

7. FIBRE TO FABRIC SOLUTIONS

TEACHING TASK

JEE MAINS LEVEL QUESTIONS

1. What is the process of loosening jute fibers from the woody stem called?

A) Ginning B) Retting C) Stripping D) Carding

Answer:B

Solution:Retting is the process of soaking jute stems in water to loosen fibers from the woody core.

2. Which natural fiber is known for its natural sheen and luxurious feel?

A) Wool B) Cotton C) Silk D) Linen

Answer:C

Solution:Silk is prized for its natural sheen, smoothness, and luxurious feel.

3. Which synthetic fiber is commonly used for its resistance to mildew and insects?

A) Nylon B) Acrylic C) Rayon D) Polyester

Answer:D

Solution:Polyester is resistant to mildew and insects, making it durable for various uses.

4. What is the main characteristic of wool fibers?

A) Wrinkle resistance B) Moisture resistance C) Insulation D) Smooth texture

Answer:C

Solution:Wool fibers have excellent insulation properties, trapping heat to keep warm.

5. Which natural fiber is obtained from the fibers of the flax plant?

A) Cotton B) Linen C) Jute D) Abaca

Answer:B

Solution:Linen is derived from the fibers of the flax plant, known for its strength and breathability.

6. Which synthetic fiber is commonly used for outdoor gear due to its moisture resistance?

A) Nylon B) Polyester C) Rayon D) Polypropylene

Answer:B

Solution:Polyester is widely used in outdoor gear due to its moisture-wicking and quick-drying properties.

7. What is the primary use of jute fibers?

A) Making ropes and sacks B) Making summer clothing
C) Making luxury garments D) Making wool substitutes

Answer:A

Solution:Jute's coarse, strong fibers make it ideal for ropes, sacks, and burlap.

8. Which synthetic fiber is known for its resistance to abrasion?

A) Polyester B) Nylon C) Acrylic D) Rayon

Answer:B

Solution:Nylon is highly resistant to abrasion, making it perfect for items like backpacks and hosiery

9. What is the main characteristic of cotton fibers?

A) Elasticity B) Absorbency C) Insulation D) Moisture resistance

Answer:B

Solution:Cotton is highly absorbent, making it comfortable for clothing and towels.

10. Which natural fiber is commonly used for making strong, durable ropes?

A) Cotton B) Hemp C) Silk D) Wool

Answer:B

Solution:Hemp fibers are exceptionally strong and durable, commonly used for ropes and canvases.

JEE ADVANCED LEVEL QUESTIONS

Multi correct answer type:

11. What are the characteristics of polyester fibers?

A) Wrinkle-resistant B) Moisture-resistant C) Highly elastic D) Absorbent

Answer:A,B

Solution:A) Wrinkle-resistant - Polyester retains its shape well and resists wrinkling.

B) Moisture-resistant - It repels water and dries quickly.

12. Which type of fibers are commonly used in making ropes and specialty papers?

A) Cotton B) Jute C) Hemp D) Abaca

Answer:B,C,D

Solution: B) Jute - Coarse and strong, used for ropes, sacks, and paper.

C) Hemp - Extremely durable, ideal for ropes and specialty papers.

D) Abaca (Manila hemp) - Used for high-strength ropes and tea bags.

A) Cotton - Soft and absorbent, not typically used for heavy-duty ropes.

13. What are the characteristics of natural fibers? (Select all that apply)

A) Highly elastic B) Absorbent

C) Resistant to moisture D) Derived from plant, animal, or mineral sources

Answer:B,D

Solution:B) Absorbent - Natural fibers like cotton and wool absorb moisture well.

D) Derived from plant, animal, or mineral sources - Examples: Cotton (plant), silk (animal), asbestos (mineral).

Assertion and Reason Type:

A) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion.

B) Both Assertion and Reason are true, but Reason is NOT the correct explanation for Assertion.

C) Assertion is true, but Reason is false.

D) Assertion is false, but Reason is true.

