

Secondary Stage



In Accordance with
NCF 2023

11
CBSE

Fashion Studies

CODE 837 | Skill Education

Meenu Kumar

Sona Sharma



Includes

- Part A: Employability Skills
- Part B: Subject Specific Skills
- Part C: Practical Work
- Part D: Project Work

FULLMARKS



Fashion Studies

CODE 837 | Skill Education

Sona Sharma



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NEW EDITION

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Preface

In order to understand clothing as one of the three most important needs of the human race, fashion theory, and practice are based on an academic basis where history, anthropology, sociology, psychology, and economics are mixed. It's the visual expression of a country's cultural identity.

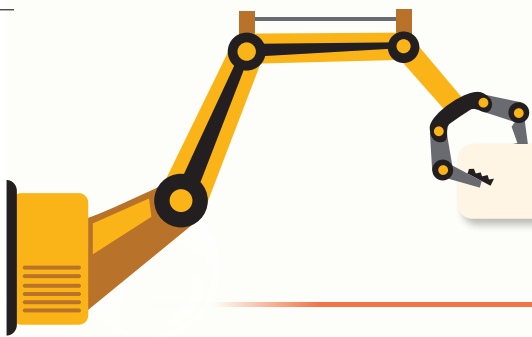
Fashion plays an active role in influencing consumers' lifestyle choices. In some areas, such as clothing, accessories, cars, foods, wellness, vacations, and so on, it has become the driving force behind global trends. Despite its glamorousness, fashion is a serious business with high financial stakes worldwide. India is becoming a prominent figure on the global fashion map as it continues to become increasingly identified with textiles, clothing, and culture in an International Fashion Scenario.

A large variety of useful topics, that encourage individual achievement, have been offered to students by the existing education environment. Several people want to pursue a non-traditional career in which creativity, problem-solving, and entrepreneurial skills are integrated into an exciting combination. Fashion Studies is offered at CBSE 11 level as an optional course that reflects the direction in which fashion is considered a creative and challenging career.

Fashion Studies provides an insight into the components and processes of garment design, textile production, and marketing. This includes the entire fiber-to-fabric process, from conception to manufacture of clothing. It gives an overview of fashion, the understanding of fabrics and surface technologies, design fundamentals, and elements of garment production. It is proposed that Fashion Studies should be the subject of a student's curriculum to enable them to decide how best to pursue their dreams.

The Subject of Fashion Studies was launched as an independent elective course at the Senior Secondary Level in 2006 to meet the needs of today's changing fashion industry. The book is designed to provide students with a thorough knowledge of this subject, by the same CBSE curriculum. For those interested in fashion and its various aspects, it can be considered as an introductory book. For an introduction course in vocational training, the book will be a useful tool.

— **Publishers**



INSIDE THE BOOK

Learning Resources

Learning Outcomes:

Students will be able to know about

Learning Outcomes

- | | |
|---|---------------------------------------|
| 1.1 Understanding Fashion: Introduction and Definition | 1.2 Factors Influencing Fashion |
| 1.3 Key Concepts and Terminology | 1.4 Movement and Direction of Fashion |
| 1.5 Theories of Fashion Movement | 1.6 Consumer Segmentation |
| 1.7 Salient Characteristics of Fashion Designers and Brands | |
| 1.8 Brands and e-brands | 1.9 International Trade in Fashion |
| 1.10 Regulatory Bodies in Fashion and Textile Sector | 1.11 Role of Fashion Professionals |
| 1.12 Fashion Institutes and Colleges in India | |

At a Glance:

This section provides summary of the chapter.

At a Glance

- Natural fibres are obtained from natural resources assets like plants/ vegetables, creature hair and regular minerals.
- Man-made fibres are obtained by the mechanical spinning of polymers like cellulose, synthetic polymers, metallic compounds and other materials which are not found in nature.
- Weaving is the process of interlacement of two arrangements of yarns that are opposite to each other. Weaving is done using looms. Looms can be grouped as handloom or powerloom.
- The three essential activities during weaving are shedding, picking and beating.

Glossary:

This section contains definitions of important terms.

Glossary

- | | |
|--------------------------------|---|
| 1. Accessories | : Articles like jewellery, hats, shoes, belts, etc. worn or carried to match clothing |
| 2. Avant Garde | : French term for design which is unconventional and ahead of its time |
| 3. Classic | : Long-lasting fashion that outlasts seasonal forecast |
| 4. Cohort | : Consumer segments categorised according to shared characteristics like demographics and lifestyle |
| 5. Consumer | : The end user who decides to purchase |
| 6. Copyright | : The legal right of a creator of an original concept or style |
| 7. Collection | : Range of clothing or accessories for a season |
| 8. Custom-made | : Made to order as per the specifications of the client. Also called Bespoke tailoring |
| 9. Disposable income | : Income of a person after tax deduction which could be spent on consumable items |
| 10. Fad | : Short-lived fashion that peaks and fades out quickly |
| 11. Fashion Cycle | : Cyclic repetition of styles from a previous period |
| 12. Fashion Forecasting | : A specialised activity to predict fashion for the next season(s) |
| 13. Fashion Seasons | : Bi-annual periods of Spring-Summer and Autumn-Winter according to which fashion collections are planned |
| 14. Haute Couture | : French term for High Fashion of one-of-a-kind fashion |
| 15. Obsolescence | : When a product is discarded for something new |
| 16. Pret a Porter | : French term for ready-to-wear fashion |

Sample Practical Work

Practical learning helps students learn more

PRACTICAL EXERCISE-1

Aim

- Relating Fashion Cycle theories to contemporary fashion

Material Requirement

1. Unlined/blank sketchbook (A3)
2. Scissor, glue
3. Fashion magazines

Procedure

1. Refer to books, magazines and the internet with a focus on any decade in the 20th century (e.g. Jazz age of 1920s, Hippie era of 1960s, Punk fashion of 1980s etc.)
2. Find articles and photographs of the overall 'look' of the selected decade e.g. art, architecture, cars, furniture and other lifestyle products.
3. Focus on the details of clothes (fabrics, silhouettes, colours and prints) and accessories (watches, bags, shoes).
4. Find visuals of Indian and international runway shows (within the last 3 years) where the collections are inspired by the selected decade but re-interpreted anew.
5. Label the visuals with information about the designers, location of the shows and year.
6. Paste the visuals on sheets/notebook co-relating similarities and differences in design between the original fashion and its contemporary interpretation

Sample Project Work

It helps the students work outside the classroom environment while improving their practical skills.

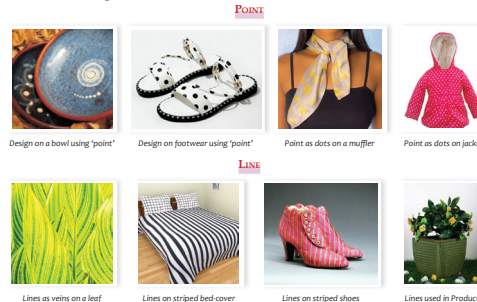
2. Project

Topic: Elements and Principles of Design

Introduction

In our daily life we experience design intent in everything around us. The presence of specific qualities which make the visual experience pleasing or non-pleasing, constitute the elements and principles of design. Basic elements of design in fashion include lines, shapes, form, colour, and texture, whereas the primary principles of design include balance, emphasis, proportions, harmony, variety, and rhythm. The elements of design guide the arrangement of elements within a design composition. They are the designers' tools for shaping the creativity required for design solutions.

Elements of Design in Fashion



Assessment Tools

Review Questions:

It presents questions before the students to access their current progress on the ongoing topic.

Review Questions

- Define fashion.
 - Explain the factors influencing fashion.
 - What are the ways in which fashion is a serious business?
 - What is sustainable fashion?
 - Name three Fair Trade Practices in the fashion industry.
- Ans.** 1. The word 'fashion' comes from the Latin word 'facere', which means 'to make' or 'to do'. This includes the two steps of making and doing, whether it's making clothes or looking good. The Webster International Encyclopedia 1998 defines fashion as a 'prevailing style of dress, particularly new designs representing changes from previous seasons'.
- Ans.** The following are the factors that affect fashion:
- | | |
|---|--------------------------------------|
| (i) Dominating events | (ii) Influence of celebrities |
| (iii) Economic factors | (iv) Psychological factors |
| (v) Social factors | (vi) Cultural factors |
| (vii) Political events and personalities | (viii) Historical inspiration |
| (ix) Geographical factors | (x) Spread of Information Technology |
| (xi) Technological advancements in textiles | |
- Ans.** As one might expect, the more fashion sense a person has, the more attention they get. Consequently, fashion plays a crucial role in social and economic advancement. Indeed, people's social ranks are reflected and determined by fashion.
- Ans.** Feasible style is a development and collaboration that advances changes in design things and the planning system to accomplish more noteworthy ecological and social value. Sustainable fashion encompasses more than just fashion apparel and accessories. It involves addressing the fashion industry as a whole. Dealing with social, cultural, ecological and financial systems that are all interdependent is necessary for this.
- Ans.** Child labour, decent working conditions, and fair wages are three Fair Trade Practices in the fashion industry.

Activity:

It provides an activity to the students allowing them to research and learn new things.

Activity 4

Background: Changes in the direction of fashion are dependent on trends. The source and process of trends, the innovators and followers, the vertical or horizontal direction and the movement of change can be explained by 3 theories.

This activity is intended to enable student groups to trace the movement of fashion and relate to the appropriate theory.

- Each group will select one fashion theory for detailed analysis.
 - Collect pictures of one item of clothing or an ensemble from photographs or articles from magazines or catalogues.
- Ans.** To be done by each student individually.



Additional Questions with Answers:

It contains MCQs, Fill in the blanks to test and improve their mental dexterity.

I. Choose the correct option.

- "I have never been about fashion and trends. I believe in a design that has lasting integrity." Which designer has quoted this?
 - Giorgio Armani
 - Issey Miyake
 - Donna Karan
 - Ralph Lauren
- Which one of the following is the full form of FMCG?
 - Fast Moving Charitable Goods
 - Fast Moving Client Goods
 - Fast Move Complex Goods
 - Fast Moving Consumer Goods
- Pleats Please is a prêt label of which designer?
 - Ritu Kumar
 - Donna Karan
 - Manish Arora
 - Issey Miyake
- Radhika has been appointed as a fashion merchandiser in an export house. What is her role in the organization?
 - To understand that design is not merely a paper-pencil activity.
 - To ensure a rigorous process of quality control.
 - To coordinate between the company and retailer to provide a wider platform for the product.
 - To prepare a graded size chart for adherence by the production unit.
- This organization is operated under the aegis of the Ministry of Textiles. The main task of this organization is to look after production levels, export and imports, implementation of schemes, and advising the government on matters of implementation of new technologies. Which is this organization?
 - Advisory Board
 - Export Promotion Council
 - Apparel Export Promotion Council
 - Powerloom Development & Export Promotion Council
- The trend of low waist saree was popular in the decade 1960s. Eventually people lost interest; soon it was rejected and later it was out of trend. And then it resurfaced after gap of 40 years i.e. in the year 2000 but with some modifications. The acceptance and discontinuation of a particular style is indicated through fashion cycle. Which of the following fashion cycles is discussed above?
 - Interrupted cycle
 - Cycle within cycle
 - Recurring fashion
 - Fads cycle

Answers:

- (d) Ralph Lauren
- (d) Fast Moving Consumer Goods
- (d) Issey Miyake
- (c) To coordinate between the company and retailer to provide a wider platform for the product.
- (a) Advisory Board
- (c) Recurring fashion
- (b) Interrupted cycle

II. Fill in the blanks.

- is a process in which elements are arranged in a manner that attracts senses and emotions.
- is defined as the process of making objects by hand.
- The word is originated from a French word 'disegnare'.
- The spread of trends across markets and consumers is called
- are the fashion of short life expectancy.
- refers to high fashion created by designers.
- refers to ready-to-wear clothing designed from the couture line.
- is referred to as fashion that is widely available in stores nationwide.

Answers:

- Art
- Craft
- Fashion
- Flow
- Fads
- Haute couture
- Prêt a Porter
- Mass fashion
- Knock off
- collection

Exercise:

It contains a variety of questions to assess the concepts taught in the unit/chapter.

II. Fill in the blanks.

- is a process in which elements are arranged in a manner that attracts senses and emotions.
- is defined as the process of making objects by hand.
- The word is originated from a French word 'disegnare'.
- The spread of trends across markets and consumers is called
- are the fashion of short life expectancy.
- refers to high fashion created by designers.
- refers to ready-to-wear clothing designed from the couture line.
- is referred to as fashion that is widely available in stores nationwide.
- refers to a close resemble or reproduction of a designer's look by another designer using cheaper material and lower production cost.
- A well-defined and meticulously edited group of clothing or products for a specific season is referred to as a, which can also be referred to as a range or line.

Answers:

- Art
- Craft
- Fashion
- Flow
- Fads
- Haute couture
- Prêt a Porter
- Mass fashion
- Knock off
- collection

III. Very Short Answer Type Questions.

- What are the different perceptions of fashion held by an average person, sociologists, psychologists and economist?

Syllabus

SCHEME OF UNITS

This course is a planned sequence of instructions consisting of units meant for developing employability and vocational competencies of students of Class XI opting for skill subject along with other education subjects.

The unit-wise distribution of hours and marks is as follows:

CLASS	THEORY	PRACTICAL	TOTAL
Class XI	60 marks	40 marks	100 marks

	UNITS	NO. OF HOURS for Theory and Practical		MAX. MARKS for Theory and Practical
PART A	Employability Skills			
	Unit 1: Communication Skills-III	10		2
	Unit 2: Self-Management Skills-III	10		2
	Unit 3: ICT Skills-III	10		2
	Unit 4: Entrepreneurial Skills-III	15		2
	Unit 5: Green Skills-III	05		2
	Total	50		10
PART B	Subject Specific Skills	Theory	Practical	Marks
	Unit 1: Overview Of Fashion	30	05	25
	Unit 2: Introduction To Fibres, Dyeing & Printing	40	10	
	Unit 3: Design Fundamentals	27	07	
	Unit 3: Design Fundamentals	28	8	25
	Unit 4: Materials Tools and Processes of Product Making	40	15	
	Total	165	45	50
PART C	Practical Work			
	Practical Examination			15
	Written Test			10
	Viva Voce			05
	Total			30
PART D	Project Work/Field Visit			
	Practical File/Student Portfolio			10
	Total			10
	Grand Total	260		100

PART-A: EMPLOYABILITY SKILLS

S. No.	Units	Duration (in Hours)
1.	Unit 1: Communication Skills-III	10
2.	Unit 2: Self-management Skills-III	10
3.	Unit 3: Information and Communication Technology Skills-III	10
4.	Unit 4: Entrepreneurial Skills-III	15
5.	Unit 5: Green Skills-III	05
	TOTAL DURATION	50

NOTE: Detailed Curriculum/Topics to be covered under Part A: Employability Skills can be downloaded from CBSE website

PART-B – SUBJECT SPECIFIC SKILLS

- Unit 1: Overview of Fashion
- Unit 2: Introduction to Fibres, Dyeing & Printing
- Unit 3: Design Fundamentals
- Unit 4: Materials Tools and Processes of Product Making

Unit	Objectives of the Course	Learning Outcomes	Course Content
UNIT-1: Overview of Fashion	<ul style="list-style-type: none"> To introduce students to Fashion Studies and provide an overview of fashion To familiarize students with essential fashion terminology and theories To provide information about fashion designers and brands To clarify the roles of regulatory bodies and professionals in the garment industry 	<p>After completion of the unit, the students shall be able to do the following:</p> <ul style="list-style-type: none"> Demonstrate their knowledge of fundamental aspects of fashion Explain appropriate terminology and theories related to fashion Explain the salient characteristics of fashion designers and brands Explain the roles of regulatory bodies and fashion professionals in the garment industry 	<ul style="list-style-type: none"> Understanding fashion: Introduction and definition Factors influencing fashion Key Concepts and Terminology Movement and Direction of fashion – Fashion forecasting, pendulum swing and fashion cycles. Theories of fashion movement Consumers – Innovators, Motivators, Followers, Victims Salient characteristics of fashion designers and brands. International Trade in Fashion Fashion Regulatory Bodies in India Role of fashion professionals Fashion Institutes
UNIT – 2: Introduction to Fibres, Dyeing & Printing	<ul style="list-style-type: none"> To introduce students to natural and manmade fibers To develop awareness of spinning, weaving, dyeing and printing 	<p>After finishing the course, the students shall be able to do the following:</p> <ul style="list-style-type: none"> Identify and differentiate fabric varieties Explain the various processes of fabric manufacturing, dyeing & printing 	<ul style="list-style-type: none"> Textile fibers– natural and manmade Yarns Weaving Dyeing and printing
UNIT – 3: Design Fundamentals	<ul style="list-style-type: none"> To introduce the students to various aspects of design To develop familiarity with different Elements of Design and Principles of Design To develop familiarity with common design terminology To develop skills of visualization and communication using design principles 	<p>After finishing the course, the students shall be able to do the following:</p> <ul style="list-style-type: none"> Identify the Elements of Design Identify the Principles of Design Use appropriate design terminology Translate design concepts to design products 	<ul style="list-style-type: none"> Design, Designers and Design process Basic Elements of Design – Point, line, shape and texture Colour Theory – Hue, tint, shade, tone, colour schemes Colour Psychology Principles of Design – rhythm, balance, emphasis and contrast Silhouette and proportion in apparel
UNIT – 4: Materials, Tools and Processes of Product Making	<ul style="list-style-type: none"> To introduce students to the sewing machine To introduce students with home fashion product categories To introduce students to leather product categories 	<p>After finishing the course, the students shall be able to do the following:</p> <ul style="list-style-type: none"> Develop proficiency in the use of the sewing machine Differentiate between stitched and unstitched products Explain categories of leather products 	<ul style="list-style-type: none"> Introduction to sewing machine - component parts and functions. Sewing tools , Safety rules and Sewing Aids Home Fashion Products Leather Fashion Products

Contents

Chapter 1: Overview of Fashion	9-54
1.1 Understanding Fashion: Introduction and Definition	9
1.2 Factors Influencing Fashion	11
1.3 Key Concepts and Terminology	15
1.4 Movement and Direction of Fashion	19
1.5 Theories of Fashion Movement	22
1.6 Consumer Segmentation	24
1.7 Salient Characteristics of Fashion Designers and Brands.....	25
1.8 Brands and e-brands.....	28
1.9 International Trade in Fashion	29
1.10 Regulatory Bodies in Fashion and Textile Sector	30
1.11 Role of Fashion Professionals.....	31
1.12 Fashion Institutes and Colleges in India.....	33
Chapter 2: Introduction to Fibres, Dyeing & Printing.....	55-82
2.1 Introduction.....	55
2.2 Textile Fibres.....	55
2.3 Yarns	61
2.4 Weaving	61
2.5 Dyeing.....	63
2.6 Printing.....	65
Chapter 3: Design Fundamentals.....	83-107
3.1 Design, Designer and Design Process.....	83
3.2 Elements of Design.....	84
3.3 Colour Theory and Psychology of Colours	87
3.4 Principles of Design	92
3.5 Illustrating Apparel on the Fashion Figure	95
Chapter 4: Elements of Garment Making	108-148
4.1 Elements of Garment Making	108
4.2 Sewing Tools and Safety Rules	113
4.3 Fashion Products	117
4.4 Common Machine Problems	120
4.5 Operating Power Machines	123
4.6 Hand Stitches	124
4.7 Seams.....	127
• Sample Practical Exercises	149-156
• Sample Projects	159-164



1. Overview of Fashion

Learning Outcomes

- | | |
|---|---------------------------------------|
| 1.1 Understanding Fashion: Introduction and Definition | 1.2 Factors Influencing Fashion |
| 1.3 Key Concepts and Terminology | 1.4 Movement and Direction of Fashion |
| 1.5 Theories of Fashion Movement | 1.6 Consumer Segmentation |
| 1.7 Salient Characteristics of Fashion Designers and Brands | 1.9 International Trade in Fashion |
| 1.8 Brands and e-brands | 1.11 Role of Fashion Professionals |
| 1.10 Regulatory Bodies in Fashion and Textile Sector | |
| 1.12 Fashion Institutes and Colleges in India | |

1.1 Understanding Fashion: Introduction and Definition

Nowadays, fashion is an essential part of society. It is a part of our lives and exists everywhere. It is one of the main topics in print and electronic media, television and the internet, window displays in stores and malls, movies, music, and other forms of entertainment, etc. Fashion is a way to make a statement about the preferences of society that are shaped by individual and collective identities. People aspire to be fashionable, so its aspirational value is the key to its core strength. History influences fashion, and society in turn influences fashion. Fashion transcends borders. Even though 'fashion' and 'garment' are frequently used interchangeably, the term has a broader meaning.

The mere fact that a garment is worn does not make it fashion. A garment must reflect the social and cultural values of the time to become a fashion. As a broad term, fashion encompasses everything associated with a 'lifestyle', including clothing, accessories, products, cuisine, furniture, architecture, transportation, vacations, leisure activities, and so on. Fashion management, technology and design are just a few of the many facets of this globally relevant field of academic study.



Gaurav Gupta Show LFW Summer/Resort 2019 edition

It is also the subject of scholarly research by anthropologists, psychologists and sociologists because of its wide range of human and social aspects.

Because of its many facets, there are many ways to interpret it. The term 'fashion' typically refers to a contemporary and trendsetting way of dressing that is currently 'in' and is likely to become 'out' by the following season or year for the average person. An economist sees fashion as a dynamic and ever-changing scenario because it has the power to render any product obsolete within a predetermined amount of time, resulting in a desire for a replacement, even though the newer item may or may not perform better. A sociologist is likely to see fashion as the result of socio-economic and political factors that were in place in a country or even the world at the time.

According to a psychologist, it could be a response to one's surroundings, human behaviour or an expression of one's personality.

It is difficult to distinguish between the frivolous and serious aspects of fashion. Underneath the glamour, fashion is a serious business with a well-coordinated cycle of activities from concept to clothing production that combines the industry's economic and design aspects. The fashion industry's structure includes connections to a vast network of raw material producers, designers, forecasters, manufacturers, merchandisers, retailers, media representatives, and others. The supply chain, which includes planned activities like sourcing raw materials, manufacturing, marketing, and sales, accomplishes this. Fashion products are made for both the domestic market and for export, which helps the country's economy and generates foreign exchange. It encompasses both domestic trade, which refers to the country's fashion industry, and international trade, which includes the export-import industry. The fashion industry operates as follows:

- Generates employment and provides salaries.
- Contributes to the national economy by paying tax.
- Contributes to the growth of domestic trade and market.
- Earns foreign exchange for the country.
- Creates profit for the company.

Defining of fashion

According to Malcolm Barnard, the word 'fashion' comes from the Latin word '*facere*', which means 'to make' or 'to do'. This includes the two steps of making and doing, whether it's making clothes or looking good. The Webster International Encyclopedia 1998 defines fashion as a 'prevailing style of dress, particularly new designs representing changes from previous seasons'. Fashion educationist and writer John Hopkins defines fashion culture as 'a system that unites individuals, establishes its own rules, and offers a social structure about current conditions and societal norms'. Some of the quotes of fashion designers indicate their philosophy and approach to fashion.



Giorgio Armani: "I've tried to find a new elegance. It's not easy because people want to be shocked. They want explosive fashion. But explosions don't last; they disappear immediately and leave nothing but ashes... My philosophy is evolution, not revolution."

Ralph Lauren: “I’ve never been about fashion and trends. I believe in design that has lasting integrity.”

1.2 Factors Influencing Fashion

Fashion reflects society’s prevalent interests, motivations and aesthetics. Social, cultural, psychological, political, geographical, economic and technological factors play a role in this fascinating topic. To put it another way, fashion is affected by the stimuli around it, either directly or indirectly. By its very nature, fashion is fleeting and subject to constant revival and change. The human mind craves novelty and change for stimulation after becoming bored with readily available goods and services. As a result, newer products are in high demand. Changes in fashion and trends are primarily influenced by human nature. Fashion reflects the human condition with its wants and needs, which designers try to anticipate and meet in their products.

