is produced only by open-end spinning.

Answer: c) The direction of twist resembles the middle portion of the letter Z.

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q11.

Which modern spinning system produces yarn directly from sliver without using roving?

- a) Ring spinning
- b) Open-end spinning
- c) Doubling
- d) Combing

Answer: b) Open-end spinning

CO: CO2 | Bloom's Taxonomy: L1 – Remember

Q12.

In friction spinning, fibres are twisted mainly by

- a) Rollers
- b) Spindles
- c) Friction drums
- d) Flyers

Answer: c) Friction drums

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q13.

The primary advantage of compact spinning is

- a) Higher yarn hairiness

- b) Lower yarn strength
- c) Reduced fibre parallelization
- d) Reduced yarn hairiness and improved strength

Answer: d) Reduced yarn hairiness and improved strength

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q14.

The main objective of doubling is to

- a) Remove seed particles
- b) Increase yarn strength and uniformity
- c) Produce sliver
- d) Insert S-twist only

Answer: b) Increase yarn strength and uniformity

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q15.

Which fancy yarn contains thick portions at regular or irregular intervals?

- a) Core yarn
- b) Mélange yarn
- c) Slub yarn
- d) Spiral yarn

Answer: c) Slub yarn

CO: CO2 | Bloom's Taxonomy: L1 – Remember

Q16.

A yarn produced by wrapping one yarn around another is called

- a) Elastomeric yarn
- b) Mélange yarn
- c) Spiral yarn
- d) Carded yarn

Answer: c) Spiral yarn

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q17.

Which fancy yarn has a central filament covered by staple fibres?

- a) Core yarn
- b) Slub yarn
- c) Spiral yarn
- d) Mélange yarn

Answer: a) Core yarn

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q18.

Elastomeric yarn is mainly used to provide

- a) High lustre
- b) Elastic stretch and recovery

c) High absorbency

d) Decorative appearance only

Answer: b) Elastic stretch and recovery

CO: CO2 | Bloom's Taxonomy: L1 – Remember

Q19.

Mélange yarn is produced by

a) Mixing fibres of different colours before spinning

b) Twisting two yarns together

c) Wrapping one yarn around another

d) Inserting extra twist into yarn

Answer: a) Mixing fibres of different colours before spinning

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q20.

Compared with carded yarn, combed yarn has

a) More short fibres

b) Higher neps

c) Better strength and smoothness

d) Lower fibre parallelization

Answer: c) Better strength and smoothness

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q21.

Which spinning system is most suitable for producing high-quality, low-hairiness yarn?

- a) Open-end spinning
- b) Friction spinning
- c) Ring spinning
- d) Compact spinning

Answer: d) Compact spinning

CO: CO2 | Bloom's Taxonomy: L3 – Apply

Analytical Multiple Choice Questions (Q22–Q30)

Q22. (Type 0 – Assertion–Reason)

Assertion (A): Combed yarn is stronger than carded yarn.

Reason (R): Combing removes short fibres and aligns the remaining fibres more uniformly.

- a) Both A and R are true, and R is the correct explanation of A.
- b) Both A and R are true, but R is not the correct explanation of A.
- c) A is true, but R is false.
- d) A is false, but R is true.

Answer: a

CO: CO2 | Bloom's Taxonomy: L3 – Apply

Q23. (Type 2 – Table Interpretation)

A spinning mill recorded the following yarn properties.

Yarn	Hairiness	Strength	Uniformity
X	High	Medium	Medium
Y	Low	High	High

Identify X and Y.

- a) X–Combed yarn, Y–Carded yarn
- b) X–Carded yarn, Y–Combed yarn
- c) X–Core yarn, Y–Slub yarn
- d) X–Mélange yarn, Y–Spiral yarn

Answer: b

CO: CO2 | Bloom's Taxonomy: L4 – Analyze

Q24. (Type 3 – Process Sequence)

Arrange the following spinning processes in the correct order.

- 1. Blow room
- 2. Carding
- 3. Drawing
- 4. Ring spinning

- a) 1 – 2 – 3 – 4
- b) 2 – 1 – 3 – 4
- c) 1 – 3 – 2 – 4
- d) 2 – 3 – 1 – 4

Answer: a

CO: CO2 | Bloom's Taxonomy: L3 – Apply

Q25. (Type 4 – Case Study)

A spinning mill wants to manufacture **premium-quality cotton yarn** with **high strength, low hairiness and excellent uniformity**.

Which spinning system is the most suitable?

- a) Friction spinning
- b) Open-end spinning
- c) Compact spinning
- d) Ring spinning

Answer: c

CO: CO2 | Bloom's Taxonomy: L4 – Analyze

Q26. (Type 12 – Incomplete Data)

A yarn sample has excellent elasticity and is mainly used in stretch garments. Which fancy yarn is most likely used?

- a) Slub yarn
- b) Mélangé yarn
- c) Spiral yarn
- d) Elastomeric yarn

Answer: d

CO: CO2 | Bloom's Taxonomy: L3 – Apply

Q27. (Type 14 – Problem Solving)

A spinning supervisor notices that the yarn contains a large number of **short fibres and neps**. Which process should be improved to reduce this problem?

- a) Combing
- b) Doubling

c) Ring spinning

d) Winding

Answer: a

CO: CO2 | Bloom's Taxonomy: L4 – Analyze

Q28. (Type 16 – Matching)

Match the spinning system with its characteristic.