14. Reason : Wool is commonly used for winter clothing.

Assertion : Wool fibers are insulating, breathable, and can regulate temperature, providing warmth and comfort in cold weather conditions.

Answer:A

Solution:Assertion accurately describes wool's properties (insulation, breathability).

Reason states its common use, which directly results from these properties.

15. Reason : Polyester is commonly used in upholstery and outdoor gear.

Assertion : Polyester fibers are durable, wrinkle-resistant, and moisture-resistant, making them suitable for long-lasting upholstery fabrics and outdoor garments that require weather resistance.

Answer:A

Solution:Assertion lists polyester's key traits (durability, weather resistance).

Reason cites its applications, which are direct outcomes of these traits.

16. Reason : Jute is commonly used to make burlap, sacks, and other coarse fabrics.

Assertion : Jute fibers are strong and durable, making them suitable for heavy-duty applications such as sacks for storing agricultural produce and burlap for packaging and decoration.

Answer:A

Solution:Assertion highlights jute's strength and durability, justifying its use.

Reason describes its typical uses, which align with these properties.

Comprehension Type:

In the textile industry, the choice of fiber is crucial, as it determines the characteristics and performance of the final product. Natural fibers, such as cotton and wool, offer breathability, softness, and insulation, making them ideal for clothing and home textiles. Conversely, synthetic fibers like polyester and nylon provide durability, moisture resistance, and elasticity, making them suitable for outdoor gear and sportswear. Blends of natural and synthetic fibers combine the advantages of both, offering fabrics that are both comfortable and resilient. Ultimately, the selection of fiber depends on the desired properties and intended use of the end product.

17. Which of the following is a characteristic of natural fibers like cotton and wool?

A) Durability B) Moisture resistance C) Breathability D) Elasticity

Answer:C

Solution:Natural fibers like cotton and wool offer breathability, softness, and insulation.

18. Synthetic fibers such as polyester and nylon are commonly used in which type of products?

A) Home textiles B) Outdoor gear C) Sportswear D) All of the above

Answer:D

Solution: Synthetic fibers are used for outdoor gear and sportswear, and blends are used in home textiles — implying synthetic fibers are also involved in home products.

19. What advantage do blends of natural and synthetic fibers offer?

A) They are highly elastic B) They are moisture-resistant
C) They combine comfort and resilience D) They provide insulation

Answer:C

Solution:Blends offer comfort (from natural fibers) and resilience (from synthetic fibers).

Matrix Matching Type:

20. Match the synthetic fiber with its characteristic.

Column A

Column B

- | | |
|--------------|-------------------------------------|
| 1. Polyester | A) Exceptional elasticity |
| 2. Nylon | B) Strong and resistant to abrasion |
| 3. Rayon | C) Durable and wrinkle-resistant |
| 4. Spandex | D) Derived from wood pulp |

Answer: 1-C, 2-B, 3-D, 4-A

Solution:

Column A

Column B

- | | |
|--------------|-------------------------------------|
| 1. Polyester | C) Durable and wrinkle-resistant |
| 2. Nylon | B) Strong and resistant to abrasion |
| 3. Rayon | D) Derived from wood pulp |
| 4. Spandex | A) Exceptional elasticity |

LEARNERS TASK

JEE MAIN LEVEL QUESTIONS

1. Which natural fiber is derived from the fleece of sheep?

- A) Cotton B) Wool C) Silk D) Jute

Answer: B

Solution: Wool - Derived from sheep fleece, known for insulation.

2. What is the main component of synthetic fibers?

- A) Cellulose B) Petrochemicals C) Flax D) Silk

Answer: B

Solution: Petrochemicals - Synthetic fibers are made from petroleum-based chemicals (e.g., polyester, nylon).