The point at which the simplest actions of sending and receiving texts and calls are insufficient to hold the interest of consumers can be illustrated by using mobile phone as an example. Today’s mobile devices have sleek designs and numerous built-in functions. To compete with one another, manufacturers introduce new ‘apps’ that transform mobile phones into personal managers, entertainers and companions. As a result, it becomes ‘fashionable’, to claim to own the most recent version of a particular mobile device, which may even mean replacing a device that works perfectly. The use of precious metals and the encrustation of pricey stones and diamonds have also elevated the mobile phone from its utilitarian status to that of a luxury fashion item for an elite customer base. *Zeitgeist*, which means ‘spirit of the times’, is the source of fashion’s inspiration and response. Every new stimulus or development causes society to change, which in turn creates new fashion cycles and trends.

The following are some of the influences and ideas prevalent in society at a particular time and interact with one another to influence fashion:

1.2.1 Dominating Events

The design of products and garments is influenced by significant occurrences like war or political events, celebratory, centennial and cultural events, Fashion Week, the Fashion Awards ceremony, national and international competitions and games like the Olympics, Commonwealth Games, and IPL cricket.



Alia Bhatt in Namrata Joshipura show at AIFW 2017

1.2.2 Influence of Celebrities

Celebrities like film stars, sports persons and musicians are always visible to the public through social media like TV serials, movies, magazine covers and photographs. The dressing style of such celebrities significantly impacts the public, causing demand for the same clothing and accessories thus resulting in a new fashion.



World War II changed women's clothing

1.2.3 Economic Factors

Whether the economy is doing well worldwide or poorly at home, fashion reflects it. Classic items, for instance, are more in demand during times of recession due to issues like ‘value for money’ and



durability. When the economy is doing well, society has a noticeable upbeat mood, which leads to innovative and fast-moving consumer goods (FMCG). The global impact of the dollar's devaluation, inflation rates, international trade agreements, and other factors influence assembling, advertising, and purchasing behaviours. The current global economic downturn has led consumers to purchase more durable and practical clothing that offers 'value for money'.

1.2.4 Psychological Factors

Although fashion, on a fundamental level, encompasses a wider lifestyle, including clothing and accessories, it has a profound psychological impact on individuals and plays a crucial role in how we view ourselves and others.

- (i) **Fashion's dual nature:** It can convey both a person's style and her/his public image at the same time. It can establish dress codes and social norms, as well as permit identity formation. It can envision the future and produce products that are commercially viable for the present.
- (ii) **Freedom from social constraints:** Fashion lets people show who they are without giving in to peer or societal pressure. These distinctions may be based on gender, culture and clothing aesthetics that are influenced by prevalent notions of beauty standards.
- (iii) **The insatiable need for novelty:** Because the human mind seeks novelty to combat boredom, fashion cycles provide consumers with options across all product categories.



1.2.5 Social Factors

Fashion emerges as a response to societal influences that affect self-identity and group identity during a specific period. There are some examples of fashion from the past that represent a period – Frayed jeans, tie-dye shirts, and T-shirts from the Hippie movement of the 1960s, broad-shouldered women's suits reflecting Power dressing of the 1980s, and so on.

The following are some social factors:

- (i) **The dynamics of social groups:** The dominance of social groups that are more prosperous exerts influence on fashion trends in two ways, i.e. *imitation* and *differentiation*.

Imitation refers to the desire of lower income consumers to resemble higher income groups, producing lower priced or even fake goods.

Differentiation occurs in two ways:

- A conscious focus on the exclusivity of products, original brands, high-priced luxury items and other similar items serves as a means of distinguishing the upper classes from the masses.
- Separation among comparative items through a show of an item to feature its disparities and prevalence over different results of the comparative sort to draw in a specific fragment of the target market. Through effective marketing, the product is made known for the following reasons:
 - Appeal to the target consumer
 - Differentiate the product from other products in the category
 - Create desirability in the consumer's mind to encourage the purchase

- (ii) **Global issues and concerns:** In 1987, the Bruntland Report made the term ‘sustainable development’ popular by stressing the importance of using development systems that can meet current needs without jeopardizing those of future generations. The fashion and textiles industry’s production, buying and selling, wearing and disposal processes have an impact on the environment.

The developing mindfulness and need for practical style is likewise characteristic of a more extensive social cognizance about the obligation in the design business. Through fashion craft linkages, India’s government, individual designers and design institutes are collaborating with artisans to create a socially responsible, sustainable design environment. High-profile events and fund-raising activities are used to raise awareness of health issues and concerns, such as HIV/ AIDS and the pink loop bow campaign to raise awareness of breast cancer.



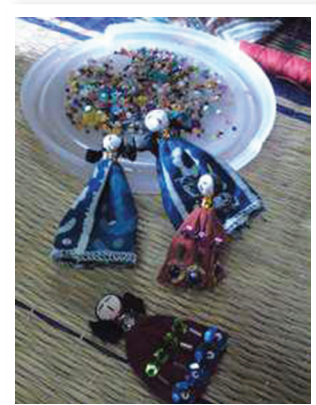
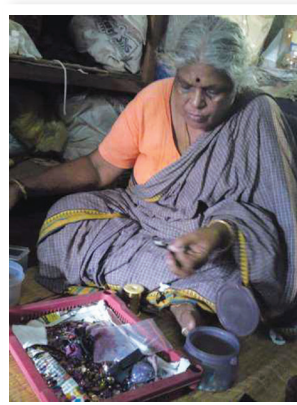
Eleven Eleven by Shani Himanshu and Mia Morikawa



Pink loop bow to raise awareness of breast cancer

Eleven Eleven by Shani Himanshu and Mia Morikawa Pink loop bow to raise awareness of breast cancer.

- (iii) **Ethical issues and practices:** The global fashion community’s concerns about social and human issues are becoming increasingly significant in society and, by extension, in the fashion industry. To strike a balance between business ethics and financial considerations, ethical fashion is gaining popularity. Fair trade practices in the fashion industry include paying workers fairly, providing decent working conditions and preventing child labour, among other things. All businesses must engage in Corporate Social Responsibility (CSR), which entails making positive social contributions and reducing their impact on the environment.



Tsunamika is not just a doll, but a symbol of hope and courage born out of a collaborative initiative by Upasana Design Studio, Auroville to help the Tsunami devastated villagers of Kerala

1.2.6 Cultural Factors

Culture and fashion interact to influence and fuel one another. The following methods are used to achieve this:

- (i) **Reflection of both High culture and Popular culture in fashion:** An appreciation of one's own country's or another country's arts, literature, music and customs is part of high culture. For instance, the fabrics, style and trims of ethnic and national folk costumes can inspire clothing designs. Through the motifs and use of colour, traditional embroidery from different states frequently makes social and cultural allusions. The influence of mainstream music, advertisements, movies, television, the internet and magazines are all included in popular culture.
- (ii) **Expression of gender indicators in different cultures through clothing norms:** In Western culture, many traditional clothing styles were only worn by one gender – for example, skirts for women and trousers for men. The roles of men and women have changed as a result of the 20th century's easing of previously rigid social attitudes. Over time, traditional barriers have been broken and fashion for one gender has borrowed items from the other gender's wardrobe, like women's trouser suits.



Pankaj and Nidhi collection inspired by Spanish matadors

1.2.7 Political Events and Personalities

Fashion is influenced by political events and personalities. Prints on T-shirts and slogans that show solidarity and support for the nation reflect social events like war. European brands like H&M now have access to a larger market thanks to the unification of East and West Germany. The khadi that Mahatma Gandhi spun in pre-independence India was more than just a fabric; it was a symbol of the desire for independence.

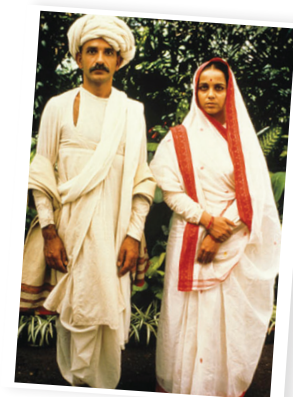


Political personalities

Politicians who are well-known to the public may inspire people to dress like them because of their success and charisma. In the 1950s, the bandh gala jacket, which Pandit Jawaharlal Nehru wore, was a popular alternative to the Western men's suit. The style of Lady Diana, a global icon, was admired for its elegance and suitability for the occasion.

1.2.8 Historical Inspiration

As we know fashion's very nature is to change and to revive. Historical costumes seen in museums and historical books influence the designers to revive the old fashion in a new form, for example, tunics turned into tunic tops. An earlier silhouette can be recreated in a new fabric or a different construction technique which indicates the updation and re-interpretation of the key features of fashion elements. Some movies like 'Gandhi' won Academy Awards as the designer Bhanu Athaiya did intensive historical research before designing the costumes for the movie.



Costumes in the movie 'Gandhi'

1.2.9 Geographical Factors

Geographical factors had always affected fashion. For example, people living in cold areas need thicker fabric clothes, and high desert temperature also requires multi-layered clothing to prevent dehydration.

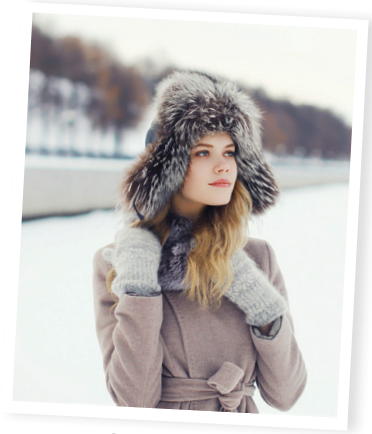
Camouflage prints used for military or para-military uniforms are designed to blend in with the surrounding terrain.



Glocal Fashion by
Urvashi Kaur

1.2.10 Spread of Information Technology

Before the boom of the IT industry, fashion movement across the world was slower. The internet gave rise to fashion trends reducing the life span from a year to a few months. With the internet facilities like Skype, geographical boundaries and timelines can be bridged with ease, facilitating international business discussions and quicker decisions. This has also resulted in the fashion business becoming 'glocal' (combining global thinking with local flavours).



Fur-overcoat

1.2.11 Technological Advancements in Textiles

The advancement in science gave rise to textile technology which influenced fashion outcomes as well and enabled the development of technologically advanced 'smart' textiles or 'intelligent' textiles whose functions go beyond the issue of everyday clothing into more varied applications. For example, new garment making and printing techniques and designs of space suits for the space environment.

1.3 Key Concepts and Terminology

1.3.1 Art Design and Craft

Art: The process of arranging elements in a way that appeals to the senses or evokes emotions is art. The term can be used to describe a variety of creative endeavours, such as the study of the liberal arts (humanities), graphic arts (visual communication), and useful arts (beautiful objects with functional value). However, the term 'art' is most commonly used to refer to the 'creative arts' or 'fine arts' (painting, sculpture, dance, music and film), which communicate an ideology and express the artist's creativity to engage or connect with the audience's aesthetic sensibilities and emotions. In cutting-edge examinations, there are different speculations of workmanship that endeavour to characterise its importance or give a verifiable or social setting.



Art

Design: Design is defined as the 'purposeful arrangement of the elements in a creative work or process' by the New Webster's International Encyclopedia in 1998. In general, the goal of design is to combine aesthetics and functionality into a harmonious whole. The French word 'disegnare', which means 'to create' or 'to mark', is the root of the word 'design'. To design is to imagine and plan for a particular end goal. Clothing, textiles, goods, etc. are all designed by humans. The designer, also known as a fashion designer (who designs clothes), a costume designer (who designs costumes for the performing arts – theater and movies), a textile designer (who designs textiles), an interior designer

(who designs private and public spaces), a graphic designer (who designs various forms of visuals for communication) and so on, is the individual who designs in specialised design areas.

Craft: According to the New Webster International Encyclopedia (1998), craft is the 'name given to the process of making objects by hand'. Also, it includes the process's output. Basket-weaving, carving, carpentry, ceramics, embroidery, knitting, sewing and leather work are examples of traditional handicrafts.



Craft

Aditi Ranjan and M.P. Ranjan, authors of *Handmade in India*, have documented Indian crafts including "Mastery of tools, techniques and processes that have evolved over the centuries through social and cultural interactions...which can be harnessed for future development of society".



Design

1.3.2 Trends

Trends are important indicators of how a season's look will be affected or characterised directly or indirectly. Trends are fleeting fashion declarations. Seasonal trends frequently influence fashion, which indicate a particular style, silhouette, colour, texture, etc. may be the most popular at a given point of time, causing everyone in society to wear the same clothes. Magazines, advertisements and other materials emphasise and reinforce this aspect. Fashion forecasters who have previous experience in spotting emerging trends engage in trend-watching on an ongoing basis. The trend is 'labelled' or given a catchy theme or name, once it has been identified. The *coat-tail* effect, also known as the *bandwagon* effect, occurs when the apparel industry attempts to profit from this trend by producing its line.



Spring trends 2020

A flow is the spread of a trend across market and consumer segments that is popularised by fashion leaders. The fashion media make it known that certain styles are 'in' or 'out'. At times it appears that animal prints and fluorescent colours are 'in' and 'cool', but these trends may give way to earthy hues and prints of foliage in the following season. Occasionally, bootleg jeans are touted as the next big thing, but they could eventually be replaced by skinny fits or cropped lengths. The length, colour, texture, silhouette, cut and fit of a garment, as well as other garment details like necklines, collars, sleeves, and pockets, all reflect trends. When there is a prevailing trend, design variations can be found in a wide range of options for a variety of consumer groups that cater to varying tastes and price points. The trend eventually loses its edge and fades away, being replaced by a new trend.

1.3.3 Collection

A well-defined and meticulously edited group of clothing or products for a specific season is referred to as a collection, which can also be referred to as a range or line. This could, for instance, be a collection of blouses that are coordinated in colour and focus on design variations in details like collars, necklines, silhouettes, lengths, and so on for the ready-to-wear (RTW) market. Indeed, even couture assortments of planners are perceived by the patterns of the time.



Manish Arora 2012 collection

1.3.4 Style

The meaning of the word 'style' varies depending on the context:

- Style, also known as a designer's or manufacturer's, or brand's 'signature style', can refer to an aesthetic sensibility that sets a designer or company apart from others in a similar apparel or product category. The style might have a distinctive cut, silhouette, fabric, colour palette, surface embellishment, pattern-making, garment construction, or finishing technique that is associated with the label and attracts the interest of the brand's target niche market or customers. Tarun Tahiliani, Manish Malhotra, Neeta Lulla, and others create glamorous couture looks that are sought after by celebrities and actors.
- An export or buying house may use the term 'style' to refer to a specific design that is given an identifying 'style number' rather than a descriptive tag within the company during the sampling, production and shipping processes.
- A person's personal style statement may be referred to as style. Regardless of whether it is "in" or "out," a person may prefer to dress in a particular way.



Tarun Tahiliani at India
Couture Week 2019

1.3.5 Haute Couture and Pret a Porter

In French, the term 'haute couture' refers to high fashion designed by 'couturiers'. Because the design is never replicated, the term 'couture' refers to fashion creations that are one-of-a-kind and custom-made for each customer. Because of the exclusivity of the design, the high quality of the fabric, skilled labour used for surface design techniques, embroidery, drape, craftsmanship, garment construction, the prices are extremely high. While couture shows around the world help the company get noticed, licensing other products like perfumes, handbags, watches and so on is the primary source of revenue and profit. Chanel, Dior, Versace and Valentino are among the international couture labels

with the highest reputation. Several designers from India work on this style, including Ritu Kumar, Tarun Tahiliani, Rohit Bal, Suneet Verma, Sabyasachi Mukherjee, Manish Arora, Manish Malhotra, and others. The majority of designers use the term 'eponymous' for their primary label, which means that it includes the designer's name.

In French, *prêt à porter* refers to ready-to-wear (RTW) garments derived from each designer's couture line or collection. It has the same aesthetics, is made to high-quality standards, and comes in multiple sizes and a wider variety of 'colour ways' or colour options. As the fashion retail industry expands and diversifies into more diverse collections in larger quantities, this term is now widely used.



'Manish Arora' lable

Designer	Main Label	Pret Label
Ritu Kumar	Ritu	Label
Manish Arora	Manish Arora	Fish Fry, Indian by Manish Arora
Rohit Bal	Rohit Bal	Balance
Ashish Soni	Ashish Soni	A & S
Tarun Tahiliani	Tarun Tahiliani	TT
Issey Miyake	Issey Miyake	Issey Miyake
Donna Karan	Donna Karan	DKNY



Indian by Manish Arora lable

1.3.6 Avant Garde Fashion



Avant-garde

The French term '*avant garde*' refers to 'advance guard' or 'vanguard' of art and culture which is used to distinguish it from the mainstream. In fashion, its goal is to push the boundaries of norms and acceptable aesthetics through experimental and novel designs. The overarching concept is to present these works as declarations of the designer's vision or ideology. There are only a few of these designs, so they may not be wearable or profitable. *Avant-garde* fashion generates enough 'buzz' to sell other products like hair accessories and cosmetics. Designs by UK based designers like Hussain Chalayan and Gareth Pugh designers from Belgium including Martin Margiela and Ann Demeulemeester exhibit an *avant-garde* aesthetic.

1.3.7 Mass Fashion, Knock-offs and Limited Fashion

Mass fashion: As the name suggests, mass or volume fashion is widely available in stores all over the country. These designs are practical, available in a variety of 'colour ways' (options of colours), and generally affordable for a wide range of people. Gap, United Colours of Benetton, Zara, and H & M are global brands, while Shoppers Stop, Pantaloons, Westside, W, and others are Indian brands and are examples of brands that deal in a lot of merchandise.



Mass fashion

Knock-off: A nearby likeness or proliferation of a fashioner's 'look' by another creator or organisation normally utilising relatively less expensive materials and lower creation cost is known as an imitation. This is a common practice in which a well-known fashion trend or distinctive style of a successful designer or brand is copied with few, if any, modifications to lower prices for moderately priced markets. While this opens up the fashion industry to a wider audience, it also raises issues with copyright infringement and intellectual property rights (IPR).

Limited fashion: The partnership between a brand or store and a fashion celebrity or designer to create an exclusive line of clothing in limited quantities is referred to as limited fashion or limited edition fashion. It benefits both parties; both the brand's and store's sales increase. As a result of the collections' innovative design approach and the platform, it provides for emerging design talent. For instance, Top Shop, which is based in the UK, has collaborated with model Kate Moss and designers Christopher Kane, Emma Cook, and JW Anderson to produce successful limited-edition clothing.

1.3.8 Classics and Fads

Classics are styles that are never called outdated. They are accepted for a long period and are not likely to vanish away. It can be a minimal modification in design to maintain a sense of simplicity and timelessness,



Calf-length jeans

for example, a crisp white collar shirt, little black dress, or well-fitted black formal trousers.

Fads are the fashion of short duration as they peak the popularity rapidly but have less life expectancy due to which they are outmoded rapidly. They are typically confined to particular social groups. They are sold at lower prices and are not expensive to copy or produce and therefore the market gets saturated easily. For example, fluorescent coloured T-shirts, ankle or calf-length jeans with turn-up cuffs, baggy anti-fit jeans, etc.



LBD

1.4 Movement and Direction of Fashion

The 'movement' of fashion refers to the indicator of the speed of a fashion becoming popular and declining with time. There are several platforms and mediums through which fashion spreads all over the world. Some of them are print media, electronic media, celebrity styles in public events and brand endorsements, websites covering runway fashion and fashion trend-spotting websites. For knowing how this movement takes place in fashion industries, we have to understand some concepts like fashion forecasting, pendulum swing and fashion cycles.

1.4.1 Fashion Forecasting

Fashion forecasting is an activity where research of previous fashion trends helps in the identification of future trends. The forecasting gives the prediction of trends that are upcoming in 6 to 18 months.

For identifying the upcoming trends, the forecasters require to do the following:

- (i) Travel frequently to leading fashion capitals like London, Milan, New York, Paris and other countries to locate trends.
- (ii) Scout for new development in fibres, yarns fabric and new research on colour.
- (iii) Study the behaviour of consumers and their changing fashion preferences which signals future trends.

- (iv) Trend chasing and trend spotting by professionals who are alert to new socio-cultural influences and technologies across the globe.
- (v) Experience to analyse the information to identify emerging patterns.

Forecast trend books are published to predict future trends, they compile the findings of specialists who analyse the information and identify what they consider to be the potential key trends for the next season/year. These books include colour palettes, fabric swatches, photographs, fashion sketches and specification details to illustrate apparel trends for women, men and children. Some of the reputed names in fashion forecasting are:

- (i) Lidewij Edelkoort is an expert forecaster for 'Trend Union' based in Paris and also conducts trend workshops in India.
- (ii) Trend forecast agencies are Paris-based Nelly Rodi, Peclers, Promostyl from France, Doneger from the USA and others.
- (iii) Colour forecasting services include the Color Association of the United States (CAUS) and the Color Marketing Group (CMG).

1.4.2 Pendulum Swing

Pendulum swing refers to the periodic movement of fashion between extremes. In other words, we can say that a pendulum swing is a type of swing where the most popular style cannot be modified more and can't give more to consumers than it is replaced by its opposite or new style with its extreme. This process may take a fashion season or even years. Between the two extremities, the designers, forecasters, manufacturers and retailers try to anticipate the direction of fashion change. Thus the fashion pendulum moves from one end to another like a clock. For example

Skirts: When short skirts get as short as possible, then the pendulum swings towards longer skirts.

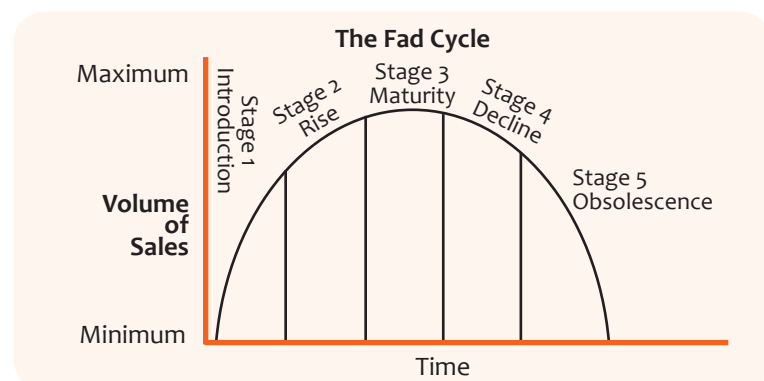
Fit: When the fit cannot be any tighter, the pendulum swings toward looser cuts.

Black: When black dominates the market for a time, brighter or lighter colours move in to relieve the gloom.

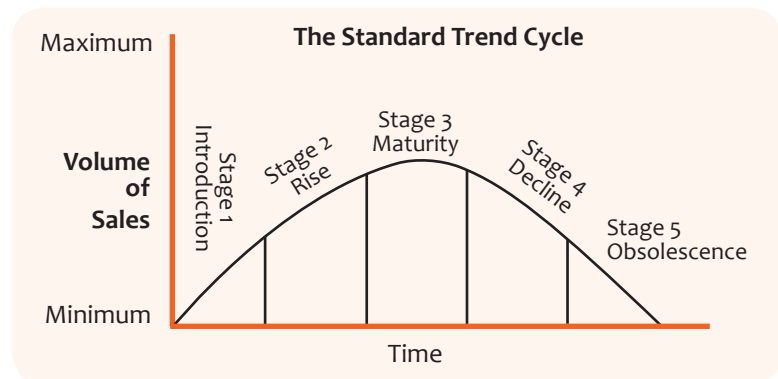
1.4.3 Fashion Cycles

The acceptance and discontinuation of a particular style by a larger segment of society are indicated through a bell-shaped curved path called a fashion cycle. There are 3 kinds of variations of the fashion cycle: Duration which is the length of time, Undulations which are high and low points, and Velocity which is the speed of acceptance and rejection. There are 3 main cycles – fad cycle, standard trend cycle, and classic trend cycle.