List I	List II
1. Open-end spinning	P. Low hairiness
2. Compact spinning	Q. Rotor used
3. Friction spinning	R. Friction drums

Choose the correct combination.

a) 1–Q, 2–P, 3–R

b) 1–P, 2–Q, 3–R

c) 1–R, 2–Q, 3–P

d) 1–Q, 2–R, 3–P

Answer: a

CO: CO2 | Bloom's Taxonomy: L4 – Analyze

Q29. (Type 18 – Data Interpretation)

The production details of two spinning systems are given below.

Spinning System	Production Speed	Yarn Quality
X	High	Medium
Y	Moderate	High

Identify X and Y.

- a) X–Compact, Y–Open-end
- b) X–Ring, Y–Friction
- c) X–Open-end, Y–Compact
- d) X–Combing, Y–Drawing

Answer: c

CO: CO2 | Bloom's Taxonomy: L4 – Analyze

Q30. (Type 7 – Statement Based)

Statement I: Doubling improves yarn strength and uniformity.

Statement II: Doubling is carried out before carding.

Choose the correct answer.

- a) Both statements are true.
- b) Statement I is false and Statement II is true.
- c) Both statements are false.
- d) Statement I is true and Statement II is false.

Answer: d

CO: CO2 | Bloom's Taxonomy: L4 – Analyze

PART B – Descriptive Questions (Q31–Q35)

Q31.

a) Explain the objectives of the following spinning preparatory processes:

- Mixing
- Blending
- Carding
- Drawing
- Ring Spinning

(10 Marks)

CO: CO2 | Bloom's Taxonomy: L2 – Understand

Q32.

a) Differentiate between **Carded Yarn** and **Combed Yarn** with respect to:

- Manufacturing process
- Fibre arrangement
- Yarn quality
- Strength
- Applications

(10 Marks)

CO: CO2 | Bloom's Taxonomy: L3 – Apply

Q33.

Explain the **principle and working of Open-end Spinning** with a neat sketch. Mention its advantages and applications.

(10 Marks)

CO: CO2 | Bloom's Taxonomy: L3 – Apply

Q34.

State the objectives of doubling and describe any **four fancy yarns** with neat sketches.

(10 Marks)

CO: CO2 | Bloom's Taxonomy: L3 – Apply

Q35. Analytical Question

(Analytical Type – Case Study)

A spinning mill has received the following customer requirements.

Customer	Requirement
A	Soft and high-quality cotton shirting fabric
B	High-speed production with economical yarn manufacturing
C	Stretchable fabric for sportswear

Answer the following:

a) Recommend the most suitable yarn or spinning system for each customer with justification. **(5 Marks)**

b) Explain why **combed yarn** is preferred over **carded yarn** for premium garments. **(5 Marks)**

CO: CO2 | Bloom's Taxonomy: L4 – Analyze

UNIT III – WEAVING AND KNITTING PROCESS

PART – A

Regular Multiple Choice Questions (Q1–Q10)

Q1.

Which preparatory process is carried out before weaving to arrange warp yarns in the required order?

- a) Drawing-in
- b) Winding
- c) Knitting
- d) Braiding

Answer: a) Drawing-in

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q2.

The main objective of sizing is to

- a) Increase the strength of warp yarns
- b) Reduce the number of warp yarns
- c) Change the colour of warp yarns
- d) Increase the length of fabric

Answer: a) Increase the strength of warp yarns

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q3.

Drawing-in refers to the process of passing each warp end through the

- a) Reed and heald eye
- b) Shuttle and pirn
- c) Needle and sinker
- d) Beam and roller

Answer: a) Reed and heald eye

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q4.

Denting is the process of passing warp ends through the

- a) Heald wire
- b) Reed dents
- c) Shuttle race
- d) Drop wire

Answer: b) Reed dents

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q5.

Which loom motion separates the warp sheets to form a shed?

- a) Beat-up motion
- b) Shedding motion
- c) Let-off motion
- d) Take-up motion

Answer: b) Shedding motion

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q6.

Which of the following is a primary motion of a loom?

- a) Shedding
- b) Let-off
- c) Warp stop
- d) Weft stop

Answer: a) Shedding

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q7.

The main function of the beat-up motion is to

- a) Push the inserted weft to the fell of the cloth
- b) Supply warp yarn from the warp beam
- c) Form loops using knitting needles
- d) Control the tension of the weft yarn

Answer: a) Push the inserted weft to the fell of the cloth

CO: CO3 | **Bloom's Taxonomy:** L2 – Understand

Q8.

Which of the following is a secondary motion of a loom?

- a) Shedding
- b) Picking
- c) Let-off
- d) Beat-up

Answer: c) Let-off

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q9.

An automatic loom is advantageous because it can

- a) Reduce production interruptions
- b) Eliminate all fabric defects
- c) Operate without any yarn supply
- d) Produce only one fabric design

Answer: a) Reduce production interruptions

CO: CO3 | **Bloom's Taxonomy:** L2 – Understand

Q10.

Which weft insertion technique uses a small gripper to carry the weft yarn across the shed?

- a) Projectile insertion
- b) Rapier insertion
- c) Air-jet insertion
- d) Water-jet insertion

Answer: b) Rapier insertion

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q11.

Which process arranges warp yarns in the correct order before they are passed through the healds and reed?

- a) Sizing
- b) Winding
- c) Drawing-in
- d) Weft insertion

Answer: c) Drawing-in

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q12.

The main purpose of denting is to

- a) Pass warp ends through the reed
- b) Insert weft yarn across the shed
- c) Form loops using knitting needles
- d) Wind yarn onto the warp beam

Answer: a) Pass warp ends through the reed

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q13.

Which of the following is an auxiliary motion of a loom?

- a) Shedding
- b) Picking
- c) Beat-up
- d) Warp stop motion

Answer: d) Warp stop motion

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q14.