3. Which natural fiber is commonly used for making burlap and sacks?

- A) Cotton B) Linen C) Jute D) Hemp

Answer: C

Solution: Jute is a coarse natural fiber used in gunny bags, sacks, and burlap

4. Which synthetic fiber is known for its exceptional elasticity?

- A) Polyester B) Nylon C) Rayon D) Spandex

Answer: D

Solution: Spandex (also called Lycra) is famous for its high stretchability, used in activewear.

5. What is the process of separating cotton fibers from seeds called?

- A) Ginning B) Retting C) Stripping D) Weaving

Answer: A

Solution: Ginning removes cotton fibers from the seeds after harvesting.

6. Which natural fiber is obtained from the leaf stalks of the abaca plant?

- A) Cotton B) Silk C) Wool D) Abaca

Answer: D

Solution: Abaca fiber is extracted from the leaf stalks of the abaca plant, used in ropes and textiles.

7. Which synthetic fiber is commonly used as a wool substitute in knitwear?

A) Polyester B) Acrylic C) Rayon D) Polypropylene

Answer:B

Solution: Acrylic resembles wool in texture and is often used as its synthetic alternative in sweaters and blankets.

8. What is the main characteristic of spandex fibers?

A) Moisture resistance B) Elasticity C) Insulation D) Smooth texture

Answer:B

Solution: Spandex is highly elastic and can stretch multiple times its length without breaking.

9. Which natural fiber is commonly used for making summer clothing and home furnishings?

A) Cotton B) Hemp C) Silk D) Wool

Answer:A

Solution: Cotton is soft, breathable, and ideal for hot weather and household items like bedsheets and curtains.

10. Which synthetic fiber is commonly used in activewear and ropes?

A) Polyester B) Nylon C) Acrylic D) Polypropylene

Answer:B

Solution: Nylon is strong, elastic, and abrasion-resistant, making it perfect for ropes and sportswear.

JEE ADVANCED LEVEL QUESTIONS

Multi correct answer type:

11. What are the characteristics of synthetic fibers? (Select all that apply)

A) Durable B) Wrinkle-resistant C) Moisture-resistant D) Highly absorbent

Answer:A,B,C

Solution:

A) Durable - Synthetic fibers like polyester and nylon are long-lasting.

B) Wrinkle-resistant - They maintain shape well (e.g., polyester shirts).

C) Moisture-resistant - Repel water (e.g., nylon raincoats).

D) Highly absorbent - Incorrect. Synthetics are hydrophobic (non-absorbent), unlike cotton or wool.

12. Which natural fibers are known for their strength and durability?

A) Linen B) Jute C) Hemp D) Silk

Answer:A,B,C

Solution:

A) Linen - Made from flax, known for strength and crisp texture.

B) Jute - Coarse and robust, used for sacks/burlap.

C) Hemp - Extremely durable, used in ropes/canvas.

D) Silk - Strong for its fineness but less durable than hemp/jute.

13. Name the natural fibers commonly used in the production of high-quality textiles and garments.

A) Cotton B) Wool C) Silk D) Hemp

Answer:A,B,C

Solution: A) Cotton - Soft, breathable, and versatile (e.g., T-shirts, bedsheets).

B) Wool - Insulating and durable (e.g., suits, sweaters).

C) Silk - Luxurious and smooth (e.g., evening wear, scarves).

D) Hemp - Strong but coarse; rarely used in high-end fashion.

Assertion and Reason Type:

A) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion.

B) Both Assertion and Reason are true, but Reason is NOT the correct explanation for Assertion.

C) Assertion is true, but Reason is false.

D) Assertion is false, but Reason is true.

14. Reason : Cotton is widely used in the textile industry for making clothing and home textiles.

Assertion : Cotton fibers are soft, breathable, and absorbent, making them ideal for comfortable clothing and absorbent home textiles like towels and bed linens.

Answer:A

Solution: Assertion accurately describes cotton's properties(softness,breathability, absorbency).

Reason states its widespread use, which directly results from these properties.

15. Reason : Silk is used in the production of high-quality textiles and garments.

Assertion : Silk fibers are luxurious, smooth, and possess a natural sheen,giving fabrics an elegant appearance and feel.