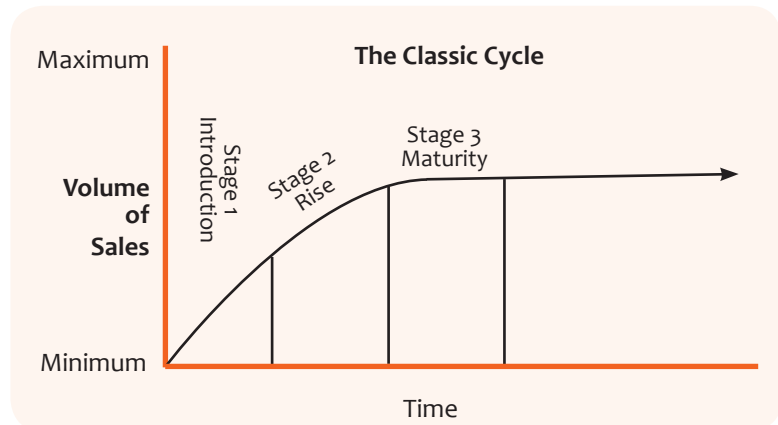
- (i) **Fad cycle:** Fads are short duration fashions cycle that peak in popularity due to an accelerated rate of acceptance but has a short life expectancy due to which they become outmoded rapidly. In other words, the cycle begins and rapidly reaches a peak in popularity and declines after a point of time.



(ii) **Standard trend cycle:** Some recurring cycles, also called long-wave phenomena, have reflective of styles that start gradually and sustain for a longer period until their popularity eventually decreases. This cycle begins and rises and reaches its peak and gradually with the flow of time declines.



(iii) **Classic trend cycle:** This cycle has styles that reach a plateau of acceptance continuing for a long period. This cycle begins and reaches maturity, but the exception in this cycle is that the style does not decline for a long period.



Each cycle is indicated through sequential phases by a bell-shaped curve over some time:

Phase 1 : It is the **Introduction** of a style when the fashion-conscious consumers adopt it at the earliest. When consumers' styles act as signifiers of future trends they are considered to be fashion leaders.

Phase 2 : When the style gets wider acceptance in society, it shows the **Rise** of the cycle. The designers and manufacturers adapt the style to make it more widely available to the general public. Fashion followers also pick up the trend. All of it is gained through media publicity.

Phase 3 : This phase reflects the **Peak** of the popularity of the style. Which means the style is worn by maximum people of the society. The majority of consumers demand and accept variations of the style at different price points in this phase. The early adopters of the style discard the style because it is widely worn in society.

Phase 4 : Due to over-exposure to the style this phase indicates the **Decline** in popularity. Retailers start offering discounts and sales in this phase because of the decreasing number of customers.

Phase 5 : This phase reflects the **Obsolescence** of the style. It is considered that the style is now outdated and is therefore rejected.

1.4.4 Cycle within Cycle

Different design interpretations and variations in terms of silhouette, colour, material, trims, etc. are made to capitalise on and meet the demand for a particular style during the popularity and acceptance stage are produced. Each of these variations is analogous to a cycle that is revolving within a larger cycle, which is called 'Cycle within Cycle'. Denim jeans, which gained popularity during the California 'Gold Rush', continue to be a fashion staple. However, there are variations in cut, colour, surface treatments (such as acid-wash, enzyme-wash and stone-wash), denim weight, and cut (such

as straight leg, bootleg or baggy). There have been both 'in' and 'out' of fashion variations of jeans that have been successfully adapted and adopted by both men and women.

1.4.5 Interrupted Cycle

An Interrupted Cycle occurs when retailers and manufacturers decide to stop producing particular design styles in anticipation of changes in popularity, preferences, seasons or socio-economic and political events like war or economic recession. This is best exemplified by the fashion shifts that occurred during World War II when a lack of fabric necessitated the discontinuation of earlier designs and the adoption of practical clothing for women.

1.4.6 Recurring Cycle

Some designs are so well-liked that even after a trend has passed, they are reinterpreted in terms of silhouette, fabric or detail in the design. A recurring cycle is what this is called. For instance, in the 1960s, Yves Saint Laurent's colour-blocking design was influenced by a painting by Piet Mondrian. For the Spring/Summer 2012 season, several designers have utilised various design interpretations of colour-blocking as a design feature.



Atsu Sekhose Collection 2012

1.5 Theories of Fashion Movement

As we have discussed earlier the change in fashion is dependent on many reasons, and also there are several questions regarding fashion like, Where does trend originate? Who are the innovators and who are the followers? Is the direction of change vertical (upward or downward) or horizontal? For knowing the answers to these questions, we need to study three theories of the fashion movement – Trickle-down Theory, Trickle-up Theory and Trickle-across Theory.

1.5.1 Trickle-down Theory

According to fashion history, the social elite at the top of the pyramid-like societal structure was royalty and nobility due to their birth, wealth and status. This social class led a life of entertainment and travel that was extremely opulent. They bought art collections, big houses with expensive furniture and expensive clothes and accessories. The clothes, hairstyles and other details added to the exclusivity were so elaborate that getting dressed required the assistance of attendants and maids. As a result, high fashion was only available to those who were at the very top of society. The commoners were able to admire them, but they lacked the resources – sometimes even the freedom – to dress in such attire. From the upper classes to the lower classes, fashion slowly trickled down through cheaper versions of the design and fabric. Any high-class fashion must include the three qualities before it is introduced:

- (i) Design aesthetics
- (ii) Skilled labour
- (iii) High-quality materials and finishing

Fashion and accessory designers who cater to the fashionable and affluent elite, hold influential positions in business and the media, and have the taste and aesthetics for designer clothing and products create high fashion. Fashion has a trickle-down effect, reaching the lowest socio-economic levels because of its aspirational value. The majority of people are unable to afford designer couture creations, accessories and bags, which are desirable status markers (indicators of socio-economic

status). Because of the aspirational value of these labels and brands, the design spreads until other people have the original product or a copy or variations of it at reasonable prices, such as Bags by Manish Malhotra, Sabyasachi Mukherjee, or Louis Vuitton are coveted status symbols.

1.5.2 Trickle up or Bubble up Theory

According to this theory, trends can originate from the general public as well as the upper class. Certain styles gradually trickle or bubble up the social strata in the constant search for novelty. Street fashion is the name given to unconventional fashion choices made by young people to attract attention. An imaginative road style might be 'gotten' (distinguished) by the pattern spotter/pattern forecaster which turns into a wellspring of visual motivation for planners, photographic artists and beauticians. As a result, street fashion progresses from the street to a designer runway collection. In this century, the tough blue jeans that were worn during the California Gold Rush in the middle of the 19th century have given way to premium denim jeans that cost hundreds of



Play Clan by Himanshu Dogra

dollars. From the streets to the runways of fashion shows, mutilated jeans are everywhere. Gianni Versace made a bejeweled accessory out of the humble safety pin for his couture show. When Marlon Brando wore the black leather motorcycle jacket in the movie *The Wild One*, it became a symbol of rebellious youth. Rock musicians like Bruce Springsteen and Jim Morrison adopted it, making it fashionable and 'cool', while designers like Claude Montana and Gianni Versace wore it on their runway shows.

Designers and brands in India occasionally incorporate street or surrounding environment images into their designs. Manish Arora has frequently utilized pictures of conventional moves, and illustrations on transport, roads, and individuals in different surface procedures. On merchandise and clothing, the names "Play Clan" and "NappaDori" also feature graphic representations of such images.

1.5.3 Trickle Across Theory

The trickle-across theory is referred to as the mass market theory. It states that fashion movement doesn't need to always be in a vertical form, it could also be in a horizontal form, e.g. fashion can be spread from a point to all classes at the same time. This is possible through knock offs which offer a style at varied suitable prices at different stores.

Knock-offs operate in 2 ways:

- (i) A close copy passed off as a real product
- (ii) A close copy that does not carry/hold the original label.

The speed of such movement depends on the mass production and popularization created by mass media. The speed with which the trends trickle across different market segments depends on factors like:

- Turnover rate (rate of replacement of existing merchandise with new styles)
- Mass/volume production
- Speed of fashion awareness and popularization created by the mass media.



Sabyasachi Mukherjee's designs have high popularity across market segments

1.6 Consumer Segmentation

The goal of consumer segmentation is to find groups of people with similar characteristics, usually in the form of demographics, attitudes, behaviour and lifestyle choices. Cohorts are groups of customers who have characteristics in common. For instance, based on data like occupation, age, marital status, ethnicity, and other characteristics, the young consumer segment can be divided into categories.

Young people in the same age group are more likely to shop and purchase in similar ways because they share a common mindset and set of characteristics. Similarly, generational cohorts are of the same age, were born roughly at the same time, and share the same socio-economic and political environment. Their relationships, attitudes toward other people and products, and lifestyle preferences are all influenced by this shared characteristic. Examples include:

- (i) The first TV generation which was born after World War II (between 1942 -1960) had direct or indirect experience of war and was called the **Baby Boomer generation**.
- (ii) **Generation X** born during 1961-1981 was the first computer generation.
- (iii) **Generation Y** born after 1982, are the children of Baby Boomers and the target of many marketing groups.

The target market is made up of all of these groups and their subgroups. To comprehend and evaluate consumer behaviour and preferences, professional consumer research firms employ a variety of data collection strategies, including focus groups, surveys and observation. A company must identify and comprehend its target customers, who are likely to respond to and purchase the offered products. The consumer segmentation is purely based on 2 types of data:

- **Demographics:** Data such as occupation, age, marital status and ethnicity are important characteristics that influence consumer attitudes and behaviour and they are referred to as demographics.
- **Psychographics:** Psychographics, which combine demographics and consumer psychology, are additional data that aid in identifying a consumer segment based on shared values, attitudes, preferences and behaviours. A small but influential group of consumers across all categories are health, fitness and nutrition-conscious. When the 'who' of demographics (identification of consumers) and the 'why' of psychographics (reason for their purchasing decisions) are combined, fashion product positioning is more successful. Today, product development and marketing are based on research into lifestyle patterns.

The demographic data shows 'who' is purchasing the item, whereas the psychographic data shows 'why' the consumer is purchasing the item. The consumers are broadly classified into two parts:

- Fashion Influential
- Fashion Followers

I. Fashion Influential

They are also known as **Fashion Change Agents**. They play an important role in the diffusion of fashion. They establish dress codes and styles followed by others. Fashion influence is subcategorised into 2 parts: fashion innovators and fashion motivators.

- (i) **Fashion Innovators:** They are fashion leaders who sense the attitude of a specific period and are early adopters of new styles. They are perceived as fashion role models capable of influencing large segments of the population as they are a small segment of society that has financial standing, aesthetic sensibility and social position. They are knowledgeable and self-confident in their choices.

Different kinds of Fashion Influentials:

- They can be a designer which are the ones who create fashion trends.
 - They can be innovators in terms of challenging prevailing fashion trends through their personal style statements.
 - They can be a celebrity, musicians or sports persons or even can be average person.
- (ii) **Fashion Motivators:** They contribute to the process by which consumers adopt new fashions:
- They can be actors, models or professionals who work for celebrities. They endorse fashion brands and products, which leads to more people from all social classes buying more of them.
 - They could be fashion journalists or members of the media whose blog posts, fashion magazines and newspaper columns are widely read. They are thought to be more knowledgeable about certain aspects of lifestyle because they have a passion for the most recent fashions and value their opinions to others in the group.
 - They might be fashion designers, but they are also influential as opinion leaders in their own right because they are frequently interviewed, quoted and asked for fashion advice.
 - They could also be high-end retailers or exclusive boutiques that are in a position to identify the designers whose works are most likely to be purchased and displayed. Most of the time, their judgment is based on how well they know their customers and how they can pinpoint the next big fashion trend.

II. Fashion Followers:

Some adhere to dress code of the majority and belong to a larger segment of the customer base. They make up the majority of customers who accept and follow established market trends. Conforming to styles that blend with others in a larger group makes them feel at ease. People who follow fashion may also be those with limited time, resources or interest in fashion. For this consumer group, some designers and manufacturers produce a greater variety of styles at lower prices. Fashion would not gain momentum without its followers. Experts in marketing consider fashion followers to be the driving force behind the mass production of commercially viable clothing in large quantities.

Fashion Victims: People who don't use their judgment when it comes to fashion trends are sometimes referred to by this expression. High purchasing power and income are frequently defining characteristics of this consumer group. They frequently purchase the most recent fashion simply because it is expensive or because fashion experts or the media declare it to be 'in'.

1.7 Salient Characteristics of Fashion Designers and Brands

1.7.1 The Glamour of Fashion: An Overview

Fashion, often perceived as a glamorous industry, involves not only creativity but also extensive hard work and focus. The 17th century marked the emergence of fashion, with France becoming a hub for luxury silk textile production. Noblewomen would engage skilled seamstresses for custom clothing, laying the foundation for the fashion industry. Charles Fredrick Worth, an Englishman in

Paris, is hailed as the “Father of Couture” for his original and opulent collections in the mid-1800s, setting the stage for modern fashion shows.

Today, Paris, Milan, New York City, and London are the world’s major fashion capitals, housing headquarters of renowned companies. Fashion weeks in these cities showcase designers’ latest collections, with Paris retaining its status as the global fashion hub. Luxury prêt labels and couture houses, including Chloe, Prada, Chanel, Dior, and Saint Laurent, contribute to Paris’s prominence in the fashion world. Haute couture is supported by accessories, purses, and prêt collections, all falling under the same brand.

1.7.2 Influential International Designers in Twentieth Century

Fashion history is marked by designers who, as trendsetters, adeptly capture the essence of their times and infuse it into mainstream styles. Drawing inspiration from diverse sources such as history, science fiction, art, tradition, and current events, these designers have left an indelible mark on the industry.

The iconic Flapper look, defining the 1920s with irregular hemlines and a rectangular form, symbolizes this era. Hubert de Givenchy, founder of his fashion business in 1952, gained renown for his hyper-structured yet flowing designs, including the formless “Sack” dress. In the 1960s, Mary Quant represented London’s sociocultural landscape, and Pierre Cardin embraced futuristic space age clothing.

Vivienne Westwood, interpreting history in a rebellious manner, contributed significantly. Notable dresses from the 1970s, like Diane von Furstenberg’s kimono-influenced wrap dress and Halston’s flowing, draped jersey styles without buttons or zippers, showcased innovation. The 1980s witnessed the international fame of American sportswear designers Ralph Lauren and Calvin Klein. The 1990s were dominated by fashion icons John Galliano and Alexander McQueen. The distinctive quality of designer labels lies in their ability to think “out-of-the-box,” creating new design directions and establishing unique identities over time.

Paul Poiret (Pwah-ray): Paul Poiret (1879–1944), initially associated with the House of Worth, launched his store in Paris in 1903 and revived the Empire style of high-waisted gowns in France. Influenced by his passion for Russian dance and Eastern art, he designed dramatic evening costumes, including the famous “lampshade” tunic and “harem” pants in vibrant colors. Poiret’s influence peaked before World War I, but by the 1920s, his appeal waned. His wife, serving as both model and muse, inspired his current straight-line outfits, showcasing her slim physique. Credited with liberating women from the corset, Poiret is hailed for “assisting them in their transition from the purely ornamental role they had up until that point.” His imaginative vision, reflected in theatrical costumes and couture, played a pivotal role in reshaping clothing history towards contemporary fashion.

Gabrielle Chanel (Gab-ree-elle): Gabrielle Chanel, known as “Coco” Chanel (1883–1971), was a pioneering French fashion designer who dominated Parisian haute couture for nearly six decades. She challenged the conventions of the 1800s, advocating for women to discard restrictive corsets and petticoats. Chanel revolutionized women’s fashion by introducing pants paired with jersey knit tops and sweaters, creating a blend of casual and sophisticated aesthetics. Her iconic designs, including the “Chanel” suit, the timeless “little black dress” (LBD), the quilted handbag with the double C emblem, and the oversized pearl necklace, continue to be highly celebrated and popular.

Jean Patou (Gsahn Pa-too'): Jean Patou (1880–1936), a prominent couturier in 1920s Paris alongside Coco Chanel, distinguished himself with remarkably simple designs. Recognizing the impact of athletics on lifestyle, Patou aimed for contemporary and functional athletic wear. In an era when covered arms and legs were customary for women, Patou's introduction of the shorter tennis skirt was considered a novel and progressive design.

Christian Dior (Chris'-tee-ahn' Dee-or'): Christian Dior SE, widely known as Dior, is a highly successful French luxury goods firm today. In the late 1940s and early 1950s, Christian Dior emerged as the preeminent fashion designer, excelling in catering to various market segments. His collections addressed the needs of his private clientele, retail purchasers of his designs, and wholesalers acquiring copyrights for large-scale manufacturing. Notably, Dior's visionary understanding of post-World War II sentiment led to the creation of "The New Look" in 1947, characterized by an ultra-feminine silhouette.

1.7.3 Indian Designers

India boasts a rich cultural heritage of crafts and textiles that serve as ongoing inspiration for designers. These designers, across various genres, collaborate with weavers and handicraft artisans to innovate and create exclusive weaves and embroidery. India's advantage lies in the customization of these traditional elements in limited yardage, catering to the needs of both Indian and international designers. The Indian consumer, well-versed in global fashion trends, confidently blends western and traditional wear.

The Indian fashion industry, although nascent compared to the West, has been catalyzed by the establishment of the National Institute of Fashion Technology (NIFT) in 1986. NIFT has produced prominent designers, including Ritu Beri, Ashish N. Soni, JJ Valaya, and Sabyasachi Mukherjee, who address the modern aspirations of society.

Ritu Kumar, a pioneer in Indian designer apparel, is highly regarded for reviving traditional zardozi embroidery in her Indian bridal wear line. Her brand, 'Ritu,' introduced the boutique culture in India and encompasses high-fashion garments and accessories. While excelling in traditional Indian attire, Ritu Kumar has expanded her business to include a contemporary Ready-to-Wear (RTW) line called 'Label.' Her success has led to branches in 14 Indian cities, as well as international locations in Paris and New York. Recognized with the Padmashri award in 2013, Ritu Kumar's contributions extend beyond fashion, as evidenced by her book 'Costumes and Textiles of Royal India,' which traces the history of Indian textiles and art design.

Sabyasachi Mukherjee, an alumnus of the National Institute of Fashion Technology, stands out as India's most renowned designer in the bridal wear domain, operating under his successful label 'Sabyasachi.' Known for modernizing traditional silhouettes, he employs indigenous crafts such as dyeing and intricate embroidery, incorporating revivalist weaving techniques. Sabyasachi is recognized for notable initiatives like reviving khadi and the 'Save the Saree' campaign, demonstrating support for weavers in Murshidabad. His influence extends globally, collaborating in various sectors, including accessory and shoe design, home products, beauty products, and hotel décor. Embracing "International styling with an Indian soul," Sabyasachi designs for Bollywood actors and international celebrities. He has also ventured into costume design for Bollywood films, winning the National Award for Best Costume in the film 'Black' in 2013.

Manish Arora, an alumnus of the National Institute of Fashion Technology, launched his label in 1997. His success led to exhibits at London Fashion Week in 2005 and Paris Fashion Week in 2007. In 2011, he became the Creative Director for Paco Rabanne, designing two successful collections. Known for unique, quirky, and experimental designs, Arora caters to unconventional and progressive customers with an appreciation for unusual details. Recognized among the world's most influential designers by the Business of Fashion (BoF) 500, he has numerous international and national collaborations, selling his creations in stores across countries.

1.8 Brands and e-brands

A brand is a distinct product produced under a specific name by a particular company. More than just encompassing logo, packaging, or marketing, a brand reflects the identity and core values of the company, product, or service it represents. While serving to distinguish a product from similar competitors, branding is crucial for identification, positioning, and profitability in an increasingly competitive market. Companies often cater to both mass and upscale markets through effective product branding.

1.8.1 Brands in India

Clothing companies in India, mirroring their international counterparts, offer diverse brands tailored to specific segments of the domestic market. Each brand, whether for kids, adults, or women, specializes in specific product categories, including formal clothing, sportswear, and casual wear. Major athletic apparel companies like Nike, Adidas, and Reebok produce sportswear and casual wear for men, women, and children. Brands can choose to focus on one or more subcategories within a product category or offer a full range. Examples include Raymond, which owns sub-brands like The Raymond Shop, Park Avenue, Parx, and Color Plus. Madura Garments, a division of the Aditya Birla Group, manages sub-brands such as Allen Solly, Peter England, Van Heusen, and Louis Philippe through their unique brand stores and multi-brand establishments. The entry of foreign brands into the Indian market in 2008, including prominent names like Mango, Zara, H&M, Marks & Spencer, and Promod, created a significant impact. The term “high street fashion” refers to the apparel found in major shopping districts, and these brands are associated with catering to the general fashion market. However, companies like Cartier, Gucci, Dior, Giorgio Armani, and Prada focus on the luxury or premium segments of the market.

Indian companies leverage their two to three decades of industry expertise, allowing them a profound understanding of the Indian consumer and market dynamics. Both the general and high-end markets are key focuses for Indian brands. Fashion designers often participate in Fashion Weeks and distribute their creations through standalone or select multi-designer boutique stores, primarily targeting the upper-end consumer market. Brands like W, Fabindia, Soma, Anokhi, Lakshita, Wills Lifestyle, Globus, Van Heusen, Allen Solly, Pantaloons, and others cater to the mass market, offering products designed and priced to meet the needs and budgets of their target customers.

1.8.2 E-Brands

An e-brand is any corporation with an accessible online presence. Many firms are exploring online channels, including search engines and online marketplaces, to build lasting customer relationships and enhance brand awareness. The popularity of e-brands is driven by the cost advantages of online

shopping compared to physical stores. Currently constituting around 25% of India's organized retail industry, internet shopping is expected to continue growing. Companies like Myntra, Jabong, Flipkart, LimeRoad, and Snapdeal cater to diverse customer needs through their websites.

1.8.3 International Brands

The notoriety of a brand is influenced by factors such as product appeal, quality, heritage, connections to a cause or celebrity, or a combination of these. Global luxury brands like Dior, Gucci, Burberry, Hermes, and Louis Vuitton offer a range of items, including fashion, accessories, cosmetics, and fragrances. Upscale jewelry brands like Cartier and Tiffany are also prominent. "High street" brands, available both in their country of origin and abroad, include Levi's (USA), Promod (France), Vero Moda (Denmark), H&M (Sweden), Zara and Mango (Spain), and Marks and Spencer (UK). Some companies have expanded their offerings to include lifestyle items and home furnishings like pillows, blankets, curtains, and rugs, in addition to clothing. Restoration Hardware, Pottery Barn, Sears, Pier 1 (USA), Speigel (Germany), IKEA (Sweden), and other brands are examples of such businesses.

1.9 International Trade in Fashion

Any kind of trade in goods between two or more nations is referred to as 'international trade' or 'global trade'. The relationships between nations and cultures in producing and distributing goods are the focus of international trade. The term 'exports' refers to the shipment or airlift of goods to another nation in exchange for money or other goods that generate revenue for the country's government or business. The term 'imports' refers to either foreign readymade goods brought into a nation for domestic consumption or raw materials imported for use in the production of goods. The textile and apparel industries have emerged as production and consumption centres for international trade. The professionals in this field are in charge of a wide range of activities that determine product availability worldwide including merchandising, marketing, design production and distribution.

The Silk Route, which saw camel caravans transport silk fiber, yarn, and fabrics from China through the Middle East to Europe, provided the earliest example of international trade. Textiles were valuable commodities that were exchanged for services or goods. Even today, goods can be imported and exported through international trade. Typically to developed nations apparel and textiles are outsourced from developing nations where labour costs are low. As a result of globalization, producers and consumers are increasingly interconnected and dependent on one another. In every nation, the textile and apparel industry employs millions of people. It is a global trade in which manufacturing and weaving may be outsourced to other nations. The producers and manufacturers of textile and apparel products are on one side and the consumers are on the other. The global fashion industry is increasingly focusing on responsibility and ethics in fashion, involving the elimination of social exploitation and environmental degradation through pollution, waste disposal methods, chemical dumping, etc.

China, India and Bangladesh now produce apparel and textiles instead of developed nations like the United States and the European Union. As compared to developing nations, developed nations 'consume' (buy and use) more. The United States of America is the world's largest apparel importer followed by Germany and Japan. Due to their expanding populations, urbanization and higher per capita income, developing nations are expected to have growth in future demand.