Which loom motion controls the delivery of warp yarn from the warp beam?

- a) Take-up motion
- b) Let-off motion
- c) Shedding motion
- d) Beat-up motion

Answer: b) Let-off motion

CO: CO3 | **Bloom's Taxonomy:** L2 – Understand

Q15.

Which type of loom uses a shuttle to carry the weft yarn across the shed?

- a) Shuttle loom
- b) Rapier loom
- c) Air-jet loom
- d) Water-jet loom

Answer: a) Shuttle loom

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q16.

In a plain loom, the warp yarn generally passes from the warp beam towards the

- a) Cloth beam through the weaving zone
- b) Needle bed through the knitting zone
- c) Sinker through the looping zone
- d) Take-up roller through the winding zone

Answer: a) Cloth beam through the weaving zone
CO: CO3 | **Bloom's Taxonomy:** L2 – Understand

Q17.

Which is an important advantage of automatic looms?

- a) Reduced production efficiency
- b) Increased manual intervention
- c) Higher productivity with less labour
- d) Lower production speed with more stoppages

Answer: c) Higher productivity with less labour
CO: CO3 | **Bloom's Taxonomy:** L2 – Understand

Q18.

Which weft insertion technique uses a jet of compressed air to carry the weft yarn?

- a) Rapier insertion
- b) Air-jet insertion
- c) Projectile insertion
- d) Water-jet insertion

Answer: b) Air-jet insertion
CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q19.

In knitting, a vertical column of loops is known as a

- a) Course
- b) Wales
- c) Texture
- d) Stitch

Answer: b) Wales
CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q20.

A horizontal row of loops in a knitted fabric is called a

- a) Wales
- b) Texture
- c) Course
- d) Gauge

Answer: c) Course

CO: CO3 | **Bloom's Taxonomy:** L1 – Remember

Q21.

Which knitting element controls the movement and formation of loops on a knitting machine?

- a) Needle
- b) Sinker
- c) Cam
- d) All of the above

Answer: d) All of the above

CO: CO3 | **Bloom's Taxonomy:** L2 – Understand

Analytical Multiple Choice Questions (Q22–Q30)

Q22. (Type 0 – Assertion–Reason)

Assertion (A): Drawing-in is an important preparatory process before weaving.

Reason (R): Drawing-in ensures that the warp ends are passed through the heald eyes and reed in the required order.

- a) Both A and R are true, and R is the correct explanation of A.
- b) Both A and R are true, but R is not the correct explanation of A.
- c) A is true, but R is false.
- d) A is false, but R is true.

Answer: a) Both A and R are true, and R is the correct explanation of A.
CO: CO3 | **Bloom's Taxonomy:** L3 – Apply

Q23. (Type 2 – Table to Inference)

Study the following table.

Loom Motion	Function
A	Forms the shed
B	Inserts the weft
C	Beats the weft to the fell
D	Supplies warp yarn

Which option correctly identifies **A, B, C, and D**?

- a) A–Picking, B–Shedding, C–Beat-up, D–Let-off
- b) A–Shedding, B–Picking, C–Beat-up, D–Let-off
- c) A–Beat-up, B–Picking, C–Shedding, D–Take-up
- d) A–Let-off, B–Beat-up, C–Picking, D–Shedding

Answer: b) A–Shedding, B–Picking, C–Beat-up, D–Let-off
CO: CO3 | **Bloom's Taxonomy:** L4 – Analyze

Q24. (Type 3 – Process Sequence)

Arrange the following stages of warp preparation before weaving in the correct sequence.

1. Sizing
2. Winding
3. Drawing-in and Denting
4. Warping

- a) 2 → 4 → 1 → 3
- b) 4 → 2 → 1 → 3

- c) $2 \rightarrow 1 \rightarrow 4 \rightarrow 3$
- d) $1 \rightarrow 2 \rightarrow 4 \rightarrow 3$

Answer: a) $2 \rightarrow 4 \rightarrow 1 \rightarrow 3$

CO: CO3 | **Bloom's Taxonomy:** L3 – Apply

Q25. (Type 4 – Decision Making)

A textile manufacturer wants to increase loom productivity and reduce manual intervention during weaving. Which type of loom would be the most suitable?

- a) Hand loom
- b) Automatic loom
- c) Basic shuttle loom
- d) Traditional loom

Answer: b) Automatic loom

CO: CO3 | **Bloom's Taxonomy:** L5 – Evaluate

Q26. (Type 7 – Statement Analysis)

Statement I: Primary motions are essential for the basic weaving operation of a loom.

Statement II: Shedding, picking, and beat-up are the three primary motions of a loom.

- a) Both Statement I and Statement II are true.
- b) Statement I is true and Statement II is false.
- c) Statement I is false and Statement II is true.
- d) Both Statement I and Statement II are false.

Answer: a) Both Statement I and Statement II are true.

CO: CO3 | **Bloom's Taxonomy:** L4 – Analyze

Q27. (Type 16 – Process Sequence)

Arrange the following stages in the formation of a knitted loop in the correct sequence.

1. Needle receives the yarn
2. Needle draws the yarn through the old loop
3. New loop is formed
4. Old loop is released

- a) $1 \rightarrow 2 \rightarrow 4 \rightarrow 3$
- b) $2 \rightarrow 1 \rightarrow 3 \rightarrow 4$
- c) $1 \rightarrow 2 \rightarrow 3 \rightarrow 4$
- d) $3 \rightarrow 1 \rightarrow 2 \rightarrow 4$

Answer: c) $1 \rightarrow 2 \rightarrow 3 \rightarrow 4$

CO: CO3 | **Bloom's Taxonomy:** L3 – Apply

Q28. (Type 17 – Match the Following)

Match **List I** with **List II**.