Answer:A

Solution: Assertion highlights silk's premium qualities (luxury, sheen, smoothness).

Reason cites its use in high-end fashion, which is a direct outcome of these traits.

16. Reason : Nylon is commonly used in various applications, including clothing and hosiery.

Assertion : Nylon fibers are strong, elastic, and resistant to abrasion, making them suitable for durable and stretchy garments like stockings and sports wear.

Answer:A

Solution: Assertion lists nylon's key properties (strength, elasticity, abrasion resistance).

Reason mentions its applications, which are enabled by these properties.

Comprehension Type:

Fibers, whether natural or synthetic, play a crucial role in the creation of a wide range of products, from clothing and textiles to industrial materials.

Natural fibers, such as cotton and wool, originate from plants, animals, or minerals and are known for their breathability, softness, and insulation

properties. On the other hand, synthetic fibers like polyester and nylon are artificially produced through chemical processes and offer attributes like durability, moisture resistance, and elasticity. The choice between natural and synthetic fibers depends on factors such as intended use, desired characteristics, and environmental considerations. Moreover, advancements in technology have led to the development of innovative blends that combine the best features of both natural and synthetic fibers, offering versatility and enhanced performance in various applications.

17. What distinguishes natural fibers from synthetic fibers?

- A) Natural fibers are artificially produced.
- B) Synthetic fibers originate from plants, animals, or minerals.
- C) Natural fibers offer breathability and softness.
- D) Synthetic fibers are known for their elasticity.

Answer:C

Solution:: Natural fibers like cotton, wool, and silk are derived from natural sources and are generally considered more breathable and soft compared to synthetic fibers, which are man-made and often have a less comfortable texture.

18. Why are synthetic fibers like polyester and nylon preferred for certain applications?

- A) They are environmentally friendly.
- B) They offer breathability and insulation.
- C) They provide durability and moisture resistance.
- D) They are soft and naturally sourced.

Answer:C

Solution: Synthetic fibers offer durability, moisture resistance, and elasticity, making them suitable for outdoor or performance-based use.

19. What is an advantage of blends of natural and synthetic fibers?

- A) They are less durable.
- B) They offer limited versatility.
- C) They combine the best features of both types of fibers.
- D) They are not suitable for industrial materials.

Answer:C

Solution: Blends offer versatility and enhanced performance by combining comfort (natural fibers) and durability/elasticity (synthetic fibers).

Matrix Matching Type:

20. Match the natural fiber with its source material.

Column A

Column B

- | | |
|-----------|-----------------------------|
| 1. Cotton | A) Cotton plant seed fibers |
| 2. Wool | B) Jute plant stems |
| 3. Silk | C) Sheep fleece |
| 4. Jute | D) Silkworm cocoons |

Answer: 1-A, 2-C, 3-D, 4-B

Solutions:

Column A

Column B

- | | |
|-----------|-----------------------------|
| 1. Cotton | A) Cotton plant seed fibers |
| 2. Wool | C) Sheep fleece |
| 3. Silk | D) Silkworm cocoons |
| 4. Jute | B) Jute plant stems |

KEY

				TEACHING TASK					
				JEE MAINS LEVEL QUESTIONS					
1	2	3	4	5	6	7	8	9	10
B	C	D	C	B	B	A	B	B	B
				JEE ADVANCED LEVEL QUESTIONS					
11	12	13	14	15	16	17	18	19	
A,B	B,C,D	B,D	A	A	A	C	D	C	
20									
1-C,2-B,3-D,4-A									
				LEARNERS TASK					
				JEE MAIN LEVEL QUESTIONS					
1	2	3	4	5	6	7	8	9	10
B	B	C	D	A	D	B	B	A	B
				JEE ADVANCED LEVEL QUESTIONS					
11	12	13	14	15	16	17	18	19	
A,B,C	A,B,C	A,B,C	A	A	A	C	C	C	
20									
1-A,2-C,3-D,4-B									