Since 2005, India's textile and apparel exports have increased at an annual rate of 10%, reaching an estimated USD 31 billion in 2011.

1.10 Regulatory Bodies in Fashion and Textile Sector

India's textile manufacturing and export sectors make it one of the world's most important textile industries. This industry gained traction as a result of economic liberalization in 1991. Over 35 million people in India are directly employed in the textiles and ancillary industries, making them the country's second-largest employment provider after agriculture. Cotton textiles, silk textiles, woollen textiles, hand-made textiles, ready-made garments, jute and coir are some of the 'sub-sectors' that make up the textile industry. In the Indian fashion and textile industry, there are some regulatory bodies comprising government, semi-government and private institutions:

1.10.1 Ministry of Textiles, Government of India

The Ministry of Textiles oversees the overall national regulation of the textile, apparel and handicraft industries. In the textile industry, it is in charge of policy formulation, planning, development, export promotion and trade regulation. This includes all fibres, both natural and synthetic, that are used to make clothing, textiles and handicrafts.

To increase India's share in the global market for clothing and textiles, the Indian government has taken many measures, some of which include export promotion policies with incentives to broaden coverage of market-linked product schemes:

- Welfare schemes for weavers and artisans
- E-marketing platforms and other marketing initiatives to promote niche handloom and handicraft products through various events
- Skill development for people in all sub-sectors
- Financial aid for weavers and cooperative societies in the handloom sector
- Textile parks employ several millions of textile workers in the apparel, hosiery, silk, processing, technical textiles, including carpet and power loom industries.
- These businesses receive support in the following ways:
 - Land
 - Common infrastructure like roads, drainage, a compound wall, a power plant for supplying electricity, telecommunication lines, and so on.
 - Factory buildings for production purposes
 - Machinery
 - Buildings for common facilities like testing laboratories, design centres, training centres, warehousing facilities, packaging units, offices of service providers, marketing support systems, etc.

The Scheme of Integrated Textile Parks (SITP) seeks to locate industrial areas with high growth potential and provides them with the infrastructure necessary to establish textile factories of international standard.

1.10.2 Advisory Boards

The Ministry of Textiles includes many advisory boards which look after production levels, export and imports, implementation of schemes, providing necessary funds for the growth of the handloom industry and advising the government on matters of implementation of new technologies or trends.

These boards are:

- All India Handloom Board
- All India Handicraft Board

- All India Power Loom Board
- Central Wool Development Board
- Jute Advisory Board
- Central Silk Board

1.10.3 Export Promotion Councils (EPC)

The following are non-profit organizations:

- Apparel Export Promotion Council, New Delhi
- Carpet Export Promotion Council, New Delhi
- Cotton Textiles Export Promotion Council, Mumbai
- Export Promotion Council for Handicrafts, New Delhi
- Handloom Export Promotion Council, Chennai
- Indian Silk Export Promotion Council, Mumbai
- Powerloom Development & Export Promotion Council, Mumbai
- Synthetic and Rayon Textiles Export Promotion Council, Mumbai
- Wool & Woollen Export Promotion Council, New Delhi

To boost exports in these sectors, each EPC is responsible for promoting a specific group of goods, projects and services. These EPCs serve the following roles:

- To portray India as a trustworthy supplier of high quality goods and services abroad.
- To provide commercially relevant information and advice on design enhancement, technology upgrade standards and specifications, product innovation and other relevant topics to their member exporters so that they can take advantage of these opportunities for expansion and diversification.
- To arrange delegates and members to visit other countries to look into business opportunities.
- To encourage exporters to follow international standards and specifications and keep an eye on them.
- To provide data on international trade and create a database of India's export-import figures.

1.11 Role of Fashion Professionals

Design, technology, fashion merchandising, retailing and management are just some of the subjects taught in fashion institutes. The purpose of the course syllabi and curricula is to prepare students to become professionals with knowledge, abilities, creative thinking and problem solving skills. Graduates can find work in a variety of positions in the fashion industry that require creativity, technical proficiency and retail acumen. To work as a cohesive team, professional interpersonal skills are essential because some of the job responsibilities may overlap.

The market is made up of businesses and organizations, each offering a unique selection of goods and services to its particular customer base.

Clothing, accessories, design communication, manufacturing, forecasting or marketing could be the focus. Brands like Shoppers Stop, Fab India, Anokhi and others target the domestic retail market or the market for designer clothing. Moreover, the commodity houses and purchasing houses fabricate attire and items just for export and don't retail inside the country. This necessitates a well-synchronized flow chart of activities performed by various departments, each of which supports the other sections and focuses on a specific area and is coordinated by a centralized core team. No

matter if a company is focused on design, technology or marketing, it will only be able to work at its full potential with the help of skilled employees.

Following is a description of the roles played by designers, technologists and merchandisers:

1.11.1 Fashion Designer

Designers can work for export houses, buying houses, corporate retail businesses or start their businesses. He/she may specialise in children's, men's or women's clothing. A career as a fashion designer in the fashion industry, particularly in an export or buying house, typically begins as an assistant designer under the supervision of a Head Designer who, through experience and/or long-term association with the company, is familiar with the entire process and holds authority within his/her department. A designer is part of a larger team that includes a pattern cutter, sample machinist, garment technologist and merchandiser in an export house.



Students in a Garment Construction Lab

The designer is responsible for the following actions:

- (i) To comprehend the company's vision and mission, as well as the relationship between the product and company in terms of customer's perception and market positioning.
- (ii) To collaborate with seniors and colleagues in brainstorming sessions rather than working alone to come up with ideas and strategies.
- (iii) To contribute to the brand's cohesive look by synchronizing one's design sensibility with that of other designers in the organisation.
- (iv) To realise that design is more than just drawing with a pencil and paper. In addition to originality and creativity, commercial realities and financial constraints influence design decisions. Monetary ramifications of subtleties like determination of textures, cost, accessibility of manages, strings, material surface medicines/weaving and so forth are equally essential.
- (v) To carry out sampling which entails creating the initial sample prototype and encompassing the entire design process from the sketch to the finished product. While the designer conceptualises, supervises and presents the prototypes as part of the new collection, other design, production coordination, merchandising or marketing colleagues must also provide valuable feedback.
- (vi) To foster an engaged and strong assortment which would be coupled with the Unique Selling Recommendation (USP), i.e. the exceptional qualities of the organization/brand and design estimate for the next season.
- (vii) To comprehend the significance of time management because time is comparable to money. This would include calculating the time taken by buyers to place an order, purchasing fabric, the production process and shipping the finished consignment on time at export houses.

1.11.2 Fashion Technologist

A garment technologist is the interface between the designer, the sample prototype and the final finished collection. Designers, textile technologists, pattern cutters, production teams and

merchandisers collaborate with the technologist. The first sample is sent to the CMT (Cut Make Trim) unit in export houses and retail businesses, where a fashion technologist can evaluate production costs and procedures.

The technologist is responsible for carrying out the following tasks:

- (i) To evaluate the sample that was created by a designer and make any necessary adjustments so that it meets the design team's specifications completely and is ready for production.
- (ii) To go to meetings with the design team so that the sample can be worn on a dress form or a 'fit model' to check for any changes and take specific notes so that the manufacturing unit can follow the pattern exactly.
- (iii) To guarantee a rigorous quality control procedure.
- (iv) To verify the outcomes of fabric tests, such as colour fastness, shrinkage, etc.
- (v) To create a graded size chart for the production unit to follow.
- (vi) To complete all requirements and produce a pack of technical specifications (Tech Pack) as a control measure to prevent manufacturing deviations.
- (vii) To inspect and make random checks on garments while they are being made.
- (viii) To deal with and find solutions to technical issues that might be found during manufacturing.

1.11.3 Fashion Merchandizer

In the fashion industry, line planning is an important creative and commercial activity that involves planning and creating a range of products for the upcoming season. However, without the valuable input of merchandizers, the designer's next collection would not be very successful. It is essential to strike a balance between commercial viability and customer satisfaction. The point of contact between design and business is the merchandiser. With the expanded seriousness on the lookout, the merchandiser needs to settle on basic decisions concerning the plan and item situating methodology which will influence the net revenues of the organisation.

The merchandiser's responsibilities include the following:

- (i) To work together with the retailer to give the merchandise a wider platform.
- (ii) To comprehend the company's or brand's USP while evaluating and analysing commercial opportunities in the market to represent the design vision of the creative team.
- (iii) To evaluate competitors in the market and conduct market research to determine trend directions.
- (iv) To examine the company's sales figures of the previous season by fashion, product category or style.
- (v) To create an internal merchandising calendar with important dates and deadlines that each department must meet.
- (vi) To talk about the new collection(s) with the designers and buyers and how to combine creative aspects with commercial concerns like costing and pricing.
- (vii) To come up with ideas with the marketing team for a plan to position and promote the new collection.

1.12 Fashion Institutes and Colleges in India

In India, there are numerous schools and universities offering professional degrees and certificates in fashion and design. The curriculum covers both academic and practical knowledge of business,

technology, and fashion design. Graduates from these institutions lead the industry as vice presidents and heads of design departments.

- (i) **National Institute of Design (NID):** Located in Ahmadabad, NID was formed under the Ministry of Human Resource Development for providing Diploma programmes at the graduate and post-graduate levels. It now offers doctoral programmes in design also. It has two more branches in Gandhinagar and now in Bengaluru.
- (ii) **The National Institute of Fashion Technology (NIFT),** established by the Ministry of Textiles, Government of India, is the country's premier fashion institute. Offering two-year master's and doctoral programs in design, management, and technology, along with four-year bachelor's degrees, NIFT has its headquarters in Delhi and operates 17 campuses across India.
- (iii) **Pearl Academy of Fashion:** This private educational institution offers undergraduate and graduate degrees, certificates, and certificate programs in fashion and related fields. There are campuses in Bangalore, Delhi, Jaipur, and Mumbai.
- (iv) **Symbiosis Institute of Design:** Degrees in fashion, communication, and industrial design are offered by this Pune-based institution.
- (v) **Srishti Institute of Art Design and Technology:** This Bengaluru-based institution offers diploma in arts, postgraduate professional programs, and undergraduate technical and professional programs.
- (vi) **Lady Irwin College:** This college, which is affiliated with Delhi University, offers undergraduate, graduate, and doctorate degrees with a focus on fabric and apparel science.
- (vii) **Institute of Home Economics:** Under Delhi University, this college offers diploma, postgraduate, and doctorate degrees in Home Science, with a focus on Fabric and Apparel Science. LIC and IHE are employed by Delhi University's Department of Home Science.
- (viii) **Maharaja Sayajirao University:** is situated in Baroda, Gujarat, it offers PhD, postgraduate, and graduation degrees in fashion and textiles.

Fashion and Textiles Councils

- (i) AEPC: Apparel Export Promotion Council
- (ii) AIACA: All India Artisans and Craft Workers welfare Association
- (iii) BITRA: Bombay Textile Research Association
- (iv) NITRA: Northern India Textile Research Association
- (v) CCI: Crafts Council of India
- (vi) CMAI: The Clothing Manufacturers Association of India
- (vii) FDCI: Fashion Design Council of India

At a Glance

- The apparel industry is the industry in which designers, manufacturers, merchandisers, distributors, and retailers work in the garment trade.
- The process of arranging elements in a way that appeals to the senses or evokes emotions is art.

- The text explores the evolution of the fashion industry from the 17th century to the present, highlighting influential designers and the global impact of fashion capitals. It discusses the contributions of Indian designers, the significance of brands, the rise of e-brands, and the presence of international brands in diverse market segments.
- The New Webster's International Encyclopedia in 1998 defined design as the purposeful arrangement of the elements in a creative work or process.
- Style is an aesthetic sensibility that sets a designer or company apart from others in a similar apparel or product category.
- Glocal means combining global thinking with local flavours.
- Any kind of trade in goods between two or more nations is referred to as 'international trade' or 'global trade'.
- A garment technologist is the interface between the designer, the sample prototype and the final finished collection.
- In the fashion industry, line planning is an important creative and commercial activity that involves planning and creating a range of products for the upcoming season.

Glossary

- 1. Accessories** : Articles like jewellery, hats, shoes, belts, etc. worn or carried to match clothing
- 2. Avant Garde** : French term for design which is unconventional and ahead of its time
- 3. Classic** : Long-lasting fashion that outlasts seasonal forecast
- 4. Cohort** : Consumer segments categorised according to shared characteristics like demographics and lifestyle
- 5. Consumer** : The end user who decides to purchase
- 6. Copyright** : The legal right of a creator of an original concept or style
- 7. Collection** : Range of clothing or accessories for a season
- 8. Custom-made** : Made to order as per the specifications of the client. Also called Bespoke tailoring
- 9. Disposable income** : Income of a person after tax deduction which could be spent on consumable items
- 10. Fad** : Short-lived fashion that peaks and fades out quickly
- 11. Fashion Cycle** : Cyclic repetition of styles from a previous period
- 12. Fashion Forecasting** : A specialised activity to predict fashion for the next season(s)
- 13. Fashion Seasons** : Bi-annual periods of Spring-Summer and Autumn-Winter according to which fashion collections are planned
- 14. Haute Couture** : French term for High Fashion of one-of-a-kind fashion
- 15. Obsolescence** : When a product is discarded for something new
- 16. Pret a Porter** : French term for ready-to-wear fashion

- 17. **Knockoff** : Copy of a higher-priced garment available at a lower price
- 18. **Licensing** : Grant of authorization by owner or authority to hold rights or to engage in activities related to the profession
- 19. **Retailing** : The entire process of buying merchandise from different sources and selling to customers at various points of retail like boutiques or department stores
- 20. **Staple** : Items of clothing or accessories which are in constant demand

EXERCISES

CBSE Textbook Questions with Answers

EXERCISE 1.1

Fill in the blanks.

1. The word refers to the spirit of the times which influences fashion.
2. The trade refers to the fashion business within the country while the trade refers to the global business.
3. The global fashion business helps the country to earn
4. Research provides versatile fabric structures with enhanced
5. Smart textiles are also referred to as textiles.
6. The key issue in the Brundtland Report in 1987 has resulted in fashion.
7. The domination of economically stronger social groups wields its influence on fashion trends in two ways namely and
8. Faux goods mean products.
9. wages for workers is an example of Fair Trade Practice.
10. Fashion simultaneously incorporates culture and culture.
11. The sequence of planned activities from raw material sourcing to sales is called the
12. A buoyant economy results in Fast Moving Goods.
13. The acronym CSR stands for
14. A business strategy combining international thinking with a local perspective is termed a approach.

Answers:

- | | | | |
|------------------|----------------------------|-------------------------------------|----------------|
| 1. Zeitgeist | 2. domestic, international | 3. foreign exchange | 4. performance |
| 5. intelligent | 6. sustainable | 7. imitation, differentiation | |
| 8. fake | 9. Equitable | 10. high, popular | |
| 11. supply chain | 12. Consumer | 13. Corporate Social Responsibility | |
| 14. glocal | | | |

Review Questions

1. Define fashion.

Ans. The word 'fashion' comes from the Latin word '*facere*', which means 'to make' or 'to do'. This includes the two steps of making and doing, whether it's making clothes or looking good. The Webster International Encyclopedia 1998 defines fashion as a 'prevailing style of dress, particularly new designs representing changes from previous seasons'.

2. Explain the factors influencing fashion.

Ans. The following are the factors that affect fashion:

- | | |
|---|--------------------------------------|
| (i) Dominating events | (ii) Influence of celebrities |
| (iii) Economic factors | (iv) Psychological factors |
| (v) Social factors | (vi) Cultural factors |
| (vii) Political events and personalities | (viii) Historical inspiration |
| (ix) Geographical factors | (x) Spread of Information Technology |
| (xi) Technological advancements in textiles | |

3. What are the ways in which fashion is a serious business?

Ans. As one might expect, the more fashion sense a person has, the more attention they get. Consequently, fashion plays a crucial role in social and economic advancement. Indeed, people's social ranks are reflected and determined by fashion.

4. What is sustainable fashion?

Ans. Feasible style is a development and collaboration that advances changes in design things and the planning system to accomplish more noteworthy ecological and social value. Sustainable fashion encompasses more than just fashion apparel and accessories. It involves addressing the fashion industry as a whole. Dealing with social, cultural, ecological and financial systems that are all interdependent is necessary for this.

5. Name three Fair Trade Practices in the fashion industry.

Ans. Child labour, decent working conditions, and fair wages are three Fair Trade Practices in the fashion industry.

Activity 1

Background: Corporate Social Responsibility (CSR) also referred to as Corporate Conscience or Responsible Business is a form of corporate self-regulation integrated into a business model to ensure its active compliance with social contributions which need to be undertaken by corporate organizations and companies.

This activity is intended to enable students to find out about Corporate Social Responsibility (CSR) issues related to the fashion and textile industry.

1. Refer to books, magazines or the internet to find out more about CSR.

Ans. Corporate Social Responsibility (CSR) refers to a company's obligation to manage the social, environmental and economic effects of its services with respect and in accordance with consumer values. CSR operations include company strategies that require partners to adhere to corporate ethical standards. Corporate social responsibility also aims to contribute significantly to society, participate in charitable endeavours and give back to society. Corporate social responsibility is increasingly being looked at by businesses as a way.

- To make a difference and establish a consistent identity.
- To identify the issues that matter most to their customers.
- To make CSR rehearses that the labourers will be pleased with.
- To determine the return on investment (ROI).
- To prepare to immediately adapt to social movements and current events. CSR initiatives were implemented at the regional level by UNIDO to encourage partnerships and networks among various stakeholders.

2. Find out how CSR is relevant in the context of the fashion and textile industry.

Ans. CSR clearly demonstrates your deep concern for societal issues that go beyond demand-related issues and would attract customers who share your priorities. As a result, it's financially sound to act responsibly. Customers are beginning to request more from their apparel and the organizations that make it. As a result, a growing number of businesses are implementing corporate social responsibility (CSR) programs to enhance their business practices. As a result, a growing number of businesses are implementing corporate social responsibility (CSR) initiatives to improve their business practices.

EXERCISE 1.2

Fill in the blanks.

1. Designers of high fashion/couture are called
2. Designs that characterize the look of a season are called
3. The spread of a trend across markets and consumer segments is called
4. Unconventional design at the vanguard which differentiates it from mainstream designs is referred to as designs.
5. The steps taken by the apparel industry to capitalize on a trend and produce a new collection is called a coat-tail or effect.
6. are fashions of short life expectancy.
7. are enduring styles that continue for a long period of time without becoming obsolete.
8. Choices of designs in a variety of colour ways and sizes at affordable prices characterize fashion.
9. A collection is also called a or
10. A label is one where the name of the designer and the label is the same.

Answers:

- | | | |
|----------------|----------------|---------------|
| 1. couturiers | 2. trends | 3. flow |
| 4. avant-garde | 5. bandwagon | 6. Fads |
| 8. mass | 9. line, range | 7. Classics |
| | | 10. eponymous |

Review Questions

1. In what way do trends function as key indicators that characterize the look of a season?

Ans. Trends are important indicators of how a season's look will be affected or characterized directly or indirectly. Trends are fleeting fashion declarations. Seasonal trends, which indicate a particular style, silhouette, colour, texture, etc., frequently influence fashion.

2. Why are Haute Couture garments so highly priced?

Ans. Haute Couture clothing commands extremely high prices due to the exclusivity of the design, high quality of the fabric, skilled labour used in surface design techniques, embroidery, drape, craftsmanship, garment construction and quality of finish.

3. What is the meaning of Limited Fashion?

Ans. The term 'limited fashion' or 'limited edition fashion' refers to a partnership between a brand or store and a fashion celebrity or designer to produce a limited-edition clothing line.

4. What are Knock-offs?

Ans. A knock-off is a close resemblance or reproduction of a designer's 'look' by another designer or company, usually made with less expensive materials and at a lower cost of production.

5. Why do designers create avant-garde fashion?

Ans. The goal of avant-garde fashion is to push the boundaries of existing norms and acceptable aesthetics through experimental and novel designs.

6. Compare Classics and Fads with examples.

Ans. Classics are timeless fashions that never go out of style; instead continue for an extended period of time at a plateau of acceptance. A simple white shirt, a little black dress (LBD) or well-fitted black formal trousers are all good examples.

Fads are that gain popularity quickly thanks to consumer acceptance. However, fads have a short lifespan and tend to become out of style quickly. T-shirts in fluorescent colours, ankle- or calf-length jeans with turn-up cuffs, baggy anti-fit jeans, and so on are examples.

Match the Columns.

Designer	Pret Label
1. Ritu Kumar	(a) DKNY
2. Manish Arora	(b) TT
3. Ashish Soni	(c) Pleats Please
4. Tarun Tahiliani	(d) A & S
5. Issey Miyake	(e) Label
6. Donna Karan	(f) Fish Fry

Ans.

Ritu Kumar	—	Label
Manish Arora	—	Fish Fry
Ashish Soni	—	A & S
Tarun Tahiliani	—	TT
Donna Karan	—	DKNY
Issey Miyake	—	Pleats Please

Activity 2

Background: The labels of most brands and designer labels bear their names. The stature and reputation of the label are associated with high prices attributed to design exclusivity, the craftsmanship of fabric

embroidery, garment construction and quality of finish. The *Prêt a porter* (pret) or Ready to wear (RTW) label of a designer usually derives from their couture lines reflecting similar aesthetics and is available at more affordable prices in multiple sizes in a wider range of colour options.

This activity is intended to familiarize students with designer labels and brands.

1. Identify any one Indian designer who has both a main label and a pret label.

Ans. Tarun Tahiliani is an Indian designer who has a main label named Tarun Tahiliani and a pret label named TT.

2. Refer to fashion magazines to find pictures of designs under the respective labels.

Ans. To be done by each student individually.



Tarun Tahiliani



Manish Arora



Ritu Kumar

3. How are the designs of the main label and pret label differentiated from each other?

Ans. Main label: The location or logo of the company that sources and sells clothing is referred to as a 'brand' or 'main label'. Customers place a high value on brand names, but they only use and consume the brands with which they are already familiar. The level of consistency, longevity and appearance of a product are all linked to the label of the brand.

Pret label: Prêt-à-porter clothing is high-quality, at low-cost, in fashion ready to wear clothing that is manufactured by independent fashion designers or clothing brands but is manufactured in a factory. These clothes are the kinds of clothes that you can see, fall in love with and buy in a variety of sizes to fit your body.

4. Discuss in class if all designers have both main and pret labels.

Ans. To be discussed in class.

EXERCISE 1.3

Fill in the blanks.

1. The activity where research and analysis of previous fashion trends help in the identification of future trends is called
2. Books and periodicals which predict fashion trends in advance are called
3. The periodic movement of fashion as it swings from one extremity to another like a clock is called

4. A particular trend is said to be when there is no further creative interpretation of the style.
5. The curved path indicating the acceptance and discontinuation of a particular style is represented by a shaped curve.
6. During the popularity and acceptance stage, different design variations create multiple cycles within the larger cycle which is called
7. After a particular trend has run its course, it fades away and resurfaces after a period through design re-interpretation called fashion cycle.
8. The five phases of a fashion cycle are Introduction, Rise, Peak, Decline and
9. A Fashion Cycle may have unpredictable variations in terms of duration, and velocity.

Answers:

1. forecasting
2. trend books
3. a Pendulum Swing
4. outdated
5. bell-
6. Cycle within Cycle
7. Recurring
8. Obsolescence
9. undulation

Review Questions

1. What is Fashion Forecasting?

Ans. Fashion forecasting is a complicated process in which past fashion trends can be studied and analyzed to predict future ones. It is a way to coordinate the activities of retailers and manufacturers of fibre, yarn, fabric and apparel.

2. What are the 5 qualities required by a trend forecaster?

Ans. The 5 qualities required by a trend forecaster are:

- (i) Pursuing and spotting trends by professionals who are aware of emerging technologies and socio-cultural influences worldwide.
- (ii) Frequent trips to major fashion centres like London, New York, Paris and Milan, as well as to other countries and continents, in order to 'pick up', i.e. find trends.
- (iii) Scouting for new research on colour and developments in fibres, yarn and fabric.
- (iv) Examine the changing patterns of consumer behaviour, fashion preferences and lifestyle that indicate future preferences.
- (v) The ability to analyse the data and spot emerging patterns

3. What is a Pendulum Swing?

Ans. Pendulum Swing is the fashion industry's cyclical shift from one end to another, like a clock.