List I

List II

P. Wales 1. Horizontal row of loops

Q. Course 2. Vertical column of loops

R. Sinker 3. Supports and controls fabric loops

Choose the correct answer.

- a) P–1, Q–2, R–3
- b) P–2, Q–1, R–3
- c) P–2, Q–3, R–1
- d) P–3, Q–1, R–2

Answer: b) P–2, Q–1, R–3

CO: CO3 | **Bloom's Taxonomy:** L4 – Analyze

Q29. (Type 12 – Incomplete Data)

A knitted fabric contains a series of loops arranged in horizontal rows and vertical columns. The horizontal rows are called _____ and the vertical columns are called _____.

- a) Wales and courses
- b) Courses and wales
- c) Textures and courses
- d) Face loops and back loops

Answer: b) Courses and wales

CO: CO3 | **Bloom's Taxonomy:** L3 – Apply

Q30. (Type 20 – Application-Based)

A knitting unit wants to produce plain knitted fabric using a circular knitting machine. Which set of elements is essential for loop formation and control?

- a) Needle, sinker, and cam
- b) Shuttle, reed, and heald
- c) Beam, shuttle, and reed
- d) Heald, cam, and shuttle

Answer: a) Needle, sinker, and cam

CO: CO3 | **Bloom's Taxonomy:** L3 – Apply

PART – B

Descriptive Questions (Q31–Q34)

Q31.

Explain the sequence of preparatory processes carried out before weaving and discuss the objectives of each process. (10 Marks)

CO: CO3 | **Bloom's Taxonomy:** L2 – Understand

Q32.

Explain the primary, secondary, and auxiliary motions of a loom. Describe the function of each motion in the weaving process. (10 Marks)

CO: CO3 | Bloom's Taxonomy: L3 – Apply

Q33.

Explain the different types of looms and describe the advantages of automatic looms. Discuss the major weft insertion techniques used in shuttle-less looms. (10 Marks)

CO: CO3 | Bloom's Taxonomy: L4 – Analyze

Q34.

Define knitting and explain the important knitting terms—Wales, Course, Texture, Face Loop, and Back Loop. Describe the functions of Needle, Sinker, and Cam in knitting. (10 Marks)

CO: CO3 | Bloom's Taxonomy: L2 – Understand

Q35 – Simple Application-Based Question

Q35. (Type 20 – Application-Based)

A textile unit wants to produce knitted fabric using a plain circular knitting machine. The machine operator needs to understand the basic knitting elements and fabric structure.

- a) Name the three important knitting elements used in the machine. (3 Marks)**
- b) What is a **course** in knitted fabric? (2 Marks)**
- c) What is a **wale** in knitted fabric? (2 Marks)**
- d) State any **three uses of braiding**. (3 Marks)**

CO: CO3 | Bloom's Taxonomy: L3 – Apply

UNIT IV – FABRIC STRUCTURE

PART – A

Regular Multiple Choice Questions (Q1–Q10)

Q1.

In woven fabric structure, a **design** represents the

- a) Arrangement of warp and weft intersections
- b) Number of heald shafts in the loom
- c) Number of yarns wound on the beam
- d) Sequence of knitting elements in a machine

Answer: a) Arrangement of warp and weft intersections

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q2.

A draft in weaving indicates the

- a) Method of winding the warp yarn
- b) Arrangement of warp threads through healds
- c) Method of inserting the weft yarn
- d) Arrangement of yarns on the cloth beam

Answer: b) Arrangement of warp threads through healds

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q3.

The peg plan is used to indicate the

- a) Lifting plan of heald shafts
- b) Number of warp yarns in a fabric
- c) Width of the woven fabric
- d) Type of yarn used for weaving

Answer: a) Lifting plan of heald shafts

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q4.

The simplest form of basic woven structure is

- a) Satin weave
- b) Twill weave
- c) Plain weave
- d) Sateen weave

Answer: c) Plain weave

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q5.

In a plain weave, each warp yarn passes

- a) Over one and under one weft yarn alternately
- b) Over two and under one weft yarn alternately
- c) Over three and under one weft yarn alternately
- d) Over four and under one weft yarn alternately

Answer: a) Over one and under one weft yarn alternately

CO: CO4 | **Bloom's Taxonomy:** L2 – Understand

Q6.

A 4×4 Matt weave is formed by modifying the structure of

- a) Satin weave
- b) Plain weave
- c) Twill weave
- d) Sateen weave

Answer: b) Plain weave

CO: CO4 | **Bloom's Taxonomy:** L2 – Understand

Q7.

The notation **2/1** in a twill weave indicates

- a) Two warp yarns over and one under
- b) Two weft yarns over and one under
- c) One warp yarn over and two under
- d) One weft yarn over and two under

Answer: a) Two warp yarns over and one under

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q8.

A 3/1 twill weave has a repeat size of

- a) Two ends and two picks
- b) Three ends and three picks
- c) Four ends and four picks
- d) Five ends and five picks

Answer: c) Four ends and four picks

CO: CO4 | **Bloom's Taxonomy:** L2 – Understand

Q9.

A 5-end satin weave is characterized by

- a) Long floats with a regular twill line
- b) Long floats with a less pronounced diagonal effect
- c) Equal interlacings in every direction
- d) Groups of yarns forming large square effects

Answer: b) Long floats with a less pronounced diagonal effect

CO: CO4 | **Bloom's Taxonomy:** L2 – Understand

Q10.