4. What is a Fashion Cycle?

Ans. A fashion cycle, which is a curved path in the shape of a bell, depicts the acceptance or rejection of a particular fashion by a larger segment of society.

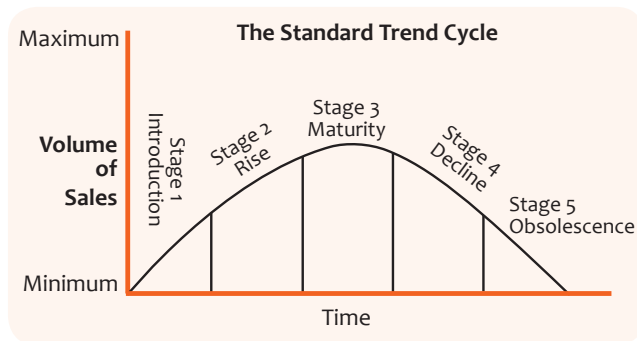
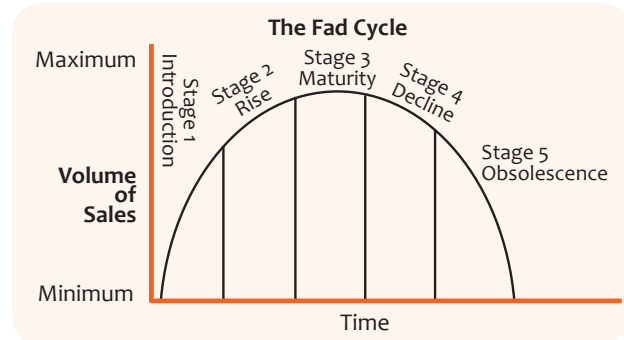
5. What are the reasons for variations in a Fashion Cycle?

Ans. A Fashion Cycle is a ringier that demonstrates the recognition and abandonment of a particular fashion by a larger segment of society. It occurs on a periodic basis, but it lacks predictability, due to that there are three variations in a fashion cycle:

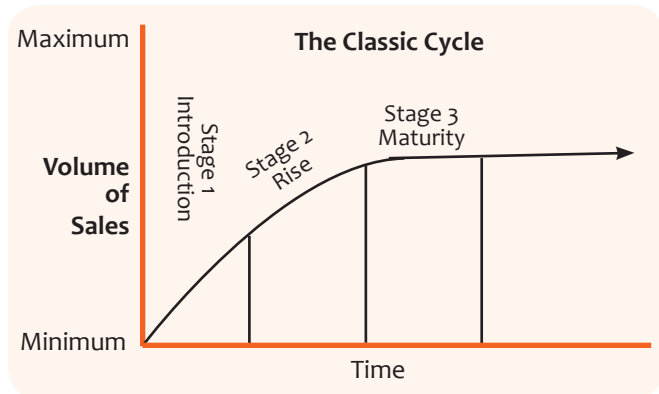
- (i) Duration (length of time)
- (ii) Undulations (high and low points)
- (iii) Velocity (speed of acceptance and rejection).

6. Define the 3 types of Fashion Cycles with diagrams.

Ans. (i) **Fad cycle:** Fads are fashions that gain popularity quickly. However, they have a short life span and tend to become out of style quickly.



(ii) **The standard cycle of trends:** Styles that begin slowly and continue for a longer period of time until their popularity eventually decreases are reflected in some recurring cycles known as long-wave phenomena.



(iii) **Classic trend cycle:** Classics are designs that have been around for a long time and have gained a certain level of popularity.

7. Define Cycle within Cycle through the example of denim jeans.

Ans. Different design interpretations and variations in terms of silhouette, colour, material, trims, etc. are made in order to capitalize on and meet the demand for a particular style during the popularity and acceptance stage. Each of these variations is analogous to a cycle that is revolving within a larger cycle, which is called 'Cycle within Cycle'. Denim jeans, which gained popularity during 'Gold Rush', in California continue to be a fashion staple. However, there are variations in cut (straight leg, tapered leg, bootleg and baggy), colour (blue and other shades), and surface treatments (acid-wash, enzyme-wash, stone-wash, and so on) denim weight, etc.

Activity 3

Background: The Pendulum Swing refers to the periodic movement of fashion which gathers momentum as it swings from one extremity to another. This helps an organization with business foresight to plan its range of clothing for the next season.

This activity will enable students to trace the Pendulum Swing in fashion history.

1. Identify any one item of clothing (jeans, skirt, kurta, etc.)

Ans. Denim jeans

2. Find pictures of design variations of this garment.

Ans. To be done by each student individually.



3. Identify the design component that has undergone the pendulum swing (e.g. length, width, flare, etc)

Ans. The trend toward high-rise jeans shifts when the 'seam rise' of the jeans falls below a certain threshold. Similarly, in other garments like skirts, the market was flooded with fitted miniskirts in the 1960s, so the pendulum swung the other way, bringing long skirts into fashion. In India, fitted, shorter kurtas with salwars have replaced the long, flowing Anarkali-style kurtas worn with churidars. At the point when structure-fitted 'leggings' (a blend of pants and tights) overwhelmed the market, looser straight-leg pants arose with a totally different outline.

4. Discuss the duration of the trend in class (e.g. months, years, etc.)

Ans. Jeans: Fitted pants, tight cuffs and skinny pants were popular in 2013. From the streets to the runway, we saw this trend.

In 2023 we saw many types of jeans in trend like low-rise jeans, boot-cut flares, pooling wide-leg jeans, patchwork jeans and cargo jeans.

EXERCISE 1.4

Fill in the blanks.

1. The Trickle Across theory is also called
2. The Trickle up theory is also called the
3. The rate of replacement of existing merchandise with new styles is called
4. Variations/copies of original designs called are available at cheaper prices to suit different budgets.
5. Street fashion travels in a direction from the masses to a designer collection.
6. The spread of design from the higher to the lower classes through imitation using cheaper versions of fabric is an example of theory.

Answers:

- | | | | |
|-----------------------|---------------------|------------------|---------------|
| 1. Mass Market theory | 2. Bubble-up theory | 3. Turnover rate | 4. Knock offs |
| 5. vertical | 6. Trickle-down | | |

Review Questions

1. Name the three theories of the Movement of Fashion.

Ans. The three theories of the Movement of Fashion are:

- (i) Trickle-Down Theory
- (ii) Trickle-Across Theory
- (iii) Trickle-Up Theory

2. What is Street Fashion?

Ans. Street fashion is the name given to unconventional fashion choices made by young people in an effort to attract attention.

3. What are the factors which affect the speed at which trends trickle across different market segments?

Ans. The speed at which the trends trickle across different market segments depends on factors like:

- (i) Turnover rate (rate of replacement of existing merchandise with new styles)
- (ii) Mass/volume production
- (iii) Speed of fashion awareness and popularization created by the mass media.

4. What are Knock-offs?

Ans. A knock-off is a close resemblance or reproduction of a designer's 'look' by another designer or company, usually made with less expensive materials and at a lower cost of production.

Activity 4

Background: Changes in the direction of fashion are dependent on trends. The source and process of trends, the innovators and followers, the vertical or horizontal direction and the movement of change can be explained by 3 theories.

This activity is intended to enable student groups to trace the movement of fashion and relate to the appropriate theory.

1. Each group will select one fashion theory for detailed analysis.

Ans. There are three theories of fashion movement:

- (i) Trickle-down theory
- (ii) Trickle-up or Bubble-up theory and
- (iii) Trickle-across theory. Refer to 1.5.1 to 1.5.3. on Page No. 19-21.

2. Collect pictures of one item of clothing or an ensemble from photographs or articles from magazines or catalogues.

Ans. To be done by each student individually.



3. Keep a regular record of the design variations of the item/ensemble reported in the print media with prices, if possible, for a period of a few months.

Ans. To be done by students themselves.

4. Discuss the relevant theory of the Movement of Fashion with the teacher.

Ans. To be discussed by students with their respective teacher.

EXERCISE 1.5

Fill in the blanks.

1. Consumers who share characteristics form groups called
2. Fashion Change Agents are also known as
3. Marketing experts try to understand the target consumers through analysis of and data.
4. Fashion innovators are also called
5. Those who follow trends without exercising their own opinion, are referred to as
6. The consumer segment referred to as is the driver of mass production of commercially viable fashion in large volumes.
7. In order to attract a particular segment of the target market, the positioning and presentation of a product requires to highlight how it is different and better than other products in the category.
8. The spread of fashion across social strata caused by the diversity of the consumer segment is called

Answers:

- | | | |
|--------------------|--------------------|-------------------------------|
| 1. cohorts | 2. influential | 3. psychographic, demographic |
| 4. Fashion Leaders | 5. fashion victims | 6. fashion followers |
| 7. differentiation | 8. diffusion | |

Review Questions

1. Define cohort.

Ans. Cohorts are groups of customers who share certain characteristics.

2. What are the two broad consumer segments?

Ans. The consumers are broadly categorized into:

- Fashion Influential
- Fashion Followers

3. What is the role of Fashion Change Agents in spreading fashion?

Ans. In the traditional sense, the fashion change agent is more than just an innovator or a thought leader. A higher order fashion influencer or stimulator with a distinct set of skills and individual fashion characteristics is typically referred to as a fashion change agent. The style change specialist has attributes related to design development, data transmission, information, and social authenticity. As a well-known fashion performer, the change agent contributes to the fashion adoption and diffusion process in a variety of ways.

4. Compare Fashion Victims and Fashion Followers.

Ans. Fashion victims: This expression is sometimes used to refer to people who don't use their judgment when it comes to current fashion trends. The consumers of this group are frequently defined by their high income and purchasing power.

Fashion followers: The majority of customers who accept and adhere to established market trends are made up of them. They feel at ease when they conform to styles that blend with others in a larger group. People with limited time, resources, or an interest in fashion may also be fashion followers.

5. What are the two broad categories of data needed to understand the target market?

Ans. The two broad categories of data are:

- **Demographic:** Data such as occupation, age, marital status and ethnicity are referred to as important characteristics that influence consumer's attitudes and behaviour in demographics.
- **Psychographics:** Psychographics combine demographics and consumer psychology. They are additional data that assist in identifying a consumer segment based on shared values, attitudes, preferences and behaviours.

Activity 5

Background: The visibility of fashion influentials like celebrity personalities like film stars, sports persons, musicians or other dominant social groups with wealth, power, culture and leadership is widespread in the public domain. The style quotient of such celebrities has a significant aspirational impact on the public demand for similar designs and fashion brands endorsed by them.

This activity will enable students to relate fashion and brand endorsements to the influence of celebrities.

1. Identify any one celebrity personality who is a Fashion Influential.

Ans. Ranveer Singh is not only a well-known person in Bollywood but also a fashion influential.

2. Examine whether the coverage of the celebrity personality is in the social or entertainment media (movies, TV series, reality shows, advertisements, interviews and photographs in magazines and newspapers, etc.)

Ans. Ranveer Singh is a Bollywood movie celebrity.

3. What are clothing or lifestyle brands endorsed by the celebrity?

Ans. Nutella, Adidas and Jack & Jones are a few of the luxury brands for which Ranveer Singh is the global brand ambassador.

4. Based on your findings, do you agree/disagree that celebrity status and brand endorsements affect and influence each other?

Ans. Celebrities frequently take pleasure in their fame and have a significant impact on the product they endorse. They frequently become associated with the product they endorse and are well-known for their previous accomplishments. The target audience is typically convinced by the celebrity's message.

EXERCISE 1.6

Fill in the blanks.

1. The exchange of goods involving two or more countries is called
2. refer to goods shipped to another country in return for money or other goods.

3. refer to the raw materials brought into a country for the production of goods or foreign readymade goods made available for domestic use.
4. addresses the need to balance economic considerations with the human and environmental aspects of the fashion business.
5. is the biggest apparel importing country in the world.
6. Future growth in demand is expected from developing nations because of three reasons namely, urbanization and per capita income.

Answers:

1. International trade
2. Exports
3. Imports
4. Ethical fashion
5. USA
6. population

Review Questions

1. What is International Trade?

Ans. Any transaction involving the exchange of goods between two or more nations is referred to as international trade or global trade. In the production and distribution of goods, international trade is about the relationships between nations and cultures.

2. What is Imports?

Ans. The term 'imports' refers to either foreign readymade goods brought into a nation for domestic consumption or raw materials imported for use in the production of goods.

3. In what way is the textile and apparel business a global trade?

Ans. In every nation, the textile and apparel industry employs millions of people. It is a global trade in which manufacturing and weaving may be outsourced to other nations. The producers and manufacturers of textile and apparel products are on one side and the consumers are on the other.

Activity 6

Background: Global consciousness of ethical fashion involves the elimination of social exploitation and environmental degradation on one hand with the introduction of Fair Trade Practices on the other.

This activity will develop an awareness of Sustainable fashion among students.

1. Refer to websites on Sustainable Fashion.

Ans. www.projectcece.com

2. What are the issues of prime concern (social exploitation/environmental degradation/fair trade practices, etc)?

Ans. Water pollution, the fashion industry's high water consumption, microfiber pollution, the fashion industry's high waste problem, chemical production, greenhouse gas emissions, soil degradation and rainforest destruction are some environmental concerns that the fashion industry faces. In addition, social exploitation, including child labour, forced labour, long working hours and unsafe working conditions are also the issues of prime concern.

3. Find out about any brand which caters to Sustainable Fashion.

Ans. Insom by Sajal Jain is an organic and up-cycled clothing label that guarantees 100% zero-waste production. It's not only super stylish and cozy, but also it recycles leftovers, defective and surplus fabrics from large scale organic fabric manufacturing industries and transforms them into wearable pieces of art.

EXERCISE 1.7

Fill in the blanks.

1. The overall nationwide regulation of the textiles, apparel and handicrafts sectors takes place under the aegis of the
2. The SITP stands for Scheme of Textile Parks.
3. EPC stands for Export Council.

Answers:

1. Ministry of Textiles
2. Integrated
3. Promotion

Review Questions

1. What are the sub-sectors of the textile industry?

Ans. Cotton textiles, silk textiles, woollen textiles, handmade textiles, ready-made garments, jute and coir textiles are a few examples of the various segments or 'sub-sectors' that make up the textile industry.

2. What are the different regulatory bodies of the Government of India?

Ans. In the Indian fashion and textile industry, there are several regulatory bodies consisting of government, semi-government and private institutions:

- Ministry of Textiles, Government of India
- Advisory Boards
- Export Promotion Councils (EPC)

3. What are the organizations that promote textile-based exports?

Ans. The organizations that promote textile-based exports are:

- Apparel Export Promotion Council, New Delhi
- Carpet Export Promotion Council, New Delhi
- Cotton Textiles Export Promotion Council, Mumbai
- Export Promotion Council for Handicrafts, New Delhi
- Handloom Export Promotion Council, Chennai
- Indian silk Export Promotion Council, Mumbai
- Powerloom Development & Export Promotion Council, Mumbai
- Synthetic and Rayon Textiles Export Promotion Council, Mumbai
- Wool & Woollen Export Promotion Council, New Delhi

4. Name any 3 initiatives taken by the Government of India to promote exports in textiles and clothing.

Ans. Three initiatives taken by the Government of India to promote exports in textiles and clothing are:

- Welfare schemes for weavers and artisans

- E-marketing platforms and other marketing initiatives to promote niche handloom and handicraft products through different events
- Skill development of people across all sub-sectors

Activity 7

Background: The overall national-level regulation of the textiles, apparel and handicrafts sectors takes place under the aegis of the Ministry of Textiles, Government of India. It is responsible for policy formulation, planning, development, export promotion and trade regulation in the textile sector. This activity is intended to familiarise student groups with the regulatory bodies in the fashion and textile sector.

1. Refer to the website of the Ministry of Textiles, Government of India and select an Advisory Board or Export Promotion Council.

Ans. Ministry of Textiles - <https://texmin.nic.in/>

Government of India - <https://www.india.gov.in/>

All India Handicrafts Board - <https://www.handicrafts.nic.in/>

Apparel Export Promotion Council - <https://www.aepcindia.com/>

2. Refer to the website of the selected organization/council about its role in the textile, clothing or handicrafts sector.

Ans. To be examined by students themselves.

3. Discuss the information with the teacher and the class.

Ans. To be discussed by students themselves.

EXERCISE 1.8

Write True or False.

1. Line planning activity is the single-handed responsibility of the designer.
2. A fashion designer is always an entrepreneur with his/her own label.
3. The responsibility of a fashion designer is to:
 - (i) Focus only on design based on originality and creativity.
 - (ii) Understand the goal of the company in terms of customer perception and its positioning in the market.
 - (iii) Concentrate on design by isolating oneself from other departments of the organization.
 - (iv) Develop a focused and cohesive collection that would be in accordance with the Unique Selling Proposition (USP) of the company/brand.
4. The responsibility of a fashion technologist is to:
 - (i) Undertake to sample.
 - (ii) Assess the cost and processes of production in export houses and retail companies based on the first sample.
 - (iii) Provide specifications for the first sample based on which production will be undertaken.
 - (iv) Ensure a rigorous process of quality control.
5. The responsibility of a fashion merchandiser is to:
 - (i) Coordinate between the company and retailer to provide a wider platform for the merchandise.
 - (ii) Make critical choices in terms of the design and product positioning strategy of the company.

(iii) Be the interface between design and technology.

(iv) Undertake market research for trend directions and evaluate market competitors.

Answers:

- | | | | |
|--------------|-----------|-------------|-----------|
| 1. False | 2. False | | |
| 3. (i) False | (ii) True | (iii) False | (iv) True |
| 4. (i) False | (ii) True | (iii) True | (iv) True |
| 5. (i) True | (ii) True | (iii) False | (iv) True |

Review Questions

1. What are the activities undertaken by a fashion designer?

Ans. There are several activities undertaken by a fashion designer, a few of them are:

- To comprehend the company's vision and mission, as well as the relationship between the product and company in terms of customer perception and market positioning.
- To collaborate with seniors and colleagues in brainstorming sessions rather than working alone to come up with ideas and strategies.
- To contribute to the brand's cohesive look by synchronizing one's own design sensibility with that of other designers in the organization.

2. What is sampling?

Ans. Creating the initial sample prototype is called sampling, which includes the entire design procedure, from the initial sketch to the finished product.

3. Who are the extended team members with the fashion designer?

Ans. A designer in an export house works as part of a larger team that also includes merchandisers, a pattern cutter, a sample machinist, a garment technologist, and others.

4. Who is a fashion technologist? What are the activities undertaken by a fashion technologist?

Ans. A fashion technologist is the interface between the designer, the sample prototype and the final finished collection. Designers, textile fashion technologists, pattern cutters, production teams and merchandisers collaborate with the technologist. There are several activities undertaken by a fashion technologist. Few of them are:

- To ensure a rigorous process of quality control.
- To check the results of any fabric tests, e.g. colour fastness, shrinkage, etc.
- To prepare a graded size chart for adherence by the production unit.
- To finalise all necessary requirements and create a pack of technical specifications (Tech Pack) as a control measure to avoid deviation during manufacture.
- To carry out inspection and random checks of garments while in production.
- To address and resolve technical problems that may be detected during manufacturing.

5. Who is a merchandiser? What are the activities undertaken by a merchandiser?

Ans. A merchandiser is the point of contact between design and business strategy. Due to increased market competition, the merchandiser must make crucial decisions regarding design and product positioning which will have an impact on the company's profit margins. There are several activities undertaken by a merchandiser.

Few of them are:

- To coordinate between the company and retailer to provide a wider platform for the merchandise.

- To understand the USP of the company/brand while analysing and exploring commercial opportunities in the market to represent the creative team's design vision.
- To undertake market research for trend directions and evaluate market competitors.
- To review the company's sales figures of the previous season by style as per the apparel or product category.

6. What is a merchandising calendar?

Ans. The merchandising calendar includes important dates and deadlines that each department must meet.

Additional Questions with Answers

I. Choose the correct option.

1. "I have never been about fashion and trends. I believe in a design that has lasting integrity." Which designer has quoted this?
(a) Giorgio Armani (b) Issey Miyake (c) Donna Karan (d) Ralph Lauren
2. Which one of the following is the full form of FMCG?
(a) Fast Moving Charitable Goods (b) Fast Moving Client Goods
(c) Fast Move Complex Goods (d) Fast Moving Consumer Goods
3. Pleats Please is a prêt label of which designer?
(a) Ritu Kumar (b) Donna Karan (c) Manish Arora (d) Issey Miyake
4. Radhika has been appointed as a fashion merchandiser in an export house. What is her role in the organization?
(a) To understand that design is not merely a paper-pencil activity.
(b) To ensure a rigorous process of quality control.
(c) To coordinate between the company and retailer to provide a wider platform for the product.
(d) To prepare a graded size chart for adherence by the production unit.
5. This organization is operated under the aegis of the Ministry of Textiles. The main task of this organization is to look after production levels, export and imports, implementation of schemes, and advising the government on matters of implementation of new technologies. Which is this organization?
(a) Advisory Board (b) Export Promotion Council
(c) Apparel Export Promotion Council
(d) Powerloom Development & Export Promotion Council
6. The trend of low waist saree was popular in the decade 1960s. Eventually people lost interest; soon it was rejected and later it was out of trend. And then it resurfaced after gap of 40 years i.e. in the year 2000 but with some modifications. The acceptance and discontinuation of a particular style is indicated through fashion cycle. Which of the following fashion cycles is discussed above?
(a) Interrupted cycle (b) Cycle within cycle (c) Recurring fashion (d) Fads cycle
7. In which type of cycle is a popular fashion discontinued due to any socio-economic or political instability?
(a) Cycle within cycle (b) Interrupted cycle
(c) Fad cycle (d) Standard cycle

8. Which theory is referred to as the 'mass market theory'?
- (a) Trickle across theory (b) Trickle down theory
(c) Trickle up theory (d) None of these
9. What are the consumers who share characteristics from groups called?
- (a) Cohorts (b) Teams (c) Customers (d) Purchasers
10. The full form of EPC is
- (a) Export Promotion Committee (b) Export Professional Council
(c) Export Promotion Council (d) Export Promotion Classes
11. The overall national level regulation of the textile, apparel, and handicrafts sector takes place under the
- (a) Ministry of Textiles (b) Ministry of Handlooms
(c) Ministry of Printed Textiles (d) Ministry of Raw Textiles
12. According to a, fashion is an expression of personality, human behaviour or a reaction to the surrounding environment.
- (a) sociologist (b) common person (c) psychologist (d) ecologist
13. The cycle in which the movement of fashion occurs and declines fast is called
- (a) Standard trend cycle (b) Fad cycle
(c) Reoccurring cycle (d) Classis cycle
14. The theory in which we study the movement of fashion from the upper strata to the lower classes is called
- (a) Trickle-down theory (b) Trickle up theory
(c) Trickle across theory (d) Mass market theory
15. Which type of consumer segment adopts new fashion without exercising their judgment?
- (a) Fashion followers (b) Fashion influencers
(c) Fashion victims (d) Fashion forecasters
16. Which of the following countries is the biggest apparel importer in the world?
- (a) India (b) Japan (c) USA (d) Australia
17. What marked the emergence of the fashion industry in the 17th century, and which country became a hub for luxury silk textile production?
- (a) The Renaissance, Italy (b) The Industrial Revolution, England
(c) The Enlightenment, France (d) The Baroque era, Spain
18. Who is considered the "Father of Couture" for his original and opulent collections in the mid-1800s?
- (a) Coco Chanel (b) Gianni Versace
(c) Charles Fredrick Worth (d) Yves Saint Laurent
19. Which cities are considered the world's major fashion capitals today?
- (a) Rome, Paris, Tokyo, Sydney (b) Milan, Madrid, Los Angeles, Berlin
(c) Paris, Milan, New York City, London (d) Moscow, Beijing, Dubai, Toronto
20. Which city retains its status as the global fashion hub, hosting fashion weeks that showcase designers' latest collections?
- (a) Milan (b) New York City (c) Paris (d) London

21. What supports haute couture in the fashion industry, including accessories, purses, and prêt collections?
- (a) Streetwear (b) Fast fashion
 (c) Luxury prêt labels and couture houses (d) Vintage fashion trends
22. What characterized “The New Look” created by Christian Dior in 1847?
- (a) Shorter tennis skirt (b) Ultra-feminine silhouette
 (c) Quilted handbag (d) Empire style gowns

Answers:

1. (d) Ralph Lauren 2. (d) Fast Moving Consumer Goods 3. (d) Issey Miyake
 4. (c) To coordinate between the company and retailer to provide a wider platform for the product.
 5. (a) Advisory Board 6. (c) Recurring fashion 7. (b) Interrupted cycle
 8. (a) Trickle-across theory 9. (a) Cohorts 10. (c) Export Promotion Council
 11. (a) Ministry of Textiles 12. (c) psychologist 13. (b) Fad cycle
 14. (a) Trickle-down theory 15. (c) Fashion victims 16. (c) USA
 17. (c) The Enlightenment, France 18. (c) Charles Fredrick Worth
 19. (c) Paris, Milan, New York City, London 20. (c) Paris
 21. (c) Luxury prêt labels and couture houses 22. (b) Ultra-feminine silhouette

II. Fill in the blanks.

1. is a process in which elements are arranged in a manner that attracts senses and emotions.
2. is defined as the process of making objects by hand.
3. The word is originated from a French word ‘disegnare’.
4. The spread of trends across markets and consumers is called
5. are the fashion of short life expectancy.
6. refers to high fashion created by designers.
7. refers to ready-to-wear clothing designed from the couture line.
8. is referred to as fashion that is widely available in stores nationwide.
9. refers to a close resemble or reproduction of a designer’s look by another designer using cheaper material and lower production cost.
10. A well-defined and meticulously edited group of clothing or products for a specific season is referred to as a, which can also be referred to as a range or line.

Answers:

1. Art 2. Craft 3. Fashion 4. Flow
 5. Fads 6. Haute couture 7. Pret a Porter 8. Mass fashion
 9. Knock off 10. collection

III. Very Short Answer Type Questions.

1. What are the different perceptions of fashion held by an average person, sociologists, psychologists and economist?

2. How is fashion different from clothing?
3. What is a supply chain?
4. What significant role does the fashion industry play in a country?
5. What is the difference between domestic trade and international trade?
6. During which century did the fashion industry begin to emerge, and which country became a hub for luxury silk textile production?
7. Who is often referred to as the “Father of Couture” for his original and opulent collections in the mid-1800s?
8. What contributes to Paris’s prominence in the fashion world, including brands like Chloe, Prada, Chanel, Dior, and Saint Laurent?
9. Who is credited with reviving the Empire style of high-waisted gowns in France and designed dramatic evening costumer, including the famous “lampshade” tunic and “harem” pants?
10. What artistic influences shaped Paul Poiret’s designs, leading to the creation of vibrant and dramatic evening costumes?

IV. Short Answer Type Questions–I

1. Define the term ‘design’.
2. Describe how pendulum swing occurs with examples.
3. Name three fashion cycles.
4. Which theory is called the bubble-up theory?
5. Define art.

V. Short Answer Type Questions–II

1. Name four factors influencing fashion.
2. Describe trends in brief.
3. What do you mean by a collection?
4. What are the various meanings of the word ‘style’?
5. How are haute couture and pret-a-porter different from each other?

VI. Long Answer Type Questions–I

1. Differentiate between classics and fads.
2. What do you understand by fashion forecasting?
3. Discuss the five phases of a fashion cycle.
4. Define ‘recurring cycle’ with an example.
5. What do you understand by consumer segmentation?

VII. Long Answer Type Questions–II

1. What are the two groups of fashion influential? Describe in brief.
2. Differentiate between export and import.
3. Discuss all the workings and initiatives of the Ministry of Textile.
4. What are the roles of a fashion designer, fashion technologist and fashion merchandiser?



2. Introduction to Fibres, Dyeing & Printing

Learning Outcomes

2.1 Introduction

2.4 Weaving

2.2 Textile Fibres

2.5 Dyeing

2.3 Yarns

2.6 Printing

2.1 Introduction

India is a country with a rich legacy of customary materials like Banarasi brocade, Kanjeevaram silk, Baluchari silk, Chanderi, Maheshwari sarees, Jamdani cotton sarees, Kashmiri woollen shawls to name a couple. Each sort of Indian material has unique features in terms of the fibres or raw materials used for production, weaving and dyeing techniques. Rich embroidery, such as Kantha stitch, Phulkari work, mirror work and Kutch embroidery, can be found in some traditional Indian textiles. This section acquaints the readers with various sorts of natural and man-made fibres, the essential idea of yarns, essential weaves and the basics of dyeing and printing innovation.

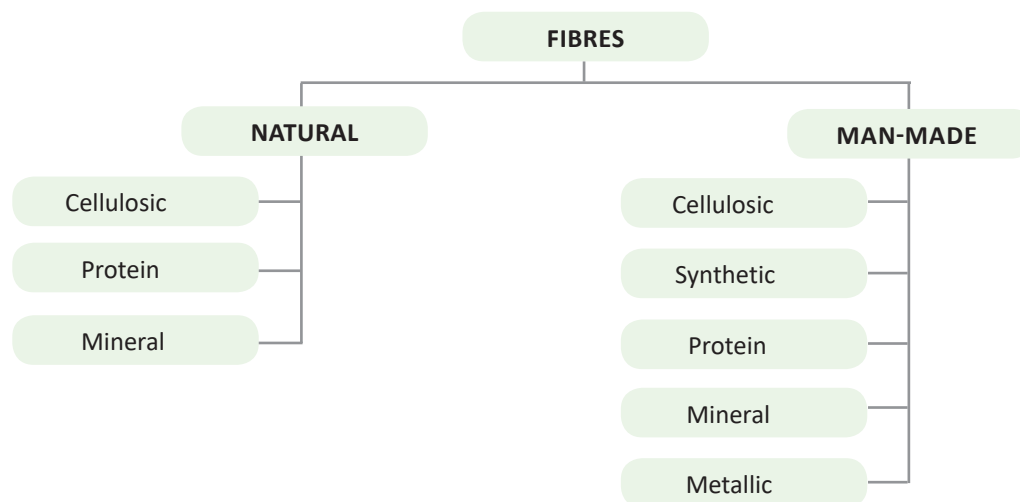
2.2 Textile Fibres

Textile fibre is, by definition, a unit of matter that is typically at least one hundred times longer than its thickness. The molecule is the basic unit of all textile fibres like cotton, wool and silk. The molecules in a fibre are called polymers as they are a long chain of atoms. The fibres acquire the necessary characteristics due to the polymeric structure. The chemical and molecular make-up of each fibre determines its individual properties.

2.2.1 Classification of Textile Fibres

Natural and man-made fibres are the two main types of fibres. They are further divided according to their chemical make-up.

The following is the classification of textile fibres:



Classification of fibres

Fibre type	Composition	Examples of fibres
Natural	Cellulosic	Cotton, jute, flax, hemp, banana fibre, pina fibre, etc.
	Protein	Silk, wool, camel hair, Angora rabbit hair, cashmere goat hair, etc.
	Mineral	Asbestos fibre
Man-made	Cellulosic	Viscose rayon, modal, tencel, etc.
	Synthetic	Polyester, nylon, acrylic, polyethylene, polypropylene, etc.
	Protein	Soyabean fibre, polylactic acid fibre, etc.
	Mineral	Glass fibre, ceramic fibre, etc.
	Metallic	Aluminium fibre, silver fibre, tungsten fibre, etc.

Classification of fibres with examples

2.2.2 Natural Fibres

Natural fibres are obtained from natural resources like plants/vegetables, creature hair and regular minerals. Fibres from vegetable and plant origin are usually cellulosic in the chemical composition. Chemically speaking, animal fibres are composed of protein. Cellulosic fibres are cotton, flax, jute, coir, hemp, banana fibre, etc. Wool, silk, and other specialty fibres like camel hair, Angora rabbit hair and pashmina goat hair, among others, are examples of natural protein fibres. Asbestos is a naturally occurring mineral fibre that is resistant to fire and is based on calcium and magnesium silicate. Asbestos isn't generally utilized because of its harmful nature.

The following segment describes the properties of the most regularly used normal filaments: cotton, jute, flax, silk and fleece.

Cotton

The cotton seed hair is used to make cotton fibre. Because it is cellulosic, it gives off the smell of burning paper when burned. Under the magnifying instrument, the fine construction of cotton can be noticed. The cross part of the cotton fibre is kidney-shaped. The length of the fibre goes from

10 mm to 65 mm depending on the variety of cotton. In India, the main cotton producing states are Maharashtra, Andhra Pradesh, Madhya Pradesh and West Bengal. Because of their hygroscopic nature, cotton fibres are capable of absorbing approximately 8.5% of their dry weight in moisture.

When made into textiles, this gives the fibre the ability to absorb sweat. Additionally, the hygroscopic nature prevents the cotton fabric from the formation of static electricity. Because



Raw cotton in cotton seed



Cross-section of cotton fibres

of this, you can wear it in hot and humid weather. Cotton fibres can conduct heat energy and can endure high ironing temperatures. The strength of the cotton fibre is great and the strength grows when the fibre is wet. This makes the garments produced using cotton durable. The fibres of cotton are unaffected by mild bleaches and alkalis. The fibre can thus be washed at home using detergents. Cotton fibres can be impacted by direct daylight because of photochemical debasement in the presence of environmental oxygen and dampness. This causes the yellowness in undyed

cotton/white textures after a certain period of time. Direct, reactive, vat and sulfur dyes are all easy to use for dyeing cotton fibres, yarns and fabrics.

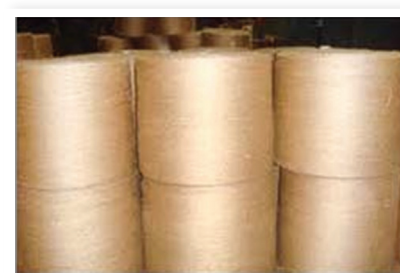
Jute

The stem of the jute plant, which grows primarily in India's West Bengal, Assam and Bihar states, is used to make jute fibre. Jute fibre



Jute plant

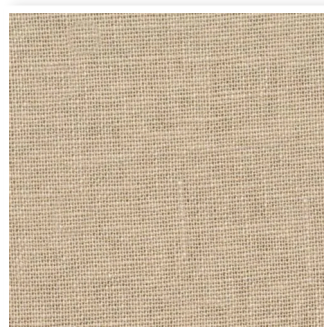
is cellulosic and like cotton, can absorb dampness. The jute fibres have low elongation and excellent strength. Jute fibres are stronger than cotton fibres and elongate less than cotton fibres when weight is applied. This property makes it appropriate to be utilised in packs and sacks to convey significant burdens. Jute fibres are used for carpets, bags, sacks and industrial applications due to their roughness and stiff handle.



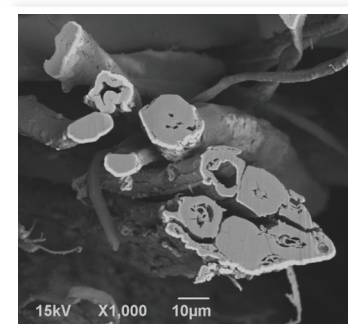
Jute yarn

Flax

The flax fibre is regular, thick and has a muted lustre. The fibre's colour ranges from a light blonde to a greyish blonde. The fibres can be bleached and coloured to any shade like cotton. The length of the fibre goes from 10 cm to 100 cm. The shape of the flax fibres can be seen in their cross-section. Linen is the name given to the fabric made from flax, which is used in clothing. Flax fibres are very strong and stiff in handle. Flax fibres (linen fabric) wrinkle easily because of their stiff



Flax Fabric

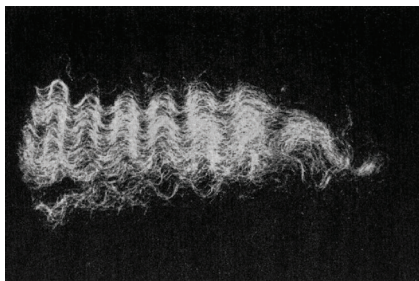


Cross-section of flax fibres under scanning electron microscope (SEM)

nature. This is one significant contrast from cotton fibre however both are cellulosic. Like cotton fibres, flax can absorb moisture and is resistant to alkalis.

Wool

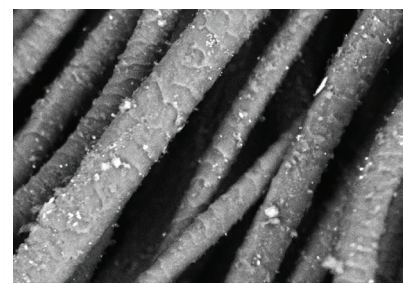
Fibre made from the fleece of domesticated sheep is called wool. It is a natural protein fibre. Wool fibres range in length from 5 centimetres for fine wool to 35 centimetres for coarse and long wool. Merino wool is a kind of fine Australian wool. Scales cover the surface of the wool fibre and it has an oval cross-section. The crimping of the wool fibres gives the woollen fabric its characteristic bulk and warmth.



Natural crimp in wool fibres

Fabrics made of wool have a crimp in them that lets air flow through.

This warmth in wool is because of the air spaces which trap endlessly air being a separator that holds the body heat. Wool absorbs dampness more than cotton. While absorbing moisture, wool also emits a small, steady amount of heat. This makes the wearer feel warm in the cold weather. Wool has this one-of-a-kind quality that is not found in any other fibre.



Wool fibres under SEM

Silk

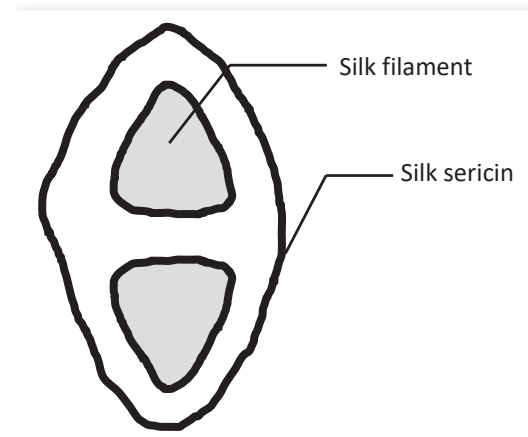
Silk is a natural protein fibre obtained from the cocoons of the silkworm. The silk is removed from the cocoon of the silkworm to give continuous length (700-1200 metres) of thread which is called silk filament. The cocoon's raw silk strand is made up of two triangular silk filaments held together by a protein called sericin. Sericin is otherwise called the 'silk gum' which gives crude silk a coarse handle. This silk gum can be easily eliminated by a cycle called 'degumming' to give silk a smooth handle and bright lustre. This is the reason that crude silk is coarse in the handle and needs radiance, yet degummed silk is delicate and lustrous. Silk filament



Silk cocoons

has a regular appearance and is extremely fine. As the filament reflects light uniformly, silk has a smooth lustre due to its triangular cross-section. The wool filament is weaker than the silk filament. Like wool, silk is easily degraded by alkalis and cannot be washed with regular detergents. Cleaning

is suggested for silk textures. Like cotton and wool, silk is affected by sunlight.



Cross-section of silk strand

The cultivated silkworm feeds on mulberry leaves, so the material is commonly referred to as 'mulberry silk'. In India certain assortments of silk other than mulberry silk which are known as 'wild silk' like Tasar silk, Muga silk and Eri silk are accessible. Different kinds of silkworms are used to grow these silk. Mulberry silk and wild silk have distinct textures. Tasar silk and Eri silk are coarser in texture and give a silk fabric that appears to be different from mulberry silk. In the state of Karnataka, mulberry silk is primarily produced in

and around Bengaluru; in the state of Bihar, tasar silk is produced in the Bhagalpur region; and in Assam and West Bengal, Muga silk is produced.

2.2.3 Man-made Fibres

Man-made fibres are obtained by the mechanical spinning of polymers like cellulose, synthetic polymers, metallic compounds and other materials which are not found in nature. For cellulosic man-made fibres, the cellulose is acquired from the wood pulp, and fibre like viscose rayon is turned. Synthetic fibres are textile fibres which are made from synthesized polymers like polyester, nylon, acrylic polyurethane, polyethylene and polypropylene. The benefits of synthetic fibres are that they can be adjusted during spinning to consolidate extra properties like antimicrobial movement, fire resistant property, and so forth. In this part, well-known man-made fibres like viscose rayon, polyester, nylon and acrylic will be talked about. A concise introduction to high execution synthetic fibre is also introduced in this part.

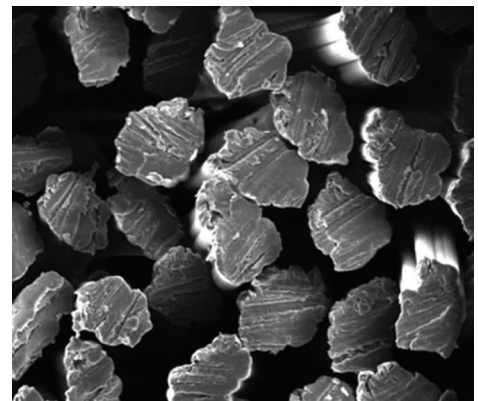
Viscose Rayon

A synthetic regenerated cellulosic fibre is known as viscose rayon. An alkali-cellulose solution that is viscous is spun into the fibres. The name viscose is derived from the word viscous, which describes the fluid condition of the turning arrangement utilized for turning the fibre or filament. Fine,



Viscose rayon fabric

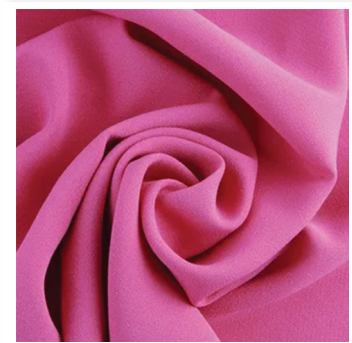
regular, or staple fibres make up rayon. The cross-segment is serrated. The structure of viscose rayon is like cotton. As a result, the characteristics of viscose rayon fibres are also comparable to those of cotton. It is frequently mixed with cotton or polyester and woven into textures. Viscose rayon absorbs moisture. As a result, it is suitable for hot, humid weather as it absorbs sweat. It can be washed at home with detergents and is resistant to alkalis.



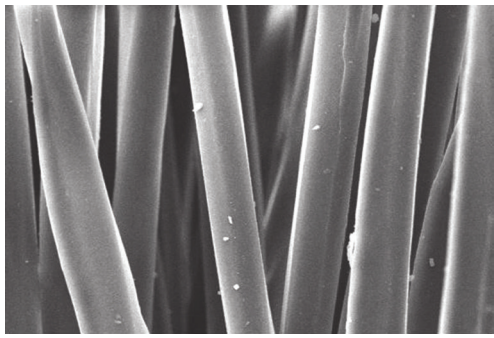
Cross-section of Viscose rayon fibres under SEM

Polyester

Polyester is man-made fibre or staple fibre produced using a response between a liquor and an acid. It is made out of polyethylene terephthalate units. Polyester fibres/filaments are very strong. The strength remains unaltered when wet. This is a direct result of the hydrophobic nature of the polymer. The hydrophobic nature of the polyester empowers polyester texture to dry rapidly as the dampness retention is 0.4% unlike cotton, wool, silk and viscose rayon. The high strength and firmness of polyester makes it a wrinkle-resistant fabric. Polyester can be shaped or molded when heated due to its nature as a thermoplastic. It tends to be heat set. And yet on openness to fire, the polymer bursts into flames and dissolves, which can be unsafe. Therefore, polyester fibres that do not ignite have also been developed and are now available



Polyester fabric



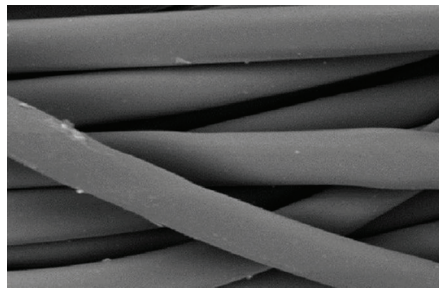
SEM image of polyester fibres

for purchase. Polyester is more resistant to acids than soluble bases. Polyester is resistant to daylight more than the natural fibres.

Polyester fibres are mixed with cotton/viscose rayon fibres to foster a texture that would force the great characteristics of both filaments. Polyester cotton/viscose blended fabrics are more resistant to creases than 100% cotton fabrics, are stronger and dry faster than 100% cotton fabrics. Polyester cotton/viscose blends are generally utilized as uniform textures and shirting/fitting material.

Nylon

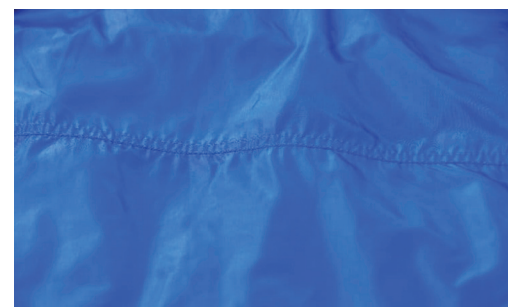
Nylon is a polyamide synthetic fibre or filament. The nylon filaments/fibres are well-known for their high abrasion resistance and strength. Polyester does not have as much elasticity as nylon filaments or fibres. On its dry weight, nylon takes in about 4% moisture. These properties make it



SEM image of nylon fibres

reasonable for items like ropes, socks, swimwear, cycling shorts and certain sports wear where high strength, flexibility and scraped spot obstruction are required.

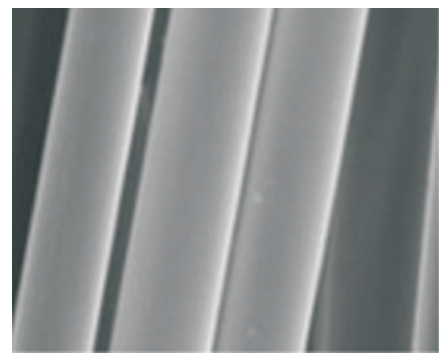
Nylon like polyester is thermoplastic in nature and melts when warmed. Nylon is less resistant to acids than to salts. It is fairly resistant to weather and sunlight.



Nylon fabric

Acrylic

Acrylic fibres/filaments are spun from acrylonitrile polymer. In modacrylic strands, a copolymer is also used alongside acrylonitrile. The slight wavy nature of acrylic fibres gives them the bulk of wool. Acrylic fibre is used for knitted sweaters, winter wears, cloaks, drapes, imitation fur, heap texture, upholstery textures, etc. Acrylic fibres have great strength and a delicate handle. Acrylic fibres are hydrophobic in nature which brings about improvement of static flexibility. Acrylic fibres immediately catch fire when exposed to flame. Acrylic fibres are more acid-resistant than alkaline fibres. Acrylic strands are also resistant to sunlight and weather.