Which of the following is a basic knitted stitch?

- a) Tuck stitch
- b) Miss stitch
- c) Knit stitch
- d) All of the above

Answer: d) All of the above

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q11.

Which weave is produced by interlacing warp and weft yarns alternately?

- a) Satin weave
- b) Plain weave
- c) Sateen weave
- d) Twill weave

Answer: b) Plain weave

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q12.

In a **plain weave**, the number of warp and weft yarns in one complete repeat is

- a) Two warp yarns and two weft yarns
- b) Three warp yarns and three weft yarns
- c) Four warp yarns and four weft yarns
- d) Five warp yarns and five weft yarns

Answer: a) Two warp yarns and two weft yarns

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q13.

Which weave produces a characteristic diagonal line on the fabric surface?

- a) Plain weave
- b) Matt weave
- c) Twill weave
- d) Satin weave

Answer: c) Twill weave

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q14.

In a **3/1 twill**, the number of warp floats in each repeat is

- a) One
- b) Two
- c) Three
- d) Four

Answer: c) Three

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q15.

Which structure is characterized by longer floats and a smooth fabric surface?

- a) Plain weave
- b) Satin weave
- c) Matt weave
- d) Twill weave

Answer: b) Satin weave

CO: CO4 | **Bloom's Taxonomy:** L2 – Understand

Q16.

Sateen is generally considered the

- a) Weft-faced equivalent of satin
- b) Warp-faced equivalent of satin
- c) Weft-faced equivalent of plain weave
- d) Warp-faced equivalent of twill weave

Answer: a) Weft-faced equivalent of satin

CO: CO4 | **Bloom's Taxonomy:** L2 – Understand

Q17.

Which stitch is formed when a needle holds an existing loop while receiving a new yarn?

- a) Knit stitch
- b) Tuck stitch
- c) Miss stitch
- d) Rib stitch

Answer: b) Tuck stitch

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q18.

In a miss stitch, the needle

- a) Forms a new loop
- b) Holds the old loop only
- c) Does not receive a new yarn
- d) Transfers the loop to another needle

Answer: c) Does not receive a new yarn

CO: CO4 | **Bloom's Taxonomy:** L2 – Understand

Q19.

Which knitted structure is commonly produced using alternate knit and purl wales?

- a) Plain
- b) Purl
- c) Rib
- d) Interlock

Answer: c) Rib

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Q20.

Which knitted structure is formed using two sets of needles arranged opposite to each other?

- a) Plain
- b) Purl
- c) Rib
- d) Interlock

Answer: d) Interlock

CO: CO4 | **Bloom's Taxonomy:** L2 – Understand

Q21.

Which notation is used to represent the movement and action of needles in knitted structures?

- a) Needle diagram
- b) Peg plan
- c) Draft plan
- d) Weave diagram

Answer: a) Needle diagram

CO: CO4 | **Bloom's Taxonomy:** L1 – Remember

Analytical Multiple Choice Questions (Q22–Q30)

Q22. (Type 0 – Assertion–Reason)

Assertion (A): The draft is an important part of a woven fabric plan.

Reason (R): The draft shows the order in which warp ends are drawn through the heald shafts.

- a) Both A and R are true, and R is the correct explanation of A.
- b) Both A and R are true, but R is not the correct explanation of A.
- c) A is true, but R is false.
- d) A is false, but R is true.

Answer: a) Both A and R are true, and R is the correct explanation of A.
CO: CO4 | **Bloom's Taxonomy:** L3 – Apply

Q23. (Type 2 – Table to Inference)

Study the following table.

Structure	Characteristic
A	One over and one under
B	Four × four repeat with grouped interlacements
C	Two over and one under
D	Long floats and smooth surface

Which option correctly identifies **A, B, C, and D**?

- a) A–Plain, B–Matt, C–2/1 Twill, D–Satin
- b) A–Matt, B–Plain, C–3/1 Twill, D–Sateen
- c) A–Plain, B–Satin, C–2/1 Twill, D–Matt
- d) A–Twill, B–Matt, C–Plain, D–Satin

Answer: a) A–Plain, B–Matt, C–2/1 Twill, D–Satin
CO: CO4 | **Bloom's Taxonomy:** L4 – Analyze

Q24. (Type 3 – Process Sequence)

Arrange the following steps involved in preparing a woven fabric plan in the correct sequence.

1. Prepare the design
 2. Prepare the draft
 3. Prepare the peg plan
 4. Develop the woven structure
-
- a) 1 → 2 → 3 → 4
 - b) 2 → 1 → 3 → 4
 - c) 3 → 1 → 2 → 4
 - d) 1 → 3 → 2 → 4

Answer: a) $1 \rightarrow 2 \rightarrow 3 \rightarrow 4$

CO: CO4 | **Bloom's Taxonomy:** L3 – Apply

Q25. (Type 4 – Decision Making)

A designer wants to produce a woven fabric with a simple, firm structure and frequent interlacements. Which weave would be most suitable?

- a) Satin weave
- b) Plain weave
- c) 3/1 Twill weave
- d) Sateen weave

Answer: b) Plain weave

CO: CO4 | **Bloom's Taxonomy:** L5 – Evaluate

Q26. (Type 7 – Statement Analysis)

Statement I: A 2/1 twill has two warp floats and one weft float in each repeat.

Statement II: A 3/1 twill has three warp floats and one weft float in each repeat.

- a) Both Statement I and Statement II are true.
- b) Statement I is true and Statement II is false.
- c) Statement I is false and Statement II is true.
- d) Both Statement I and Statement II are false.

Answer: a) Both Statement I and Statement II are true.

CO: CO4 | **Bloom's Taxonomy:** L4 – Analyze

Q27. (Type 16 – Process Sequence)

Arrange the following stages for representing a knitted structure in diagrammatic form.

1. Identify the stitch type
2. Select the required notation
3. Draw the needle arrangement
4. Complete the stitch representation

- a) $1 \rightarrow 2 \rightarrow 3 \rightarrow 4$
- b) $2 \rightarrow 1 \rightarrow 3 \rightarrow 4$
- c) $1 \rightarrow 3 \rightarrow 2 \rightarrow 4$
- d) $3 \rightarrow 2 \rightarrow 1 \rightarrow 4$

Answer: a) $1 \rightarrow 2 \rightarrow 3 \rightarrow 4$

CO: CO4 | **Bloom's Taxonomy:** L3 – Apply

Q28. (Type 17 – Match the Following)

Match **List I** with **List II**.

List I

List II

- P. Knit Stitch 1. Needle receives yarn and forms loop
- Q. Tuck Stitch 2. Needle holds old loop and receives new yarn
- R. Miss Stitch 3. Needle does not receive new yarn

Choose the correct answer.

- a) P–1, Q–2, R–3
- b) P–2, Q–3, R–1
- c) P–3, Q–1, R–2
- d) P–1, Q–3, R–2

Answer: a) P–1, Q–2, R–3

CO: CO4 | **Bloom's Taxonomy:** L4 – Analyze

Q29. (Type 12 – Incomplete Data)

A knitted fabric is required to have alternate knit and purl wales, producing a structure with good elasticity and widthwise stretch. The most suitable structure is _____.

- a) Plain
- b) Purl
- c) Rib
- d) Interlock

Answer: c) Rib

CO: CO4 | **Bloom's Taxonomy:** L3 – Apply

Q30. (Type 20 – Application-Based)

A textile student is asked to prepare the woven structure of a **3/1 twill**. Which combination correctly represents the required information?

- a) Three warp floats and one weft float
- b) One warp float and three weft floats
- c) Two warp floats and one weft float
- d) One warp float and two weft floats

Answer: a) Three warp floats and one weft float

CO: CO4 | **Bloom's Taxonomy:** L3 – Apply

PART – B

Descriptive Questions (Q31–Q35)

Q31.

Define Design, Draft, and Peg Plan. Explain the relationship between these three elements in the construction of a woven fabric structure. (10 Marks)

CO: CO4 | **Bloom's Taxonomy:** L2 – Understand

Q32.

Draw the Design, Draft, and Peg Plan for Plain Weave and 4 × 4 Matt Weave. (10 Marks)

CO: CO4 | **Bloom's Taxonomy:** L3 – Apply

Q33.

Draw the Design, Draft, and Peg Plan for 2/1 and 3/1 Twill Weaves. (10 Marks)

CO: CO4 | Bloom's Taxonomy: L4 – Analyze

Q34.

Explain the Design, Draft, and Peg Plan of 5-End Satin Weave and Sateen Weave.

(10 Marks)

CO: CO4 | Bloom's Taxonomy: L4 – Analyze

Q35 – Type 4: Decision-Making

Q35. A textile designer wants to develop a knitted fabric collection for garments. The designer has to select suitable knitted structures based on the required fabric characteristics.

- a)** For a fabric requiring **good widthwise stretch**, which knitted structure would you recommend? Give a reason. *(3 Marks)*
- b)** For a fabric requiring a **double-layered and stable knitted structure**, which structure would you recommend? Give a reason. *(3 Marks)*
- c)** The designer wants to produce a fabric using **loops formed on only one set of needles**. Which basic knitted structure would be suitable? *(2 Marks)*
- d)** Name the **three basic stitch types** that can be used to develop different knitted structures. *(2 Marks)*

CO: CO4 | Bloom's Taxonomy: L5 – Evaluate

UNIT V – NON-WOVEN FABRICS

PART – A

Regular Multiple Choice Questions (Q1–Q10)

Q1.

Non-woven fabric is a textile material produced mainly by

- a) Interlacing warp and weft yarns
- b) Interlooping yarns with needles
- c) Bonding fibres or filaments together
- d) Braiding several yarns together

Answer: c) Bonding fibres or filaments together

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q2.

Which of the following is a common use of non-woven fabrics?

- a) Surgical masks
- b) Woven denim garments
- c) Knitted sweaters
- d) Woven sarees

Answer: a) Surgical masks

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q3.

Non-woven fabrics can be classified based on

- a) Web formation and bonding methods
- b) Warp count and weft count
- c) Weave repeat and draft plan
- d) Course and wale arrangement

Answer: a) Web formation and bonding methods

CO: CO5 | **Bloom's Taxonomy:** L2 – Understand

Q4.

Which web formation technique uses a liquid medium to distribute fibres?

- a) Dry-laid web formation
- b) Wet-laid web formation
- c) Spun-laid web formation
- d) Melt-blown web formation

Answer: b) Wet-laid web formation

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q5.

In dry-laid web formation, fibres are generally arranged using

- a) Air or mechanical methods
- b) Liquid suspension methods
- c) Molten polymer extrusion
- d) Chemical adhesive solutions

Answer: a) Air or mechanical methods

CO: CO5 | **Bloom's Taxonomy:** L2 – Understand

Q6.

A web in which fibres are predominantly arranged in the machine direction is called a

- a) Random-laid web
- b) Cross-laid web
- c) Parallel-laid web
- d) Wet-laid web

Answer: c) Parallel-laid web

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q7.

Which web formation method produces a web with fibres arranged in different directions?