SEM image of acrylic fibres



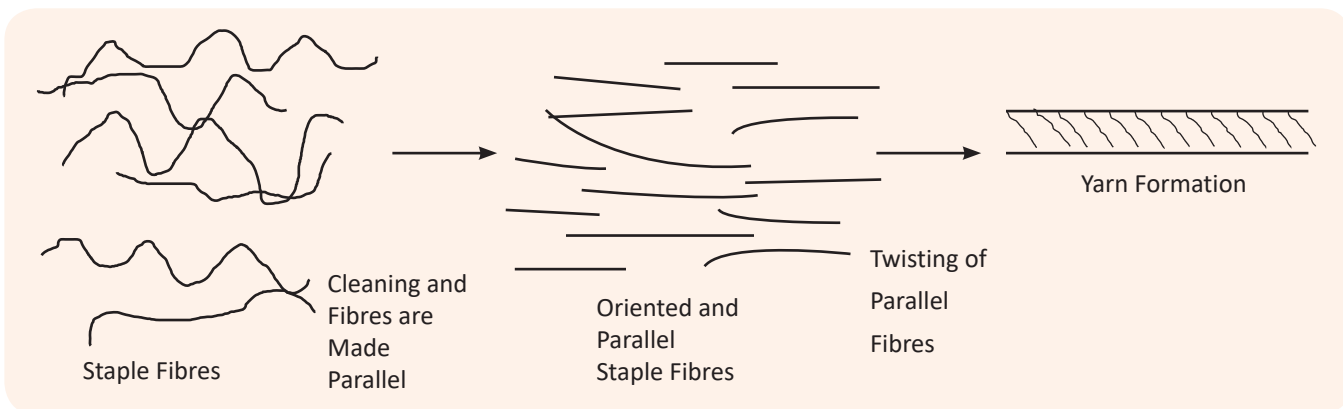
Acrylic fabric

2.2.4 High Performance Fibres

Apart from the conventional fibres that have been examined in this part, various high-execution fibres have been created and popularised. These fibres are strong, chemical resistant and are able to withstand high temperatures without breaking down. They are used for tactical armor carriers, firemen's uniforms and advanced plane designs incorporating airplanes and modern applications. Some examples are carbon fibres, ultra-high molecular weight polyethylene fibres (Dyneema™ and Spectra™), aramid fibres (Kevlar™, Nomex™, Twaron™), etc.

2.3 Yarns

The fibres/filaments are made into yarn, which can be used for knitting or weaving. Individual fibres are made parallel to one another involving a series of machines in a spinning unit. Then the equal strands of fibres are drafted and twisting together to frame a yarn. The twist imparts strength and cohesion to the yarn. At the point when yarn is spun from staple fibres it is known as 'spun yarn'; and when yarn is produced using the twisting of parallel fibres like silk, where the fibre runs throughout the strand of the yarn, it is known as 'fibre yarn'. The process of yarn formation is shown in the figure below:



Yarn formation

2.4 Weaving

Weaving is the process of interlacement of two arrangements of yarns that are opposite to each other. Weaving is done using looms. Looms can be grouped as handloom or powerloom. Powerloom can be non-automatic or automatic. Handlooms are operated manually and powerlooms require electricity. Some customary Indian textures are created by handlooms in specific groups in India. The essential parts and the main process of weaving are the same in every one of the weaving machines. To interweave warp and weft threads on a weaving machine, the three fundamental tasks of shedding, picking and beating up are essential. The set of threads that run down the fabric in the longitudinal bearing is named 'warp' and the set of threads that are embedded in the fabric in the level course is named the 'weft'.



The three essential activities during weaving are as follows:

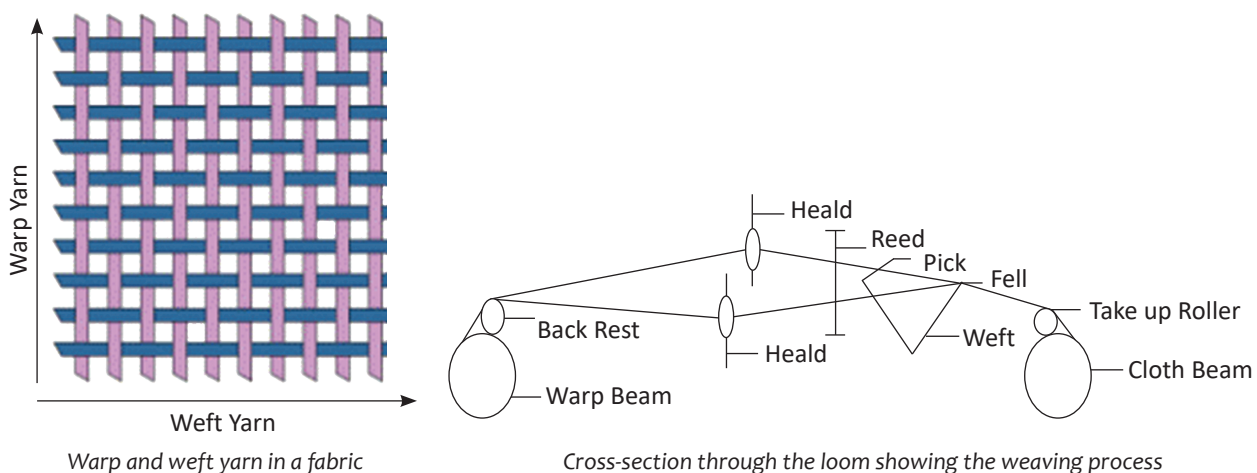
1. **Shedding:** Isolating the warp threads into two layers to frame a passage known as a shed.

2. **Picking:** Passing of the weft thread through the shed. The weft threads are the yarn that crosses down the width of the fabric, perpendicular to the warp.
3. **Beating:** This is pushing the recently embedded length of weft, known as pick to the already woven fabric at a point known as the fell.

The three tasks are the essential weaving movements and happen in a sequence for fabric creation.

2.4.1 Weaving Process

Yarn from the warp shaft passes over the back rest and comes through the drop wires to the healds, which are liable for isolating the warp with the end goal of shed development. It then goes through the reed, which holds the threads at uniform spacing and is also answerable for the beating-up activity of the weft yarn to the fell of the fabric. The pick is inserted between the reed and fabric roller through a pick inclusion instrument or transport. The fabric then, at that point, gets wound up in the material roller with the assistance of a take-up roller.

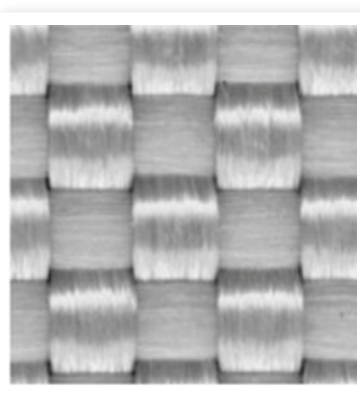


2.4.2 Weave structures

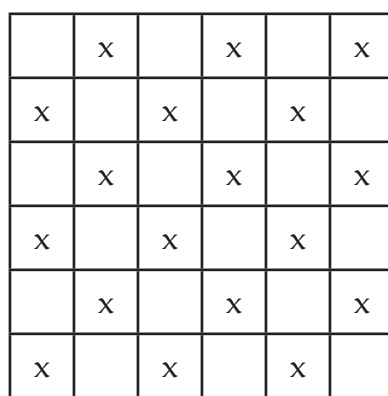
The quantity of weave structures that can be created is limitless. In this part, the essential designs like plain, twill and sateen weave from which other woven structures are created are talked about.

Plain Weave

Plain weave is the least complex intertwining design that can be produced. It is produced by alternatively lifting and bringing down one warp thread across one weft thread. The yarns don't lie straight with the fabric because the warp and weft have to twist around one another when they are intertwined.



Microscopic image of plain woven fabric

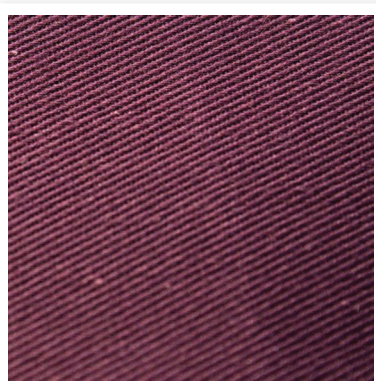


Graphical representation of plain weave



Twill Weave

A twill is a weave that repeats on at least three closures and picks and produces diagonal lines on the face of a fabric. The course of the inclining lines on the fabric's outer layer is mostly seen along the warp direction. Denim and jeans fabrics are common examples of twill weave.



Twill woven fabric

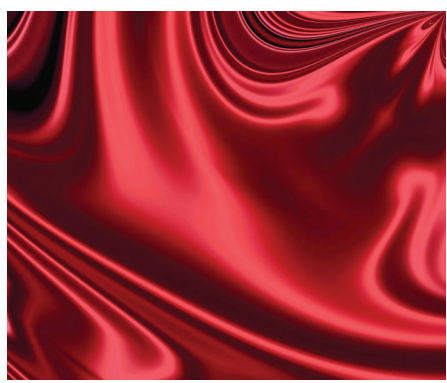
	x	x		x	x
x	x		x	x	
x		x	x		x
	x	x		x	x
x	x		x	x	
x		x	x		x



Graphical representation of 2 up 1 down twill weave

Satin and Sateen Weave

In Britain, satin is a warp-confronted weave in which the binding points are organised to create a smooth fabric surface free from twill lines. Satin is much of the time described as a 'warp satin'. A sateen, much of the time referred to as 'weft sateen' is a weft-faced weave to give a smooth and sparkling appearance.



Satin woven fabric

x	x	.	x	x
x	.	x	x	x
x	x	x	x	.
x	x	.	x	x
.	x	x	x	x



Five-end sateen weave

2.5 Dyeing

Dyeing is the course of coloration of textile materials by drenching them in a fluid arrangement of dye. Dye molecules are natural molecules. Dye molecules are coloured because they are specifically ready to absorb and reflect incident light. The dye molecules can react to the functional groups in the fibre in the shapeless reactions and structure ionic bonds/van der Waal's forces or covalent bonds and impart colour to the textile fibre. The dye molecules must stay in the fibre after repeated washes in a textile that is colour fast.

2.5.1 Classification of Dyes

Dyes can be broadly classified as synthetic dyes and natural dyes based on the source.



Coloration of textile

2.5.2 Natural Dyes

Natural dyes are a class of colorants separated from vegetative matter (seeds, leaves, roots and bark) and animal residues. Natural dyes on textiles have been utilized since old times. The earliest composed record of the utilization of natural dyes was found in China dated 2600 BC.

Advantages of Natural Dyes

- Natural dyestuff can create varieties of colours.
- A small variation in the dyeing method or the utilization of various mordants (e.g copper sulfate, ferrous sulfate, alum, etc) with the similar dye can move the colours to a range reach or make new colours, which is not easily imaginable with synthetic dyestuffs.
- Unlike non-renewable basic raw materials for synthetic dyes, natural dyes are usually renewable, being agro-renewable/vegetable based and at the same time biodegradable.
- In some cases like harda, indigo, etc., the waste in the process becomes an ideal fertilizer for use in agricultural fields. Therefore, no disposal problem for this natural waste.
- Many plants thrive on wastelands. Thus, wasteland utilization can be an added advantage if natural dyes are extracted from plants in wastelands.



Vegetative matter

Limitations of Natural Dyes

- It is hard to duplicate shades by utilizing natural dyes/colorants, as these are agro items.
- Colorant fluctuates starting from one yield season to the next crop season, all around and species to species, maturity period, and so forth.
- Natural dyeing requires skilled workmanship and is consequently costly. Low variety yield of source natural dyes consequently requires the utilization of additional dyestuffs, bigger dyeing time, and overabundance cost for mordants and mordanting.
- Scientific backup is necessary and research and development in this field is still required.
- Absence of accessibility of exact specialized information on extraction and dyeing methods.
- The dyes are delicate to pH. They change the tone if the pH of the water changes.
- The dyed textile might change colour when presented to the sun, sweat and air.
- Almost all natural dyes with a couple of special cases require the utilization of mordants to fix them onto the textile substrate. While dyeing, a substantial portion of the mordant remains in the residual dye bath and may pose a serious effluent disposal problem.

2.5.3 Synthetic Dyes

Synthetic dyes are chemically synthesized organic compounds. They have been categorised based on the application. The various classes of dyes have a liking for various fibres.



Class of dye	Fibres which can be dyed
Direct dyes	Man-made & natural cellulosic fibres (cotton, flax, viscose rayon)
Acid dyes (anionic dyes)	Natural protein fibres (silk, wool), nylon fibres
Basic dyes (cationic dyes)	Acrylic, modacrylic fibres
Disperse dyes	Polyester, nylon, acrylic, cellulose acetate
Reactive dyes	Cellulosics & protein fibres (Cotton & Silk)
Mordant dyes	Wool, silk (natural protein fibres)
Metal-complex dyes	Wool, silk (natural protein fibres)
Sulphur dyes	Natural & man-made cellulosic fibres
Vat dyes	Cellulosic fibre

Classes of synthetic dyes

Advantages of Synthetic Dyes

- A small amount of colorant is required to dye a large quantity of textile material.
- An entire range of shades can be achieved with synthetic dyes.
- The shades can be easily reproduced so that a similar shade is achieved on repeated dyeing.
- The dyes like reactive, vat and disperse have excellent fastness properties.

Limitations of Synthetic Dyes

- Synthetic dyes also require electrolytes (salt) and auxiliaries for dyeing.
- The waste water from the dye house needs to be treated for proper effluent control to reduce water and soil pollution.

2.5.4 General Theory of Dyeing

Dyeing is the course of coloration of textiles by drenching in a watery arrangement of dye known as dye baths. The dye molecules must diffuse from the dye bath to the fibre. The dye molecules must enter inside the fibre structure in the shapeless regions to give the necessary fastness. To work on the viability of dyeing, electrolyte (e.g. salt, soft drink debris), dye auxiliaries (e.g. levelling agents), and heat is required to help the course of dye diffusion.

Dyeing can be possible in the fibre stage, yarn stage, fabric stage or even garment dyeing can be possible. In the textile business, dyeing machines are utilized for dyeing. Present day dyeing machines are sophisticated and computerised for the standard dyeing process. In the handloom area of India manual dyeing is still practised.

2.6 Printing

Printing is the course of utilization of colorant to a particular region of the fabric in light of the design of the print. It resembles the confined colouring of textiles. The method involved in printing on textiles utilizing wooden blocks was normal in India since the 12th century. India holds a rich custom of block printing. By and by, block printing, screen printing, transfer printing and digital printing are done on textiles.



Printed cotton fabrics

2.6.1 General Theory of Printing

The printing of textile materials is the course of the use of colorant to a predetermined region of the design. For printing dye or pigment is required as the colorant. The printing on textiles is done with the use of print glue that is ready by utilizing dye/pigment, binder, thickener, water and other print auxiliaries. A print paste restricts the colorant to a restricted piece of the fabric, not at all like colouring where the colorant ought to be applied consistently all through the fabric. This part would talk about the role of the various ingredients used in the printing of textiles.

Dye/pigment: The main colouring compound in the printing process.

Water: A modest quantity of water is required in printing to break down the dye into the print glue. Water is a convenient and easily accessible medium to mix and scatter the dye molecules in the thickener.

Thickener: The purpose of the thickener is to produce a mechanism for the dye paste. The consistency of the printing glue is vital as it influences the lucidity and profundity of the printed design. The physical and chemical properties of the thickener ought to be with the end goal that it shouldn't soon after printing. Thickeners can be any of the following:

- Natural gums such as gum Acacia, gum Arabic or gums from starches
- Man-made natural polymer based gums like carboxyl methyl cellulose, sodium alginate
- Man-made synthetic compounds such as polyvinyl alcohol.

Steam: After printing the next process is by and large steaming. Steaming guarantees satisfactory entrance of the dye molecules in the fibre. This is conceivable because steaming gives energy to the dye molecules to enter the fibre structure. Steaming also helps in expanding the fibre so that the dye from the print paste can enter the fibre polymer framework.

Dry heating: Thermoplastic fibres more often than not are hydrophobic and don't expand adequately in water when exposed to steaming. Dry heating softens the fibre and permits the dye molecules to go into the indistinct region of the fibre structure.

Washing off: Washing is done to eliminate the thickener and other printing paste from the outer layer of the fabric after the printing system.

2.6.2 Methods of Printing

Printing can be done using different methods which are as follows:

- (i) Block Printing: Manual method
- (ii) Screen printing
 - Flat bed screen printing (manual/semi-manual/automatic)
 - Rotary screen printing (automatic)
- (iii) Transfer printing/sublimation printing
- (iv) Digital printing
- (v) Other methods: Flock printing, foil printing, embossing, rubber printing, etc.

Block Printing

One of the more conventional methods of printing is block printing in which wooden blocks are carved according to the design. After that, the blocks are placed on the print paste and stamped on

the fabric to be printed. The block's size must be altered to reduce the print's size. It is still used to print by hand in India, primarily in the following states:

States	Locations
Andhra Pradesh	Hyderabad, Machalipatnam (Kalamkari)
Gujarat	Ahmedabad (Pethapur), Kutch, Porbandar, Rajkot
Rajasthan	Bagru, Chittroli, Sanganer, Jaipur, Jodhpur
Madhya Pradesh	Bagh, Behroragarh, Indore, Mandasar, Burhanpur
Uttar Pradesh	Benares (Block-makers), Farrukabad, Pilakhan (Blockmarkers)
West Bengal	Kolkata and Serampore

Block printing locations in India



Wooden blocks for block printing



Block printing process

Screen Printing

A porous mesh is used to first prepare a screen for screen printing. By the print design, the screen keeps the area through which the print paste must pass open and blocks the remaining areas. The number of screens that need to be prepared is proportional to the number of colours that are required for printing. A squeegee is then used to apply the print paste to the fabric. The squeegee is used to move the print paste across the screen, forcing it through the screen and into the fabric after it has been applied to the screen. In the textile printing industry, rotary screen printing is the most widely used and is the cost-effective printing method. Additionally, it produces at a high rate.



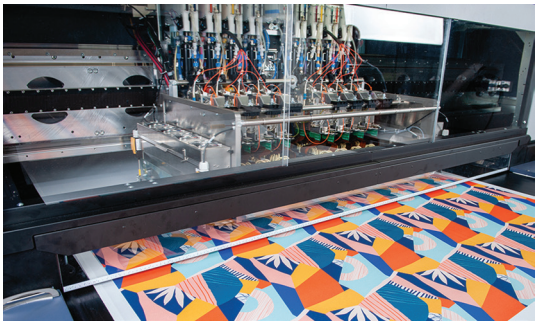
Transfer Printing

Sublimation transfer, melt transfer or film-release transfer are all methods of image transfer used in transfer printing. Typically, in this method volatile dyes are used to print the image on a paper carrier. The dyes are transferred to the fabric when heat and pressure are applied to this paper. Transfer printing makes use of dyes that are volatile and dispersed.



Digital Printing

Digital printing, in which digital inkjet printing machines are used to print the design on the fabric, is the most recent development. Screen or block preparation is not required to transfer the design to the fabric because the process is computerized. Digital printing inks can be based on pigments or dyes. Compared to screen printing or block printing, it allows for more design flexibility. Typically, the fabrics are pretreated before being printed in the machine. The dyes are typically removed, washed and dried after being fixed with steam in a separate machine.



At a Glance

- Natural fibres are obtained from natural resources assets like plants/vegetables, creature hair and regular minerals.
- Man-made fibres are obtained by the mechanical spinning of polymers like cellulose, synthetic polymers, metallic compounds and other materials which are not found in nature.
- Weaving is the process of interlacement of two arrangements of yarns that are opposite to each other. Weaving is done using looms. Looms can be grouped as handloom or powerloom.
- The three essential activities during weaving are shedding, picking and beating.
- Natural dyeing requires skilled workmanship and is consequently costly. Low variety yield of source natural dyes consequently requires the utilization of additional dyestuffs, bigger dyeing time, and overabundance cost for mordants and mordanting.
- The waste water from the dye house needs to be treated for proper effluent control to reduce water and soil pollution.
- Originally hair from the downy undercoat of the Asiatic Goat. Currently similar hair from animals bred selectively from the feral goat population of Australia, New Zealand and Scotland, is also being regarded as Cashmere provided the fibre diameter is similar.
- In Rotary screen printing a separate screen is created for each colour. Rotary cylinders are used for printing. The number of cylinders in Rotary printing is equivalent to the number of colours. It is a faster process than any other method of printing and also economical. The size of the design repeat is limited to the circumference of the cylinders.

Glossary

- 1. Acid Dye** : An anionic dye characterized by its affinity for Protein and Polyamide Fibres usually applied from an acidic dye bath.
- 2. Acrylic Fibre** : A term used to describe fibres composed of synthetic linear molecules having in the chain at least 85% (by mass) of acrylonitrile groups.
- 3. Angora** : The hair of the Angora rabbit. Note: The Hair of the Angora Goat is referred to as Mohair.
- 4. Aramid fibre** : A term used to describe fibres composed of synthetic linear macromolecules having in the polymeric chain recurring amid groups. These fibres are high-performance fibres.
- 5. Basic Dye** : A cationic dye characterized by its substantivity for basic-dyeable acrylic and basic dyeable polyester fibres.
- 6. Block Printing** : A hand printing method using wood, metal or linoleum blocks. The design is carved on the blocks, one block for each colour. The dye is applied to the block which is pressed against the fabric.
- 7. Cocoon** : An egg-shaped casing of silk spun by the silkworm to protect itself.
- 8. Continuous-filament Yarn; Filament Yarn** : A yarn composed of one or more filaments that run essentially the whole length of the yarn. Yarns of one or more filaments are usually referred to as monofilament or multifilament, respectively.
- 9. Cotton** : The seed hair of a wide variety of plants of the Gossypium family.
- 10. Drawing (Synthetic Filaments and Films)** : Drawing is the process of stretching synthetic filaments to orient the molecular chains in the filament in a particular direction.
- 11. Dupion** : A type of coarse and rough silk yarn that is spun from double cocoons. The silk yarn of dupion silk is bulky and coarse as compared to mulberry silk.
- 12. Dye** : A colorant that has substantively a substrate and is soluble in water.
- 13. Glass (fibre)** : A term used to describe fibres made of mixed silicates.
- 14. Gum-Sericin** : The silk gum that holds the two strands of silk filament together is called sericin. It is a protein in nature and soluble in water.
- 15. Hydrophilic** : Having an affinity for water.
- 16. Hydrophobic** : Having no affinity for water.
- 17. Man-made Fibre** : A fibre manufactured by man and distinct from a fibre that occurs naturally.

- 18. Merino** : Refers to the wool from the merino sheep that is fine, strong and of very high quality.
- 19. Mordant** : A substance, usually a metallic compound, applied to a substrate to form a complex with a dye, which is retained by the substrate more firmly than the dye itself.
- 20. Permanent Set** : The process of conferring permanent stability, pleats, and creases in fibres or fabrics by successive heating and cooling.
- 21. Pigment** : Pigment is a substance that adds colour to the medium when it is dispersed in the medium. It is insoluble in water.
- 22. Polyamide, Natural (fibre)** : Natural fibres consisting of polymers containing the repeating group – CONH – Examples are silk, wool and other animal hairs.
- 23. Polymer** : A large molecule built up by the repetition of small, simple, chemical units.
- 24. Sateen** : Sateen is a type of weave that gives a glossy appearance to the fabric.
- 25. Weft** : The yarn that runs across the width of the fabric.
- 26. Yarn** : A product of substantial length and relatively small cross-section consisting of fibres and/or filament(s) used for weaving, knitting, etc.

EXERCISES

CBSE Textbook Questions with Answers

EXERCISE 2.1

Purpose: To enable students to understand the source and origin of fibres

I. Classify the following fibres as natural or man-made fibres:

Hemp, Polyester, Acrylic, Mohair, Polypropylene, Glass, Jute, Merino Wool, Pinafibre, Cashmere, Cotton, Angora, Banana, Camel hair, Ceramic, Kevlar.

Ans.

Natural Fibres		Man-made Fibres
Hemp	–	natural
Polyester	–	man-made
Acrylic	–	man-made
Mohair	–	natural
Polypropylene	–	man-made
Glass	–	man-made
Jute	–	natural
Merino Wool	–	natural

Pina fibre	—	natural
Cashmere	—	natural
Cotton	—	natural
Angora	—	natural
Banana	—	natural
Camel hair	—	natural
Ceramic	—	natural
Kevlar	—	man-made

II. Match the following:

Part A		Part B	
1.	Kevlar	(a)	Manmade cellulosic fibres
2.	Hemp, Jute, Flax	(b)	Natural mineral fibre
3.	Viscose rayon, Modal, Tencel	(c)	Natural cellulosic fibres
4.	Wool, Angora, Cashmere	(d)	Animal protein fibres
5.	Asbestos	(e)	High Performance fibres

Answers:

1. (e) 2. (c) 3. (a) 4. (d) 5. (b)

Activity 2.1

Collect 5 different types of fibres and write down their properties and applications. Include new areas of application of the fibres in the field of technical textiles also.

Ans. To be practically conducted by students.