- a) Parallel laying
- b) Random laying
- c) Spun laying
- d) Melt blowing

Answer: b) Random laying

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q8.

Spun-laid webs are generally produced from

- a) Continuous filaments
- b) Short staple fibres
- c) Woven yarn packages
- d) Knitted fabric loops

Answer: a) Continuous filaments

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q9.

Melt-blown webs are formed by extruding molten polymer through

- a) A weaving reed
- b) Fine spinneret holes
- c) Knitting needles
- d) A carding cylinder

Answer: b) Fine spinneret holes

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q10.

Which bonding method uses heat to soften or melt thermoplastic fibres and join them together?

- a) Adhesive bonding
- b) Needle punching
- c) Thermal bonding
- d) Mechanical twisting

Answer: c) Thermal bonding

CO: CO5 | **Bloom's Taxonomy:** L2 – Understand

Q11.

Which bonding technique uses a liquid or paste adhesive to hold fibres together?

- a) Thermal bonding
- b) Needle punching
- c) Adhesive bonding
- d) Spun bonding

Answer: c) Adhesive bonding

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q12.

Needle punching forms a non-woven fabric by

- a) Interlocking fibres mechanically with barbed needles
- b) Melting polymer and extruding continuous filaments
- c) Distributing fibres in a liquid suspension
- d) Applying adhesive between layers of fibres

Answer: a) Interlocking fibres mechanically with barbed needles

CO: CO5 | **Bloom's Taxonomy:** L2 – Understand

Q13.

Which web formation technique is mainly associated with the production of webs from continuous filaments?

- a) Wet laying
- b) Dry laying
- c) Spun laying
- d) Cross laying

Answer: c) Spun laying

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q14.

In a cross-laid web, the fibre layers are arranged mainly

- a) Along the machine direction only
- b) Across the width in successive layers
- c) Randomly without any layering
- d) In a liquid suspension

Answer: b) Across the width in successive layers

CO: CO5 | **Bloom's Taxonomy:** L2 – Understand

Q15.

Which process produces a web by directly forming continuous filaments from molten polymer?

- a) Melt-blown process
- b) Wet-laid process
- c) Dry-laid process
- d) Needle-punching process

Answer: a) Melt-blown process

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q16.

A non-woven fabric made from a web of staple fibres can be formed using

- a) Wet-laid or dry-laid techniques
- b) Spun-laid or melt-blown techniques
- c) Weaving or knitting techniques
- d) Braiding or twisting techniques

Answer: a) Wet-laid or dry-laid techniques

CO: CO5 | **Bloom's Taxonomy:** L2 – Understand

Q17.

Which web formation method aims to distribute fibres without a definite directional arrangement?

- a) Parallel laying
- b) Cross laying
- c) Random laying
- d) Spun laying

Answer: c) Random laying

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q18.

The main purpose of bonding a non-woven web is to

- a) Increase the length of individual fibres
- b) Hold the fibres together to form a stable fabric
- c) Convert staple fibres into woven yarns
- d) Produce a knitted loop structure

Answer: b) Hold the fibres together to form a stable fabric

CO: CO5 | **Bloom's Taxonomy:** L2 – Understand

Q19.

Which method bonds a spun-laid web by using an appropriate bonding technique to improve fabric strength?

- a) Bonding of spun-laid webs
- b) Winding of spun-laid webs

- c) Sizing of spun-laid webs
- d) Warping of spun-laid webs

Answer: a) Bonding of spun-laid webs

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q20.

Which type of web is generally produced by suspending fibres in water before forming the web?

- a) Dry-laid web
- b) Wet-laid web
- c) Parallel-laid web
- d) Spun-laid web

Answer: b) Wet-laid web

CO: CO5 | **Bloom's Taxonomy:** L1 – Remember

Q21.

A manufacturer wants to produce a non-woven material with a fine fibre structure suitable for filtration applications. Which web formation technique would be most appropriate?

- a) Cross-laid web
- b) Parallel-laid web
- c) Melt-blown web
- d) Wet-laid web

Answer: c) Melt-blown web

CO: CO5 | **Bloom's Taxonomy:** L3 – Apply

Analytical Multiple Choice Questions (Q22–Q30)

Q22. (Type 0 – Assertion–Reason)

Assertion (A): Non-woven fabrics can be produced without conventional weaving or knitting processes.

Reason (R): Fibres or filaments can be formed into a web and bonded together to produce a stable fabric.

- a) Both A and R are true, and R is the correct explanation of A.
- b) Both A and R are true, but R is not the correct explanation of A.
- c) A is true, but R is false.
- d) A is false, but R is true.

Answer: a) Both A and R are true, and R is the correct explanation of A.

CO: CO5 | **Bloom's Taxonomy:** L3 – Apply

Q23. (Type 2 – Table to Inference)

Study the following table.

Web Formation	Characteristic
A	Fibres distributed using a liquid medium
B	Fibres mainly arranged in one direction
C	Fibres arranged across the machine direction
D	Fibres distributed without a definite direction

Which option correctly identifies **A, B, C, and D**?

- a) A–Wet-laid, B–Parallel-laid, C–Cross-laid, D–Random-laid
- b) A–Dry-laid, B–Cross-laid, C–Parallel-laid, D–Wet-laid
- c) A–Spun-laid, B–Random-laid, C–Wet-laid, D–Cross-laid
- d) A–Melt-blown, B–Wet-laid, C–Dry-laid, D–Parallel-laid

Answer: a) A–Wet-laid, B–Parallel-laid, C–Cross-laid, D–Random-laid

CO: CO5 | **Bloom's Taxonomy:** L4 – Analyze

Q24. (Type 3 – Process Sequence)

Arrange the following stages in the correct sequence for producing a bonded non-woven fabric.