EXERCISE 2.2

Purpose: To understand the process of yarns formation

I. Write TRUE/FALSE against each of the following statements:

- (a) Twist imparts strength and cohesion to the yarn.
- (b) Yarns made from staple fibres are known as filament yarns.
- (c) Silk is an example of filament yarn.
- (d) Cotton fibres need to be cleaned, made parallel, drafted and twisted for yarn formation.
- (e) Yarns are not used for weaving and knitting.

Answers:

- (a) True (b) False (c) True (d) True (e) False

Activity 2.2

Open any yarn by untwisting it and removing the fibres or the filaments to observe the process of yarn formation.

Ans. To be observed by students themselves.

EXERCISE 2.3

Purpose: To understand the process of weaving

I. Write TRUE/FALSE against each statement.

- (a) Shedding is the process of separating the warp threads into two layers to form a tunnel known as a shed.
- (b) Picking is the process of insertion of the warp thread in the shed.
- (c) Shedding, Picking and Beat up are the secondary motions in a loom.
- (d) Plain, Twill and Satin weaves are basic weaves.
- (e) Plain weave is the simplest form of interlacement that can be produced.

Answers:

- (a) True (b) False (c) False (d) True (e) True

Activity 2.3

Take any fabric swatch and analyse the movement of the warp and the weft in the fabric sample and illustrate it in a paper.

Ans. To be observed by students themselves.

EXERCISE 2.4

Purpose: To understand the basic theory of dyeing and different classes of dyes

I. Fill in the blanks.

- (a) is the process of coloration of textile materials by immersing them in an aqueous solution of dye.
- (b) The dyes that are extracted from vegetative matter (seeds, leaves, roots and bark) and animal residues are termed as
- (c) Synthetic dyes are _____ organic compounds.
- (d) class of dye can dye natural and man-made cellulosic fibres.
- (e) and dyes can dye protein fibres like wool and silk.

Answers:

- (a) Dyeing (b) natural dyes (c) synthesized (d) Direct/Reactive/Vat
(e) Acid, Reactive

II. Write TRUE/FALSE against each statement.

- (a) Dyes are soluble in water.
- (b) Dyes form bonds within the fibre structure.
- (c) Dyeing can be done on fibres, yarns and fabrics.
- (d) A large quantity of colorant is used, to dye fabrics with synthetic dyes.
- (e) Natural dyes are sensitive to pH.

Answers:

- (a) True (b) True (c) True (d) False

Activity 2.4

Take 5 samples of fabric $5 \times 5 \text{ cm}^2$ and wash them in a solution of detergent for 15-20 minutes. Dry them and check visually if there is any loss of colour during washing. Try to find out why the colour fastness to washing is good or poor.

Ans. To be done by students.

EXERCISE 2.5

Purpose: To understand the basic process of printing textiles

1. Fill in the blanks.

- is like localized dyeing of textiles.
- is a traditional method of printing.
- For printing or is required as the colorant.
- Acacia gum, Gum Arabic or gums from starches are used as in printing.
- The number of screens required for screen printing of a particular design is equivalent to the number of in the design.

Answers:

- (a) Printing (b) Block printing (c) Dyes; pigment (d) Thickeners (e) Colours

2. Differentiate between transfer printing and digital printing.

Ans. Transfer printing: It is the process of transferring an image to fabric by the process of sublimation transfer, melt transfer or film-release method. In this method, the image is generally printed on a paper, carrier using volatile dyes. When heat and pressure are applied to this paper, the dyes are transferred to the fabric. Volatile disperse dyes are used for transfer printing.

Digital printing: It is the latest advancement in the method of printing, in which digital inkjet printing machines are used to print the design on the fabric. As the process is computerized, screen or block preparation is not necessary to transfer the design to the fabric. The inks used for digital printing can be based on dyes or pigments. It gives more flexibility to change the design than a block or screen printing.

Activity 2.5

Take 5 printed fabric samples $10 \text{ cm} \times 10 \text{ cm}$. Study the print design. Sketch the print design on paper and write down how many dyes/pigments have been used to print the design.

Ans. To be practically conducted by students.

Review Questions

1. How can textile fibres be classified?

Ans. There are two broad categories of textile fibres:

- Natural fibres
- Synthetic fibres

2. Give 4 examples of cellulosic natural fibres.

Ans. Cotton, Jute, Flax and Hemp are a few examples of cellulosic natural fibres.

3. What are the sources of natural protein fibres?

Ans. Animal fibres (wool and other animal hairs) and insect fibres (silk) are the sources protein fibres.

4. What is the difference in the properties of cotton and jute fibres?

Ans. Cotton: In India, the main cotton-producing states are Maharashtra, Andhra Pradesh, Madhya Pradesh and West Bengal. Because it is cellulosic, it gives off the smell of burning paper when burned. Under the magnifying instrument, the fine construction of cotton can be noticed. The cross part of the cotton fibre is kidney-shaped. When made into textiles, this gives the fibre the ability to absorb sweat. Additionally, the hygroscopic nature of cotton fabric prevents it from the formation of static electricity. Because of this, you can wear it in hot, humid weather. Cotton filaments can direct heat energy and can endure high ironing temperatures. The strength of the cotton fibre is great and the strength increases when the fibre is wet.

Jute: The stem of the jute plant, which grows primarily in India's West Bengal, Assam and Bihar states, is used to make jute fibre. Jute fibre is cellulosic and like cotton, can absorb dampness. The jute fibres have low elongation and excellent strength. Jute fibres are stronger than cotton fibres and elongate less when weight is applied than cotton fibres. This property makes it appropriate to be utilized in packs and sacks to convey significant burdens. Jute fibres are used for carpets, bags, sacks and industrial applications due to their roughness and stiff handle.

5. What are the differences between the properties of cotton and wool?

Ans. Cotton: Because cotton is cellulosic, it gives off the smell of burning paper when burned. Under the magnifying instrument, the fine construction of cotton can be noticed. The cross part of the cotton fibre is kidney-shaped. When made into textiles, this gives the fibre the ability to absorb sweat. Additionally, the hygroscopic nature of prevents cotton fabric it from the formation of static electricity. Because of this, you can wear it in hot and humid weather. Cotton filaments can direct heat energy and can endure high ironing temperatures. The strength of the cotton fibre is great and the strength increases when the fibre is wet.

Wool: The crimping of the wool fibres gives the woollen fabric its characteristic bulk and warmth. Fabrics made of wool have a crimp in them that lets air flow through. This glow in wool is because of the air spaces which trap endlessly air being a separator that holds the body heat. Wool retains dampness more than cotton. Wool also absorbs moisture and emits a small, steady amount of heat. It makes the wearer feel warm in the chilly climate. Wool has this unique quality that is not found in any other fibre.

6. What are the advantages of polyester over cotton fibres?

Ans. Because of its chemical composition, polyester is more durable than cotton and has a greater capacity for stretching. The hydrophilic nature of the polyester enables it to dry quickly as the moisture absorption is 0.4% unlike cotton. The high strength and stiffness of polyester makes it a wrinkle resistant fabric. Polyester is more resistant to acid than alkalis. Polyester is resistant to sunlight more than cotton.

7. What are the applications of nylon and acrylic fibres?

Ans. Nylon is used for items like ropes, socks, swimwear, cycling shorts and certain active apparel where high strength, flexibility and scraped spot obstruction are required.

Acrylic fibre is used for knitting sweaters, winter wears, cloaks, drapes, imitation fur, heap texture, upholstery textures, etc.

8. What are the applications of polyester and viscose?

Ans. Polyester fabric has properties that make it ideal for use as clothing as it is both breathable and stain-resistant. Polyester's stain resistance makes it an excellent material for furniture coverings.

Polyester is used as a batting material for cushions and upholstery because it retains its volume and shape even after being compressed multiple times. Polyester is used for disposable plastic bottles due to its resistance to micro-organisms and does not degrade biologically.

The most common uses of viscose are in apparels like dresses, suits, sari, lingerie and neckties, scarves, etc. Viscose used in non-woven fabrics for baby wipes, wet wipes, napkins, etc.

9. Name 3 high-performance fibres.

Ans. Carbon fibres, ultra-high molecular weight polyethylene fibres (Dyneema™ and Spectra™), aramid fibres (Kevlar™, Nomex™, Twaron™), etc. are a few examples of high-performance fibres.

10. Why is wool warm to wear?

Ans. The crimping of the wool fibres gives the woollen fabric its characteristic bulk and warmth. Fabrics made of wool have a crimp in them that lets air flow through. This crimp in fleece is because of the air spaces which trap endlessly air being a separator that holds the body heat. Wool retains dampness more than cotton. Wool also absorbs moisture and emits a small, steady amount of heat. It makes the wearer feel warm in the cold weather.

11. What is the reason for the lustre of silk?

Ans. The degumming process gives silk a smooth handle and a bright lustre. For this reason, raw silk is coarse in the handle and lacks lustre, but degummed silk is soft and lustrous. Silk filament is very fine, and regular in appearance. The triangular cross-section gives silk a smooth lustre as the filament reflects light uniformly.

12. Name 3 traditional Indian textiles.

Ans. Banarasi brocade, Kanjeevaram silk, and Baluchari silk are three traditional Indian textiles.

13. What are the steps involved in weaving?

Ans. Yarn from the warp shaft passes over the back rest and comes through the drop wires to the healds, which are liable for isolating the warp with the end goal of shed development. It then goes through the reed, which holds the threads at uniform spacing and is also answerable for the beating-up activity of the weft yarn to the fell of the fabric. The pick is inserted between the reed and fabric roller through a pick inclusion instrument or transport. The fabric then, at that point, gets wound up in the material roller with the assistance of a take-up roller.

14. Name three basic weaves.

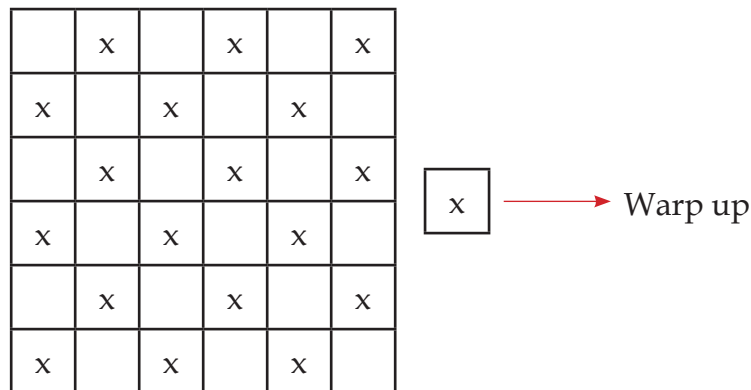
Ans. Plain, twill and sateen weaves are the three basic weaves.

15. What is warp and weft in a woven fabric?

Ans. Weaving is the process of interlacement of two sets of yarn that are perpendicular to one another. The set of threads that are inserted in the fabric in the horizontal direction is termed the 'weft'. The set of threads that runs down the fabric in the longitudinal direction is termed a 'warp'.

16. Graphically represent plain weave.

Ans.



17. What are the different types of looms?

Ans. Handloom and powerloom are different types of looms.

18. What are the parts of a loom?

Ans. There are many important parts of a loom that are Heald shaft, Shuttle, Picker, Reed, Beam, Base rod and Picking stick.

19. What are the uses of twill weave?

Ans. Twill weave is used in mostly Denim and pants fabrics.

20. What is the difference between natural and synthetic dyes?

Ans. Natural dyes are a class of colorants separated from vegetative matter (seeds, leaves, roots and bark) and animal residues. Natural dyes on textiles have been used since old times. The earliest composed record of the utilization of natural dyes was found in China dated 2600 BC.

Synthetic dyes are chemically synthesized organic components. They have been categorised based on the application. The various classes of dyes have a liking for various fibres.

21. What are the advantages of natural dyes?

Ans. Advantages of Natural Dyes

- Natural dyestuff can create varieties of colours.
- Small variety in the dyeing method or the utilization of various mordants (e.g copper sulfate, ferrous sulfate, alum, etc) with a similar dye can move the colours to a wide range or make new varieties, which is not easily imaginable with synthetic dyestuffs.
- Unlike non-renewable basic raw materials for synthetic dyes, natural dyes are usually renewable, being agro-renewable/vegetable based and at the same time biodegradable.
- In some cases like harda, indigo, etc., the waste in the process becomes an ideal fertilizer for use in agricultural fields. Therefore, no disposal problem for this natural waste.
- Many plants thrive on wastelands. Thus, wasteland utilization can be an added advantage if natural dyes are extracted from plants in wastelands.

22. What are the disadvantages of synthetic dyes?

Ans. Disadvantages of Synthetic Dyes

- Synthetic dyes require electrolytes (salt) and auxiliaries for dyeing.
- The wastewater from the dye house needs to be treated for proper effluent control to reduce water and soil pollution.

23. Which class of dye can be used for cotton?

Ans. Direct dyes and Reactive dyes can be used for cotton.

24. Briefly explain the process of dyeing.

Ans. Dyeing is the process of colouring of textiles by drenching them in a fluid arrangement of dye known as dye baths. The dye molecules should diffuse from the dye bath to the fibre. The dye molecules should enter inside the fibre structure in the shapeless regions to give the necessary quickness. To work on the process of dyeing, electrolyte (e.g. salt, soft drink debris), dye helpers (e.g. leveling agents), and heat is expected to help the process of dye diffusion. Dyeing should be possible in the fibre stage, yarn stage, fabric stage or even article of clothing dyeing should be possible.

25. What are the different methods of printing?

Ans. Printing can be done using different methods which are as follows:

(i) Block Printing: Manual method

(ii) Screen printing

- Flatbed screen printing (manual/semi-manual/automatic)

- Rotary screen printing (automatic)

(iii) Transfer printing/sublimation printing (iv) Digital printing

(v) Other methods: Flock printing, foil printing, embossing, rubber printing, etc.

26. What is the difference between transfer printing and digital printing?

Ans. Transfer printing: Sublimation transfer, melt transfer, or film-release transfer are all methods of image transfer used in transfer printing. Typically, in this method volatile dyes are used to print the image on a paper carrier. The dyes are transferred to the fabric when heat and pressure are applied to this paper. Transfer printing makes use of dyes that are volatile and dispersed.

Digital printing: Digital printing, in which digital inkjet printing machines are used to print the design on the fabric, is the most recent development. Screen or block preparation is not required to transfer the design to the fabric because the process is computerized. Digital printing inks can be based on pigments or dyes. Compared to screen printing or block printing, it allows for more design flexibility. Typically, the fabrics are pretreated before being printed in the machine. The dyes are typically removed, washed and dried after being fixed with steam in a separate machine.

27. In which regions of India is block printing still practised?

Ans. There are a few regions in which block printing is still practised.

States	Locations
Andhra Pradesh	Hyderabad, Machalipatnam (Kalamkari)
Gujarat	Ahmedabad (Pethapur), Kutch, Porbandar, Rajkot
Rajasthan	Bagru, Chittoli, Sanganer, Jaipur, Jodhpur
Madhya Pradesh	Bagh, Behrongarh, Indore, Mandasar, Burhanpur
Uttar Pradesh	Benares (Block-makers), Farrukabad, Pilakhuan (Blockmakers)
West Bengal	Kolkata and Serampore

28. What is the function of thickener in printing?

Ans. The purpose of the thickener is to produce a mechanism for the dye paste. The consistency of the printing glue is vital as it influences the lucidity and profundity of the printed design. The physical and chemical properties of the thickener should be such that it shouldn't crack soon after printing.

29. Which method of printing is most popular and why?

Ans. Rotary screen printing is the most popular method of printing because it is the most economical printing method in the textile printing industry. It also has a high production rate.

30. What are the advantages of digital printing?

Ans. In digital printing screen or block preparation is not required to transfer the design to the fabric because the process is computerized. Digital printing inks can be based on pigments or dyes. Compared to screen printing or block printing, it allows for more design flexibility. Typically, the fabrics are pretreated before being printed in the machine. The dyes are typically removed, washed and dried after being fixed with steam in a separate machine.

31. Sketch the cross-section of cotton fibre.

Ans.



32. Why is rayon called regenerated cellulosic fibre?

Ans. Rayon is known as regenerated fibre because it is manufactured from natural resources like cellulose present in wood pulp.

Additional Questions with Answers

I. Choose the correct option.

1. An example of natural mineral fibre is:

- (a) Asbestos Fibre (b) Silver Fibre (c) Aluminum Fibre (d) Ceramic Fibre

2. _____ is the process of transferring an image to fabric by the process of sublimation transfer, melt transfer or film-release method.

- (a) Block printing (b) Transfer printing (c) Digital printing (d) Screen printing

3. Tasar silk is mainly cultivated in:

- (a) Bengaluru (b) Bhagalpur (c) Assam (d) Rajasthan

4. The _____ nature of cotton prevents it from developing static electricity.

- (a) Hydroscopic (b) Hydrophobic
(c) Photochemical degeneration (d) Shrinking

5. A small amount of _____ is required in printing to dissolve the dye into the print paste.
(a) Gum (b) Milk (c) Water (d) Chemical
6. What is the difference between raw silk and degummed silk?
(a) Raw silk is slippery in the handle and lacks lustre, but degummed silk is soft and lustrous.
(b) Raw silk is coarse in the handle and lacks lustre, but degummed silk is soft and lustrous.
(c) Raw silk is coarse in the handle and lacks lustre, but degummed silk is pebbly and lustrous.
(d) Raw silk is coarse in the handle and lacks lustre, but degummed silk is pebbly and lustrous.
7. Which of the following fibres is thermoplastic in nature?
(a) Wool (b) Polyester (c) Cotton (d) Silk
8. During the weaving process, the separation of the warp threads into two layers to form a tunnel is known as:
(a) Beating (b) Shedding (c) Picking (d) Felting
9. Why is it important to degum silk fibre?
(a) To give silk a grainy texture and bright lustre.
(b) To give silk a fluffy handle and bright lustre.
(c) To give silk a smooth handle and grainy texture.
(d) To give silk a smooth handle and bright lustre.
10. These fibres have high strength, are resistant to chemicals and can withstand high temperatures without degradation. For example, they are used for bullet proof vests.
(a) Natural fibres (b) Man-made fibres
(c) High-performance fibres (d) Blended fibres
11. Which one among the following is not wild silk?
(a) Mulberry silk (b) Eri silk (c) Muga silk (d) Tassar silk
12. This fibre has high strength. Therefore it is used to make sacks but due to rough texture it is unsuitable to be used for clothing.
(a) Jute (b) Flax (c) Cotton (d) Wool
13. Give another name for 'sericin'.
(a) Silk gum (b) Silk binder
(c) Silk worm's cocoon (d) Silk liquid
14. Which type of fibre is acrylic fibre?
(a) Natural fibre (b) Synthetic fibre
(c) High-performance fibre (d) None of these

Answers:

1. (a) Asbestos Fibre 2. (b) Transfer printing 3. (b) Bhagalpur 4. (a) Hydroscopic
5. (c) Water
6. (b) Raw silk is coarse in the handle and lacks lustre, but degummed silk is soft and lustrous.
7. (b) Polyester 8. (b) Shedding

9. (d) To give silk a smooth handle and bright lustre.
10. (c) High-performance fibres
11. (a) Mulberry silk 12. (a) Jute
13. (a) Silk gum 14. (b) Synthetic fibre

II. Fill in the blanks.

- is a unit of matter which is usually at least 100 times longer than its thickness.
- In India, the main producing states are Maharashtra, Andhra Pradesh, Madhya Pradesh, and West Bengal.
- is the fibre obtained from the fleece of domesticated sheep.
- Polyester is a man-made synthetic filament composed of units.
- When yarn is spun from staple fibres it is known as yarn and when yarn is made from twisting of parallel filaments like silk, where the filament runs throughout the strand of the yarn it is known as yarn.
- Looms can be classified as or powerloom.
- The process of pushing the newly inserted length of weft, known as pick to the already woven fabric at a point known as the fell is
- A is a weave that repeats on three or more ends and picks and produces diagonal lines on the face of a fabric.
- is the process of coloration of textile materials by immersing them in an aqueous solution of dye.

Answers

- Textile fibre
- cotton
- Wool
- polyethylene terephthalate
- spun; filament
- handloom
- beating
- twill
- Dyeing

III. Very Short Answer Type Questions.

- What makes each type of Indian textile unique?
- What are the molecules in a fibre called?
- What are some examples of traditional textiles found in India?
- What is dyeing?
- Which type of bonds can be formed between dye molecules and functional groups in the fibre?
- What are the sources that provide natural fibres?
- What are some examples of natural cellulosic fibres?
- What is asbestos and why is it not widely used?
- What is the effect of direct sunlight on cotton fabrics?
- From where is jute fibre obtained?
- Why is jute fibre not used for clothing?

12. What are the properties that make jute fibre suitable for bags and sacks?
13. What is the major difference between flax fibre and cotton fibre?
14. How does the moisture absorbing property of wool affect the warmth felt by the wearer in cold weather?
15. What happens to wool when exposed to sunlight?

IV. Short Answer Type Questions–I

1. How is the silk filament obtained?
2. What is degumming?
3. Which synthetic polymers are commonly used to produce synthetic fibres?
4. What are the advantages of using man-made fibres?
5. What is viscose rayon?
6. Why is viscose rayon called viscose?
7. What are the properties of viscose rayon fibres?
8. How does the hydrophobic nature of the polymer affect the strength of polyester when wet?
9. What are some advantages of polyester as a fabric?
10. What are some properties of nylon filaments that make them suitable for products like ropes, swimwear and sportswear?

V. Short Answer Type Questions–II

1. What are some similarities between nylon and acrylic fibres?
2. What are some applications of high performance fibres?
3. What are some examples of high performance fibres?
4. How are fibres converted to yarn for weaving or knitting?
5. What is weaving?
6. What are the three basic operations required during weaving?
7. What is shedding in weaving?
8. What is the function of the reed in the weaving process?
9. How is the pick inserted between the reed and cloth roller?
10. How does the take-up roller affect the length of the final fabric?
11. How are complex weave structures produced?
12. What is the difference between plain weave and twill weave?
13. What is the difference between a satin and a sateen?
14. What is the difference between a 'warp satin' and a 'weft sateen'?
15. What is dyeing?

VI. Long Answer Type Questions–I

1. How do dye molecules impart colour to textile fibre?
2. What is the difference between synthetic dyes and natural dyes?
3. What is the advantage of using natural waste from dyeing processes?
4. Are there limitations to using natural dyes?
5. How can the use of different mordants affect the colours produced by natural dyes?
6. What is the main challenge of using natural dyes in the textile industry?
7. What is the importance of scientific backup in natural dyeing?
8. What are the limitations of synthetic dyes?
9. What are the additional substances required for dyeing in the textile industry?
10. What are the components of a print paste used in textile printing?

VII. Long Answer Type Questions–II

1. What is the purpose of a print paste in the printing process of textiles?
2. What is the process of printing on textiles?
3. What is block printing?
4. How is screen printing different from block printing?
5. What is digital printing?

About the Book

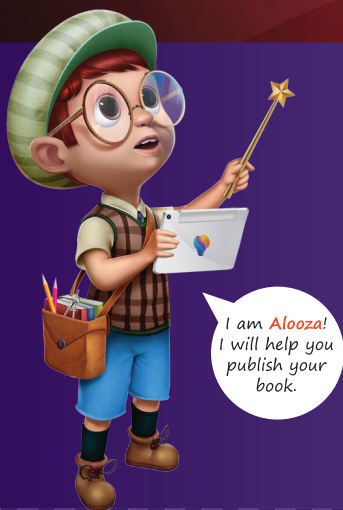
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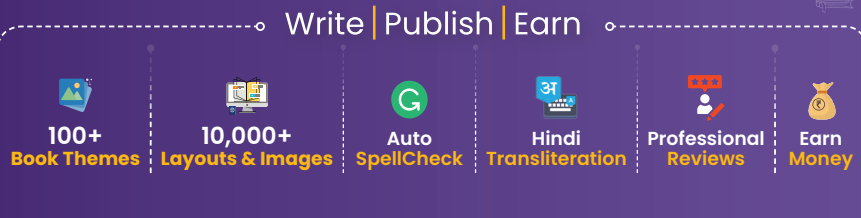
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