1. Fibre or filament preparation

2. Web formation
3. Web bonding
4. Formation of finished non-woven fabric

- a) 1 → 2 → 3 → 4
- b) 2 → 1 → 3 → 4
- c) 1 → 3 → 2 → 4
- d) 3 → 2 → 1 → 4

Answer: a) 1 → 2 → 3 → 4

CO: CO5 | **Bloom's Taxonomy:** L3 – Apply

Q25. (Type 4 – Decision Making)

A manufacturer wants to produce a non-woven fabric by mechanically entangling fibres without using adhesives or heat. Which bonding method should be selected?

- a) Thermal bonding
- b) Adhesive bonding
- c) Needle punching
- d) Spun-laid bonding

Answer: c) Needle punching

CO: CO5 | **Bloom's Taxonomy:** L5 – Evaluate

Q26. (Type 7 – Statement Analysis)

Statement I: Wet-laid webs are formed by dispersing fibres in a liquid medium.

Statement II: Dry-laid webs are formed using air or mechanical methods to arrange staple fibres.

- a) Both Statement I and Statement II are true.
- b) Statement I is true and Statement II is false.
- c) Statement I is false and Statement II is true.
- d) Both Statement I and Statement II are false.

Answer: a) Both Statement I and Statement II are true.

CO: CO5 | **Bloom's Taxonomy:** L4 – Analyze

Q27. (Type 16 – Process Sequence)

Arrange the following stages in the **melt-blown web formation process** in the correct sequence.

1. Collection of fine fibres as a web
2. Polymer melting
3. Attenuation and drawing of filaments by high-velocity air
4. Extrusion through fine spinneret holes

- a) $2 \rightarrow 4 \rightarrow 3 \rightarrow 1$
- b) $4 \rightarrow 2 \rightarrow 1 \rightarrow 3$
- c) $2 \rightarrow 3 \rightarrow 4 \rightarrow 1$
- d) $1 \rightarrow 3 \rightarrow 4 \rightarrow 2$

Answer: a) $2 \rightarrow 4 \rightarrow 3 \rightarrow 1$

CO: CO5 | **Bloom's Taxonomy:** L3 – Apply

Q28. (Type 17 – Match the Following)

Match **List I** with **List II**.

List I

List II

- P. Adhesive bonding 1. Uses barbed needles
- Q. Thermal bonding 2. Uses heat
- R. Needle punching 3. Uses adhesive
- S. Melt-blown 4. Uses high-velocity air to attenuate fibres

Choose the correct answer.

- a) P-3, Q-2, R-1, S-4
- b) P-2, Q-3, R-4, S-1
- c) P-1, Q-4, R-2, S-3
- d) P-4, Q-1, R-3, S-2

Answer: a) P-3, Q-2, R-1, S-4

CO: CO5 | **Bloom's Taxonomy:** L4 – Analyze

Q29. (Type 12 – Incomplete Data)

A manufacturer wants to produce a non-woven fabric from **staple fibres**. The fibres are first arranged into a web and then mechanically interlocked using barbed needles. The selected web formation and bonding methods are _____ and _____ respectively.

- a) Wet-laid and thermal bonding
- b) Dry-laid and needle punching
- c) Spun-laid and adhesive bonding
- d) Melt-blown and thermal bonding

Answer: b) Dry-laid and needle punching

CO: CO5 | **Bloom's Taxonomy:** L3 – Apply

Q30. (Type 20 – Application-Based)

A manufacturer wants to produce a non-woven fabric using **continuous filaments** rather than staple fibres. Which combination of web formation techniques would be most appropriate?

- a) Wet-laid and dry-laid
- b) Parallel-laid and cross-laid
- c) Spun-laid and melt-blown
- d) Random-laid and wet-laid

Answer: c) Spun-laid and melt-blown

CO: CO5 | **Bloom's Taxonomy:** L3 – Apply

PART – B

Descriptive Questions (Q31–Q34)

Q31.

Define non-woven fabrics. Explain their classification and describe any five important uses of non-woven fabrics. (10 Marks)

CO: CO5 | Bloom's Taxonomy: L2 – Understand

Q32.

Explain the web formation techniques used for staple fibres. Describe wet-laid and dry-laid web formation methods. (10 Marks)

CO: CO5 | Bloom's Taxonomy: L3 – Apply

Q33.

Describe the principle of spun laid web formation technique with diagram. (10 Marks)

CO: CO5 | Bloom's Taxonomy: L4 – Analyze

Q34.

Describe the principles of adhesive bonding and thermal bonding with diagram. (10 Marks)

CO: CO5 | Bloom's Taxonomy: L4 – Analyze

Q35 – Type 4: Decision-Making / Analytical Question

A non-woven fabric manufacturer receives orders for three different products: **a soft disposable product, a heat-bonded fabric, and a mechanically bonded thick fabric**. The production manager must select suitable bonding techniques for each product.

- a) Which bonding method would you recommend for the **soft disposable product** if an adhesive is used to hold the fibres together? Give a reason. (3 Marks)
- b) Which bonding method would you select when **heat is used to soften thermoplastic fibres and bond them together**? Explain the principle. (3 Marks)
- c) Which bonding method would you recommend for producing a **thick and mechanically entangled non-woven fabric**? Explain how it works. (2 Marks)

d) State one important advantage of using bonding techniques in non-woven fabric production.
(2 Marks)

CO: CO5 | **Bloom's Taxonomy:** L5 – Evaluate